

Jharkhand State Electricity Regulatory Commission



**Tariff Order
on
Annual Revenue Requirement
and
Determination of Generation Tariff
for
Financial Year 2010-11
for
Tata Power Company Limited
(TPCL)**

Ranchi

July 2010

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List of Abbreviations

Abbreviation	Description
A&G	Administrative and General
ARR	Aggregate Revenue Requirement
COD	Date of Commercial Operation
FY	Financial Year
GCV	Gross Calorific Value
GFA	Gross Fixed Assets
GoI	Government of India
JSERC	Jharkhand State Electricity Regulatory Commission
Kcal	Kilocalorie
Kg	Kilogram
kWh	Kilowatt-hour
MAT	Minimum Alternative Tax
MCL	Mahanadi Coalfields Ltd. (IB Valley Coalfields)
ml	Millilitre
MT	Million Tonnes
MUs	Million Units
MW	Megawatt
O&M	Operations and Maintenance
PLF	Plant Load Factor
PPA	Power Purchase Agreement
RJC	Reprocessed Jig Coal
R&M	Repair and Maintenance
RoE	Return on Equity
Rs	Rupees
SBI	State Bank of India
SERC	State Electricity Regulatory Commission
SLM	Straight Line Method
TPCL	Tata Power Company Limited
TSL	Tata Steel Limited

A1: INTRODUCTION

Jharkhand State Electricity Regulatory Commission

- 1.1 The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as the “JSERC” or “the Commission”) was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act, 1998 on August 22, 2002. The Commission became operational w.e.f. April 24, 2003. The Electricity Act, 2003 (hereinafter referred to as “the Act” or “EA, 2003”) came into force w.e.f. June 10, 2003; and the Commission is now deemed to have been constituted and functioning under the provisions of the Act.
- 1.2 The Government of Jharkhand vide its notification dated 22.08.2002 defined the functions of JSERC as per Section 22 of the Electricity Regulatory Commission Act, 1998 to be the following, namely:-
 - (a) to determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in section 29;
 - (b) to determine the tariff payable for the use of the transmission facilities in the manner provided in section 29;
 - (c) to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the State;
 - (d) to promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act.
- 1.3 With the Electricity Act, 2003 being brought into force, the earlier Electricity Regulatory Commission Act of 1998 stands repealed and the functions of JSERC are now defined as per Section 86 of the Act.
- 1.4 In accordance with the Act, the JSERC discharges the following functions: -
 - (a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:

Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;

- (b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;
- (c) facilitate intra-state transmission and wheeling of electricity;
- (d) issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- (e) 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;
- (f) adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
- (g) levy fee for the purposes of this Act;
- (h) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;
- (i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
- (j) fix the trading margin in the intra-state trading of electricity, if considered, necessary;
- (k) discharge such other functions as may be assigned to it under this Act.

1.5 The Commission advises the State Government on all or any of the following matters, namely :-

- (a) promotion of competition, efficiency and economy in activities of the electricity industry;
- (b) promotion of investment in electricity industry;
- (c) reorganisation and restructuring of electricity industry in the State;
- (d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.

- 1.6 The State Commission ensures transparency while exercising its powers and discharging its functions.
- 1.7 In discharge of its functions, the State Commission is guided by the National Tariff Policy as brought out by GoI in compliance to Section 3 of the Act. The objectives of the National Tariff Policy are to:
- (a) ensure availability of electricity to consumers at reasonable and competitive rates;
 - (b) ensure financial viability of the sector and attract investments;
 - (c) promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
 - (d) promote competition, efficiency in operations and improvement in quality of supply.

Tata Power Company Limited

- 1.8 The Tata Power Company Limited (hereinafter referred to as 'TPCL' or the 'Petitioner'), is a company incorporated under the Indian Companies Act, VII of 1913 and is engaged in the generation, transmission and distribution of electricity in the country.
- 1.9 TPCL operates two Units (Unit II and Unit III) of Jojobera Power Plant which are the subject of tariff determination in this Tariff Order. Both Units have a capacity of 120 MW each. Unit II commenced its operations on February 1, 2001 and Unit III on February 1, 2002.
- 1.10 Tata Steel Limited (TSL), which is engaged in the production of iron and steel and related activities in Jamshedpur (Jharkhand) since 1907, obtained permission from the Government of Bihar to establish power plants in Jojobera in 1991 through its subsidiary company named Jamshedpur Power Company Ltd. (JAPCOL) which was subsequently transferred to Tata Power Company Limited. TPCL thereafter commissioned the two Units of 120MW each at Jojobera for supply of power to TSL.

Scope of the Present Order

- 1.11 This Order relates to the ARR and Tariff petition filed by TPCL before JSERC for approval of :
- (a) Truing-up of ARR for FY 2008-09;
 - (b) Revision of ARR for FY 2009-10;
 - (c) Determination of ARR and tariff for FY 2010-11

in accordance with Sections 61, 62 and 64 of the Act and provisions of the JSERC (Terms and Conditions for Thermal Generation Tariff) Regulation, 2004 (hereinafter referred to as 'Generation Tariff Regulations, 2004')

1.12 While conducting the truing-up for FY 2008-09, revision for FY 2009-10 and ARR & tariff determination for FY 2010-11, the Commission has taken into consideration the following:

- (a) Provisions of the Electricity Act, 2003,
- (b) Provisions of the National Electricity Policy (NEP),
- (c) Provisions of the National Tariff Policy (NTP);
- (d) Principles laid down in the 'Generation Tariff Regulations, 2004'; and
- (e) Power purchase agreement (PPA) between TPCL and TSL.

A2: PROCEDURAL HISTORY

Background

- 2.1 In accordance with Section 64(3) of the Act, the State Electricity Regulatory Commission, within one hundred and twenty days of the filing of application for determination of tariff, is required to either accept it and issue a tariff order or reject the application for reasons to be recorded in writing.
- 2.2 The Petitioner submitted that it had signed a PPA with TSL on September 12, 1997 under which both the parties agreed to set up, in a phased manner, a power plant with a total capacity of up to 500 MW at Jojobera. The Petitioner further submitted that Unit II and Unit III of the Jojobera Power Plant, which are the subject matter of analysis in this Tariff Order, come under aforesaid PPA.
- 2.3 The PPA contains certain provisions which govern the determination of tariff for power generated at Jojobera power plant and purchased by TSL. As the PPA is binding on both parties, the petitioner has requested the Commission to determine generation tariff for sale of power from both the Units, as per the provisions of the existing PPA.
- 2.4 The Commission in its previous tariff order has accepted the petitioners request and decided to follow the provisions of PPA for determination of tariff upto the FY 2010-11 for power generated by Unit II and Unit III. However, the Commission has directed the petitioner to re-negotiate the terms and conditions for the determination of tariff specified in the PPA with TSL within 6 months of the issue of that order and submit the ARR filing for FY 2011-12 as per the re-negotiated terms and conditions, which is required to be ratified by the Commission. The Commission has further directed the petitioner that the terms and conditions for tariff determination, in the new agreement between TPCL and TSL, shall be guided by 'Generation Tariff Regulations, 2004' as amended from time to time.

Information Gaps in the Petition

- 2.5 As part of tariff determination exercise for FY 2010-11, several deficiencies/information gaps were observed in the tariff petition submitted by the Petitioner. These information gaps were communicated to the Petitioner vide letter no. JSERC/05 of 2010/42 dated April 20, 2010.
- 2.6 The Petitioner subsequently submitted its response to the aforesaid letter and provided the requisite additional data/information vide letter no. JPP/JSERC/REG/89/10 dated May 6, 2010.
- 2.7 The Commission scrutinized the additional data/information and on its validation, accepted the ARR & tariff petition filed by the Petitioner.

Inviting Public Comments/Suggestions

- 2.8 After the acceptance of the ARR and tariff petition filed by the petitioner, the Commission directed the Petitioner to make available copies same to the members of general public on request, and also issue a public notice inviting comments/ suggestions on the ARR and tariff petition.
- 2.9 The aforesaid public notice was issued by the petitioner in various newspapers and a period of thirty (30) days was given to the members of the general public for submitting their comments/suggestions.

Table 1: List of newspapers and dates on which the public notice by TPCL appeared

Newspaper	Date
Telegraph (English)	07.06.2010 & 08.06.2010
Hindustan Times (English)	07.06.2010 & 08.06.2010
Prabhat Khabar (Hindi)	07.06.2010 & 08.06.2010
Hindustan (Hindi)	07.06.2010 & 08.06.2010

- 2.10 Subsequently, the Commission also issued an notice on its website www.jserc.org and various newspapers for conducting the public hearing on the ARR and Tariff petition filed by TPCL. The details of the newspapers where the notice was issued by the Commission are as under:

Table 2: List of newspapers and dates on which the public notice by JSERC appeared

Newspaper	Date
AAJ (Hindi)	02.07.2010 & 03.07.2010
Hindustan (Hindi)	02.07.2010 & 03.07.2010
Prabhat Khabar (Hindi)	02.07.2010 & 03.07.2010
Ranchi Express (Hindi)	02.07.2010 & 03.07.2010
Dainik Jagran (Hindi)	02.07.2010 & 03.07.2010
Uditvani (Hindi)	02.07.2010 & 03.07.2010
Hindustan Times (English)	02.07.2010 & 03.07.2010
The Pioneer (English)	02.07.2010 & 03.07.2010
Quami Tanzeem (Urdu Daily)	02.07.2010 & 03.07.2010
Farooqui Tanzeem (Urdu Daily)	02.07.2010 & 03.07.2010

Submission of Comments/Suggestions and Conduct of Public Hearing

- 2.11 A public hearing was held on July 10, 2010 at Jamshedpur and many respondents voiced their views on the ARR and tariff petition filed by the petitioner. The comments/suggestions voiced by the respondents and the petitioner's response thereon along with the Commission's analysis on the response provided by the petitioner is detailed in the subsequent section dealing with the public consultation process.

A3: SUMMARY OF THE PETITION FILED BY TPCL

Overview of the Thermal Stations

- 3.1 TSL obtained permission from the Government of Bihar in the year 1991 for establishment of thermal power plants in Jojobera through a subsidiary company named Jamshedpur Power Company Limited which later on was transferred to TPCL. Thereafter, TPCL commissioned two coal-based thermal power units of 120 MW each (Unit II and Unit III) at Jojobera, for supply of power to TSL for its own use in addition to distribution of electricity in the township of Jamshedpur, TSL being the distribution license holder for supply of electricity in the township of Jamshedpur.
- 3.2 These two units i.e. Unit-I and Unit-II are the subject of ARR and tariff determination in the petition filed by TPCL. The following table summarizes the information pertaining to the both the units which are subject to ARR and tariff determination exercise:

Table 3: Summary of Unit II and Unit III

S. No.	Name of Thermal Plant	Installed Capacity (in MW)	Status of Operation	Commercial Date of Operation
1	Jojobera Power Plant Unit-II	120	Operational	February 1, 2001
2	Jojobera Power Plant Unit-III	120	Operational	February 1, 2002

Status of PPA

- 3.3 As detailed above, the petitioner executed a PPA with TSL on September 12, 1997. The petitioner submitted that the PPA was executed before the enactment of the Act and also before the constitution of JSERC. The petitioner further submitted that PPA is binding upon both the parties (i.e. TPCL & TSL) and, therefore, requested the Commission to process the ARR and tariff petition in accordance with the principles contained in the PPA.

ARR & Tariff Determination

- 3.4 The tariff for sale of electricity from a thermal power generating station comprises of two parts, namely, fixed charges – for recovery of annual capacity charges and variable charges- for recovery of energy charges.
- 3.5 The fixed charges consist of:
- Return on equity
 - Interest on loan capital
 - Operation & Maintenance (O&M) expenses
 - Depreciation

- (e) Interest on working capital
- (f) Income Tax

3.6 The variable charges consists of:

- (a) Cost of primary fuel (i.e. coal), and
- (b) Cost of secondary fuel (i.e. oil)

Truing-up of FY 2008-09

3.7 The actual variable cost components as submitted by the petitioner for FY 2008-09, are summarised in the following table:

Table 4: Trued up variable cost components as submitted by the Petitioner for FY 2008-09

Variable Cost Components	units	Unit II	Unit III
Plant Load Factor	%	77.55	83.60
Heat Rate	Kcal / kWh	2569	2592
Gross Generation	MUs	815.24	878.75
Auxiliary Consumption	%	10.05	10.07
Net Generation	MUs	733.31	790.23
Calorific Value of Coal (West Bokaro/MCL/RJC/ Imported/Tailing)	Kcal / kg	4466/2998/3111/ 2993/3126	4472/2981/3077/ 2980/3299
Landed Cost of Coal (West Bokaro/MCL/RJC/ Imported/Tailing)	Rs/Ton	1792/999/2603/ 6734/2509	1810/1003/2580/ 6744/2514
Specific Oil Consumption	ml /kWh	0.64	0.52
Total Fuel Cost	Rs Cr	91.97	99.72

3.8 The actual fixed cost components as submitted by the petitioner for FY 2008-09, are summarised in the following table:

Table 5: Trued-up Fixed Charges as Submitted by Petitioner for FY 08-09 (Rs Cr)

Fixed Charge Components	Unit II	Unit III
O&M expenses	20.78	18.83
Depreciation	32.55	32.55
Interest on Loan	6.12	9.90
Return on Equity	27.35	31.82
Interest on Working Capital	5.00	5.35
Income Tax (MAT)	3.49	4.07
Total Fixed Charges	95.29	102.51

Revision of FY 2009-10

3.9 The revised variable cost components as proposed by the Petitioner for FY 2009-10, are summarised in the following table:

Table 6: Revised Variable Cost Components as Submitted by the Petitioner for FY 2009-10

Energy Charge Components	Units	Unit II	Unit III
Plant Load Factor	%	75.07	80.25
Heat Rate	Kcal / kWh	2680	2680
Gross Generation	MUs	789.18	843.58
Auxiliary Consumption	%	10.45	10.45
Net Generation	MUs	706.71	755.43
Calorific Value of Coal (Middling/MCL/RJC/Imported)	Kcal / kg	4375/ 2835/ 2877/ 3351	4345/ 2822/ 2873/3329
Landed Cost of Coal (West Bokaro/MCL/RJC/ Imported/Tailing)	Rs/Ton	2053/1057/ 1950/6416	2050/1056/ 1950/6411
Specific Oil Consumption	ml / kWh	0.97	0.97
Total Fuel Cost	Rs Cr	106.50	114.99

3.10 The revised fixed cost components as proposed by the Petitioner for FY 2009-10, are summarised in the following table:

Table 7: Revised Fixed Charges as Submitted by Petitioner for FY 09-10 (Rs Cr)

Fixed Charge Components	Unit II	Unit III
O&M expenses	22.23	20.14
Depreciation	32.54	32.19
Interest on Loan	2.00	5.90
Return on Equity	25.16	28.88
Interest on Working Capital	5.41	5.78
Income Tax (MAT)	5.15	5.91
Total Fixed Charges	92.49	98.81

Tariff Determination for FY 2010-11

3.11 The variable cost components as proposed by the Petitioner for tariff period of FY 2010-11, are summarised in the following table:

Table 8: Proposed Energy Charges submitted by the Petitioner for FY 2010-11

Energy Charge Components	Units	Unit II	Unit III
Plant Load Factor	%	79.10%	83.72%
Heat Rate	Kcal / kWh	2680	2680
Gross Generation	MUs	831.46	880.06
Auxiliary Consumption	%	10.40%	10.40%
Net Generation	MUs	744.98	788.53
Calorific Value of Coal (West Bokaro/MCL/RJC/ Imported/Tailing)	Kcal / kg	4400/2800/ 2800	4400/2800/ 2800
Landed Cost of Coal (West Bokaro/MCL/RJC)	Rs/Ton	2260/1200/ 2200	2260/1200/ 2200
Specific Oil Consumption	ml / kWh	0.97	0.97
Total Fuel Cost	Rs Cr	115.24	121.98

3.12 The fixed cost components as proposed by the Petitioner for the tariff period of FY 2010-11, are summarised in following table:

Table 9: Proposed Fixed Charges as Submitted by the Petitioner for FY 2010-11 (Rs. Cr)

Energy Charge Components	Unit II	Unit III
O&M expenses	23.79	21.55
Depreciation	32.54	32.17
Interest on Loan	0.00	1.96
Return on Equity	28.75	31.93
Interest on Working Capital	5.57	5.82
Income Tax (MAT)	7.16	7.95
Total Fixed Charges	97.80	101.38

A4: PUBLIC CONSULTATION PROCESS

- 4.1 The public hearing was held on July 10, 2010 in Jamshedpur. In total, there were twenty (20) members of public who participated in the public hearing. The list of participants is attached as Annexure-I.
- 4.2 The comments and suggestion of the members of the public along with the response thereon of the petitioner and the views of the Commission are detailed hereunder:

General Comments/Suggestions

Public Comments/Suggestions

- 4.3 The consumers complained that the TPCL mentioned of the expenditures but not of the incomes earned from sale of power.
- 4.4 The consumer also enquired about the sale of power by TPCL to JUSCO.

Petitioner's response

- 4.5 The Petitioner submitted that details of both income and expenditure are specified in the ARR and tariff petition filed with the Commission. The Petitioner further clarified that it is not selling power directly to JUSCO. Under the terms of PPA, TPCL is selling power to TSL which is distributing this power in Jamshedpur town and residual power to JUSCO.

Commission's View

- 4.6 The Commission agrees with the response of the Petitioner.

A5: TRUING- UP EXERCISE FOR FY 2008-09

- 5.1 TPCL has sought approval for the truing-up of expenditure and revenue based on the actual expenditure and revenue for FY 2008-09, as per the audited accounts. TPCL has provided a comparison of actual revenue and expenditure against each component of ARR with Commission's approved revenue and expenditure, along with the reasons for deviations.
- 5.2 The Commission has analysed all the components of revenue and expenditure for FY 2008-09 and has undertaken the truing-up exercise of various components after a prudence check. The component-wise description of the petitioner's submission and the Commission's analysis on the same is provided hereunder.

Basis of Variable Cost & Fixed Cost Determination

Petitioner's submission

- 5.3 The Petitioner has submitted its proposal of variable and fixed charges in accordance with the terms and conditions of the PPA and for parameters not specified in the PPA on the basis of actual audited data.

Commission's analysis

- 5.4 Since the PPA is binding on the petitioner; and the Commission in its previous tariff order approved the ARR for FY 2008-09 in accordance with the provisions of PPA, the Commission has decided to undertake the truing-up exercise also in accordance with the terms of PPA for parameters specified in PPA and to 'Generation Tariff Regulations, 2004' for parameters not specified in PPA.
- 5.5 However, for parameters where the actual figures show improvement in the efficiency of the Generation Company or are more cost-effective vis-à-vis the terms and conditions of the PPA/Generation Tariff Regulations, 2004, the Commission has decided to accept same for the purpose of truing-up exercise.

Plant Load Factor (PLF)

Petitioner's submission

- 5.6 For the purpose of truing-up of costs for FY 2008-09, the petitioner has submitted the actual PLF in FY 2008-09, which is 77.55% for Unit II and 83.60% for Unit III.
- 5.7 The petitioner submitted that the lower PLF of Unit-II is offset by higher PLF of Unit-III, thus meeting the overall PLF and hence generation target set by the Commission.

Commission's analysis

- 5.8 In its previous tariff order the Commission has approved a PLF of 80.85% for both the Units. In terms of PPA, the base PLF required to be maintained by the petitioner is 68.5%.
- 5.9 For the purpose of true-up exercise, the Commission has asked the petitioner to submit actual monthly PLF data for FY 2008-09 for both the Units by way of additional information. On the basis of the additional information, the Commission calculated the annual PLF based on the total unit-wise generation submitted by the petitioner for FY 2008-09.
- 5.10 The Commission approves the PLF of 77.55% for Unit-II and 83.60% for Unit-III for the purpose of true-up as it meets the cumulative generation target set by the Commission in its previous tariff order as well as it is well above the base PLF required to be maintained by the petitioner in accordance with the terms and conditions of PPA. However, the Commission is concerned with the low PLF of Unit II and directs the petitioner to take adequate steps to run both the Units at their optimum level.

Table 10 : Summary of Trued-up PLF for FY 2008-09

Particulars	Tariff order of FY 09-10	Actual submitted by TPCL	Approved by JSERC
Unit-II	80.85%	77.55%	77.55%
Unit-III	80.85%	83.60%	83.60%

Gross Generation

Petitioner's submission

- 5.11 The petitioner submitted 815.24 MUs as the gross generation of Unit II and 878.75 MUs as that of Unit III for FY 2008-09, on the basis of the actual PLF of 77.55% and 83.60% respectively for Unit-II and Unit-III.
- 5.12 The petitioner has stated that generation of Unit-II is marginally lower than that approved by the Commission in the previous tariff order, but the lower generation of Unit-II is offset by the higher generation of Unit-III thereby meeting the combined generation target set for both the Units .

Commission's analysis

- 5.13 As detailed in section 5.10 above, the Commission approves the figures of gross generation submitted by the petitioner.

Table 11 : Summary of Trued-up Gross Generation (in MUs) for FY 2008-09

Particulars	Tariff order of FY 09-10	Actual as submitted by TPCL	Approved by JSERC
Unit-II	849.90	815.24	815.21
Unit-III	849.90	878.75	878.77

Auxiliary Consumption

Petitioner's submission

5.14 The Petitioner has submitted that the actual auxiliary consumption during FY 2008-09 was 10.05% for Unit II and 10.07% for Unit III.

Commission's analysis

5.15 The Commission in its previous tariff order approved a figure of 10.40% for each Units of the Jojobera plant. The petitioner submitted the actual auxiliary consumption of 10.05% and 10.07% for Unit-II and Unit-III respectively, which is lower than the quantum approved by the Commission. Thus, the Commission approves the auxiliary consumption as proposed by the petitioner.

Table 12 : Summary of Auxiliary Consumption for FY 2008-09

Particulars	Tariff order of FY 09-10	Actual submitted by TPCL	True up by JSERC
Unit-II	10.40%	10.05%	10.05%
Unit-III	10.40%	10.07%	10.07%

Net Generation

Petitioner's submission

5.16 The Petitioner has submitted the net generation of 733.31 MUs and 790.23 MUs for Unit II and Unit III respectively.

Commission's analysis

5.17 The Commission approves the net generation of 733.28 MUs for Unit-II and 790.25 MUs for Unit-III on the basis of approved values of PLF, gross generation and auxiliary consumption.

Station Heat Rate

Petitioner's submission

- 5.18 The Petitioner has submitted SHR of 2569 kcal/kWh and 2592 kcal/kWh for Unit II and Unit -III respectively for FY 2008-09.
- 5.19 The Petitioner has stated that at the time of execution of PPA, it was agreed with TSL that the actual gross station heat rate will be considered for the purpose of tariff computation.

Commission's analysis

- 5.20 The Commission in its previous tariff order had approved SHR of 2669 Kcal/Kwh for Unit-II and 2662 Kcal/Kwh for Unit-III respectively.
- 5.21 Since the actual SHR submitted by the petitioner is lower than the SHR approved by the Commission in its previous tariff order, the Commission approves the actual SHR as proposed by the petitioner.

Table 13 : Summary of Trued-up SHR (Kcal/Kwh) for FY 2008-09

Particulars	Tariff order of FY 09-10	Actual submitted by TPCL	True up by JSERC
Unit-II	2669	2569	2569
Unit-III	2662	2592	2592

Specific Oil Consumption

Petitioner's submission

- 5.22 The Petitioner has submitted specific oil consumption of 0.64 ml/kWh and 0.52 ml/kWh for Unit II and III respectively during FY 2008-09.

Commission's analysis

- 5.23 The Commission in its previous tariff order had approved specific oil consumption of 0.97 ml/Kwh for Unit-II and 0.91 ml/Kwh for Unit-III.
- 5.24 Since, the specific oil consumption as submitted by the petitioner is lower than the figure approved by the Commission in its previous tariff order, the Commission approves the actual specific oil consumption submitted by the Petitioner for the purpose of truing-up for FY 2008-09.

Table 14 : Summary of Trued-up Specific Oil Consumption (ml/Kwh) for FY 2008-09

Particulars	Tariff order of FY 09-10	Actual submitted by TPCL	True up by JSERC
Unit-II	0.97	0.64	0.64
Unit-III	0.91	0.52	0.52

Gross Calorific Value (GCV) of Primary and Secondary Fuel

Petitioner's submission

- 5.25 The Petitioner has submitted that the coal is primarily sourced from West Bokaro colliery of Tata Steel (Middling Coal) and Mahanadi Coal fields, Orissa (MCL Coal). However, the coal from other sources was also procured during FY 2008-09 to make-up for the shortfall in the supply of MCL Coal.
- 5.26 The Petitioner has submitted that there was severe crisis in supply of coal during August'08 (2.90 days), September'08 (1.26 Days) and October'08 (4.36 days) and the situation started improving from Nov'08 onwards after procuring coal from alternate sources.
- 5.27 The Petitioner has further stated that production of MCL coal at Mahanadi Coalfields, Orissa was very low and Ministry of Coal had imposed an embargo on MCL for supplying coal to private utilities. Therefore, in order to build the coal stock, the Petitioner had to procure coal from other sources i.e. from West Bokaro Colliery (Tailing Coal), Aryan Coal Benefication, Korba Colliery (Reprocessed Jig Clean-RJC Coal) and Indonesia (Imported Coal).
- 5.28 The Petitioner also mentioned in the additional information that at the time of submission of ARR petition for FY 2008-09, the crisis due to shortfall in MCL coal was not foreseen and therefore, consumption of RJC, tailing and imported Coal was not factored in the said petition.
- 5.29 For the purpose of truing up, the Petitioner has submitted the GCV of middling coal as 4466 kcal/kg, MCL Coal as 2998 kcal/kg, imported coal as 2993 kcal/kg, RJC coal as 3111 kcal/kg and that of tailing coal as 3126 kcal/kg for Unit-II for FY 2008-09.
- 5.30 For Unit-III, the petitioner has submitted the GCV of Middling coal as 4472 kcal/kg, MCL coal as 2981 kcal/kg, imported coal as 2980 kcal/kg, RJC coal as 3077 kcal/kg and that of tailing coal as 3299 kcal/kg .
- 5.31 The petitioner has submitted the GCV of secondary fuel at 9100 kcal/kl for both the units.

Commission's analysis

- 5.32 In view of the facts and circumstances put-forth by the petitioner, the Commission allows the procurement of coal from sources other than those approved by the Commission in its previous tariff order.
- 5.33 The Commission directed the petitioner to submit various data such as monthly calorific value of fuel, monthly consumption of fuel and monthly price of fuel for all types of fuel (including Secondary oil) procured by them for the purpose of calculating the actual GCV for all types of coal. On the basis of said calculation, the Commission approves the following GCV for various types of coal for both the Units:

Table 15 : Trued-up GCV of Coal (Kcal/kg) as approved by JSERC for FY 08-09

Type of Coal	Unit-II	Unit-III
Middling Coal	4494	4493
MCL Coal	3035	3011
RJC Coal	3058	3058
Imported Coal	2925	2923
Tailing Coal	3486	3477

- 5.34 The Commission approves the GCV of secondary fuel of 9100 kcal/kl for both the Units for FY 2008-09, as proposed by the petitioner.

Price of Primary and Secondary Fuel

Petitioner's submission

- 5.35 The coal cost submitted by the Petitioner for FY 2008-09 for Unit-II and Unit-III, is tabulated hereunder:

Table 16 : Coal Cost (Rs/Ton) submitted by the Petitioner for FY 2008-09

Type of Coal	Unit-II	Unit-III
Middling Coal	1792	1810
MCL Coal	999	1003
RJC Coal	2603	2580
Imported Coal	6734	6744
Tailing Coal	2509	2514

- 5.36 The petitioner has submitted the price of secondary fuel as Rs. 41011/kl for Unit-II and Rs 28216/kl for FY 2008-09. The price of secondary fuel for Unit III is lower than Unit II because of the adjustments made by the petitioner in its books of account.

Commission's analysis

- 5.37 To determine the actual rate and quantity consumed of both the primary and secondary fuel, the Commission asked the petitioner to furnish the monthly coal cost and monthly consumption for various fuel sources during FY 2008-09, which the petitioner submitted by way of additional information.
- 5.38 The Commission after scrutinizing the data and the documents submitted by the Petitioner approves the following Coal costs for Unit-II & Unit-III.

Table 17 : Trued-up Coal Cost (Rs/Ton) for FY 2008-09

Type of Coal	Unit-II (Rs/Ton)	Unit-III (Rs/Ton)
Middling Coal	1792	1810
MCL Coal	999	1003
RJC Coal	2603	2580
Imported Coal	6734	6744
Tailing Coal	2509	2514

- 5.39 The Commission approves the cost of secondary fuel as Rs 41011/Kl and Rs 28216/Kl for Unit-II and Unit-III respectively, as submitted by the petitioner.

Transit Loss

Petitioner's submission

- 5.40 The petitioner submitted that as per the PPA, fuel costs shall mean the actual landed cost of primary and secondary fuel consumed by the power station, including all agreed transportation losses.

Commission's analysis

- 5.41 The Commission has not considered transit loss separately in accordance with the terms of PPA, since the fuel price submitted by the petitioner is the actual landed cost of fuel and this implies that all calculations involving the given fuel price are already grossed up.

Summary of Plant Parameters & Fuel Cost Determinants

- 5.42 The summary of plant parameters and fuel cost determinants for Unit II and Unit III of TPCL, as submitted by the petitioner and as approved by the Commission for the purpose of truing-up for FY 2008-09 is tabulated below.

Table 18: Plant parameters & Fuel cost determinants (True up for FY 2008-09)

Parameters	Unit	Unit-II		Unit-III	
		Submitted by TPCL	True up by JSERC	Submitted by TPCL	True up by JSERC
Capacity	MW	120	120	120	120
Plant Load Factor	%	77.55	77.55	83.60	83.60
Auxiliary Consumption	%	10.05	10.05	10.07	10.07
Station Heat Rate	Kcal/Kwh	2569	2569	2592	2592
GCV of Coal (IB Valley /West Bokaro /Tailing/ RJC /Imported)	Kcal/Kg	2998/4466/ 3126/3111/ 2993	3035/4494/ 3486/3058/ 2925	2981/4472/ 3299/3077/ 2980	3011/4493/ 3477/3058/ 2923
GCV of oil	Kcal/litre	9100	9100	9100	9100
Specific oil consumption	ml/Kwh	0.64	0.64	0.52	0.52
Consumption of Indian coal	MT	517738	512564	560839	557073
Consumption of Imported Coal	MT	11530	11530	9266	9266
Oil consumption	Kl	522	522	457	457
Price of Coal (IB Valley /West Bokaro/ Tailing/ RJC/ Imported)	Rs/MT	999/1792/ 2509/2603/ 6734	999/1792/ 2509/2603/ 6734	1003/1810/ 2514//2580/ 6744	1003/1810/ 2514//2580/ 6744
Price of Oil	Rs/KL	41011	41011	28216	28216
Total Coal Cost	Rs Cr	89.82	88.98	98.44	97.80
Total Oil cost	Rs Cr	2.15	2.14	1.28	1.29
Net Fuel Cost	Rs Cr	91.97	91.12	99.72	99.08
Energy Charges	Rs/Unit	1.25	1.24	1.26	1.25

Operation & Maintenance (O&M) Expenses

Petitioner's submission

5.43 The Petitioner has submitted that the Commission in the Tariff Order for FY 2009-10 had approved Rs 20.78 Cr for Unit-II and Rs 18.83 Cr for Unit-III for FY 2008-09 and accordingly, the same has been submitted by TPCL for truing up.

Commission's analysis

- 5.44 In accordance with the terms of PPA, the O&M expenditure is to be allowed at the rate of 3% of original project cost to be escalated by 7% each year and the Commission in its previous tariff order has allowed the O&M accordingly. Since, the original project cost has not undergone any change, the Commission retains the O&M expenses approved by its previous tariff order.

Depreciation

Petitioner's submission

- 5.45 The petitioner submitted that the Commission had approved a depreciation charge of Rs 32.55 Cr each for Unit-II & Unit-III in the Tariff Order for FY 2009-10 and has submitted the same for truing up of FY 2008-09.

Commission's analysis

- 5.46 As in case of O&M expenses, the depreciation charge is also computed on the basis of original project cost. Since, the original project cost has not undergone any change, the Commission retains the depreciation charge as approved in its previous tariff order, which amounts to Rs 32.55 Cr for each of the Units for FY 2008-09.

Interest on Loan

Petitioner's submission

- 5.47 The Petitioner has submitted that the Commission in its previous tariff order had approved an average interest rate of 13.02% for Unit-II and 12.33% for Unit-III and accordingly an interest of Rs 6.12 Cr for Unit-II and Rs 9.90 Cr for Unit-III was allowed. TPCL has submitted the same for truing up for FY 2008-09.

Commission's analysis

- 5.48 The Commission accepts and approves the interest on loan of Rs 6.12 Cr for Unit-II and Rs 9.88 Cr for Unit-III for the purpose of truing-up for FY 2008-09, being the same amount as determined by the Commission in its previous tariff order.

Interest on Working Capital

Petitioner's submission

- 5.49 The PPA states that: "*Working capital is estimated as per GoI norms and the interest thereon at the prevailing SBI advance rate.*" Accordingly, working capital has been calculated after considering the following norms for generating stations.

- (a) Fuel costs for one month, reasonable fuel stocks as actually maintained but limited to 15 days for pit head stations and 30 days for non-pit head stations;
- (b) The cost of 60-day inventory for any fuel other than coal;
- (c) Operation & Maintenance expenses for one month, and
- (d) The project's receivables equivalent to two months' average billing for Capacity Payment and Energy Payment.

5.50 The interest on working capital has been considered as 12.25%, which the Petitioner submitted was the prevailing SBI Advance Rate as on 1st April 2008. Accordingly, the Petitioner request the Commission to approve Rs 5.00 Cr and Rs 5.35 Cr as the interest on working capital for Units II and Unit III respectively for FY 2008-09.

Commission's analysis

5.51 The Commission has calculated the interest on working capital as per the expenses and receivables trued-up up in this tariff order. The rate of interest on working capital is considered as 12.25% p.a. which was the prevailing SBI advance rate on April 1, 2008 and accordingly approves an interest on working capital of Rs 4.97 Cr for Unit-II and Rs 5.33 Cr for Unit-III.

Return on Equity (RoE)

Petitioner's submission

5.52 Petitioner has submitted that as per the terms of PPA, the petitioner is entitled to a RoE of 16% at a base PLF of 68.5%. Additional RoE is given for generation above 68.5% PLF. The PPA specifies the following mechanism for incentive in the RoE vis-à-vis PLF achieved in a financial year: For each 1.0% (or fraction thereof, on *prorata* basis) the PLF is greater than the Guaranteed PLF of 75%, the RoE for such year shall be increased by:

- (a) 0.5% if the PLF is between 68.5% and 73.5%;
- (b) 0.6% if the PLF is between 73.5% and 75.5%; and
- (c) 0.7% if the PLF is between 75.6% and 95%.

The PPA also contains a disincentive clause for poor performance on this parameter. For each 1.0% that the PLF is below the Minimum Plant Load Factor, the RoE for such year shall decrease by 0.25%.

5.53 The petitioner further stated that the since the actual PLF of Unit-II amounts to 77.55% and that of Unit-III amounts to 83.60%, for Unit-II, the RoE along with PLF incentive works out to Rs 27.35 Cr against Rs 30.17 Cr approved by the Commission and for Unit-III, RoE works out to Rs 31.82 Cr as against Rs 29.25 Cr approved by the Commission in its previous tariff order.

Commission's analysis

5.54 The Commission has computed the RoE in accordance with the terms and conditions of PPA and approved PLF of 77.55% for Unit-II and 83.60% for Unit-III. Thus, for the purpose of truing-up for FY 2008-09, the Commission approves RoE of Rs 27.35 Cr for Unit-II and Rs 31.82 Cr for Unit-III.

Income Tax

Petitioner's submission

5.55 The petitioner has submitted that the effective minimum alternate tax (MAT) rate for FY 2008-09 was 11.33% and RoE was grossed up by the applicable MAT rate to calculate MAT. Accordingly, MAT works out to Rs 3.49 Cr and Rs 4.07 Cr for Unit-II and Unit-III respectively.

Commission's analysis

5.56 The Commission has calculated and approved the MAT payable by the Petitioner in FY 2008-09 at Rs 3.49 Cr for Unit II and Rs 4.07 Cr for Unit III.

Summary of Fixed Cost determinants and Generation Tariff

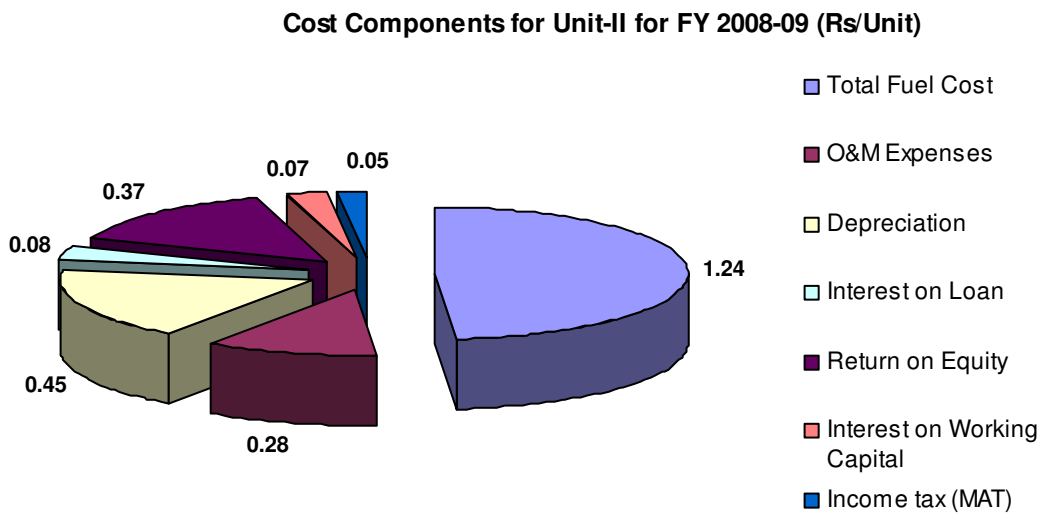
5.57 The trued-up fixed cost determinants and Generation tariff for FY 2008-09, in terms of the Commission approvals in the Tariff Order of FY 2009-10, Petitioner's revised submission and the Commission's approved costs for the purpose of truing-up for Unit-II, are tabulated hereunder:

Table 19: Fixed cost determinants and Generation tariff for FY 2008-09 for Unit-II

Parameters	Unit	Unit II		
		Tariff Order FY 2009-10	Submitted By TPCL	True up by JSERC
O&M charges	Rs Cr	20.78	20.78	20.78
Depreciation	Rs Cr	32.55	32.55	32.55
Interest on Loan	Rs Cr	6.12	6.12	6.12
Return on Equity	Rs Cr	30.17	27.35	27.35
Interest on Working Capital	Rs Cr	5.23	5.00	4.97

Income Tax	Rs Cr	3.86	3.49	3.49
Total Fixed cost	Rs Cr	98.70	95.29	95.26
Energy Cost	Rs Cr	88.97	91.97	91.12
Total Cost	Rs Cr	187.67	187.26	186.38
Net generation	MUs	761.51	733.31	733.28
Generation Tariff	Rs/Unit	2.46	2.55	2.54

5.58 The pictorial representation of cost components for generation tariff of Rs 2.54/Kwh for Unit-II approved by the Commission for FY 2008-09 is depicted below:



5.59 The trued-up fixed cost determinants and Generation tariff for FY 2008-09, in terms of the Commission approvals in the Tariff Order of FY 2009-10, Petitioner's revised submission and the Commission's approved costs for the purpose of truing-up for Unit-III, are tabulated hereunder:

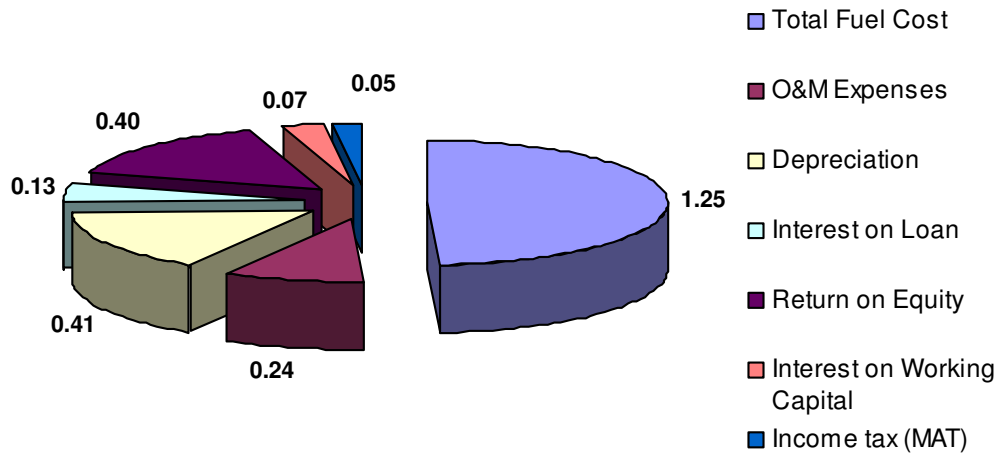
Table 20: Fixed cost determinants and Generation for FY 2008-09 for Unit-III

Parameters	Unit	Unit III		
		Tariff Order FY 2009-10	Submitted By TPCL	True up by JSERC
O&M charges	Rs Cr	18.83	18.83	18.83
Depreciation	Rs Cr	32.55	32.55	32.55
Interest on Loan	Rs Cr	9.88	9.90	9.88
Return on Equity	Rs Cr	29.25	31.82	31.82
Interest on Working Capital	Rs Cr	5.37	5.35	5.33

Income Tax	Rs Cr	3.74	4.07	4.07
Total Fixed cost	Rs Cr	99.61	102.51	102.48
Energy Cost	Rs Cr	88.97	99.72	99.08
Total Cost	Rs Cr	188.57	202.23	201.56
Net generation	MUs	761.51	790.23	790.25
Generation Tariff	Rs/Unit	2.48	2.56	2.55

5.60 The pictorial representation of cost components for generation tariff of Rs 2.55/Kwh for Unit-III, approved by the Commission for FY 2008-09 is depicted below:

Cost Components for Unit-III for FY 2008-09 (Rs/unit)



A6: REVISED ESTIMATES FOR FY 2009-10

- 6.1 TPCL has submitted the revised tariff petition for FY 2009-10 on the basis of actual operational and financial figures submitted for April'09 to February'10 and estimates for the month of March'10. The petitioner submitted the information for each and every component of expenditure and revenue for FY 2009-10 vis-à-vis the figures approved by the Commission in its previous tariff order.
- 6.2 The Commission has scrutinized the petition filed by TPCL for the revised cost estimates & operational parameters for FY 2009-10 as per the actual data.. The component-wise description of the Petitioner's submission and the Commission's analysis on the same is given below.

Basis of Variable Cost and Fixed Cost Determination

Petitioner's submission

- 6.3 The Petitioner has submitted the variable and fixed charges as per the terms and conditions of the PPA and the latest available information for FY 2009-10 for parameters not specified in PPA.
- 6.4 As stated above, the Petitioner in the petition of FY 2010-11 has submitted the actual data from April'09 to February'10 and estimates for March'10.

Commission's analysis

- 6.5 Since the PPA is binding on the petitioner, and the Commission in its previous tariff order approved the tariff for FY 2009-10 in accordance with the provisions of PPA, the Commission has decided to undertake the revision exercise also in accordance with the terms of PPA, for parameters specified in PPA, and for parameters not specified in PPA, in accordance with 'Generation Tariff Regulations, 2004'.
- 6.6 However, for parameters where the actual figures show improvement in the efficiency of the Generation Company or are more cost-effective vis-à-vis the terms and conditions of the PPA/'Generation Tariff Regulations, 2004', the Commission has decided to accept the actual figures for revision.
- 6.7 For revision of various operational and cost components for FY 2009-10, the Commission has considered the latest available data submitted by the petitioner by way of additional information.

Plant Load Factor

Petitioner's submission

- 6.8 TPCL has submitted the PLF of 75.07% for Unit-II and 80.25% for Unit-III in present petition for the purpose of revised estimation for FY 2009-10.
- 6.9 The petitioner stated that the PLF of Unit-II is lower than the PLF of 80.27% approved by the Commission in the previous tariff order, on account of forced outage of 38 days due to stator winding failure during the month of October-November 2009, which is an uncontrollable factor. It has further submitted that the possible cause for failure is the formation of cracks on ground wall insulation due to grid frequency. As a remedial measure, drum support system under the TG Rotor overhead was modified to ensure cushioning and withstanding of higher fatigue load. The Petitioner has submitted that the generation of Unit-III is in line with the approved targets.
- 6.10 The petitioner after submitting the petition, furnished the additional information wherein the actual data for FY 2009-10 is provided and the actual PLF works out to 74.75% for Unit-II and 79.39% for Unit-III, which is lower than the PLF originally proposed in the petition.

Commission's analysis

- 6.11 For revision of operational parameters for FY 2009-10, the Commission has considered the latest available data submitted by the Petitioner in the additional information.
- 6.12 The Commission has verified and approved the annual PLF on the basis of the actual generation data submitted by the petitioner for FY 2009-10.
- 6.13 In view of the fact that in accordance with the terms and conditions of the existing PPA, the petitioner is required to maintain the base PLF of 68.5% and also in view of the statement of reason for lower PLF for Unit II put forth by TPCL, the Commission approves the actual PLF of 74.75% for Unit-II and 79.39% for Unit-III. However, the Commission is concerned with the low PLF of both the Units and directs the petitioner to take adequate steps to run both the Units at atleast 85% as indicated in the directives section of this Order.

Table 21 : Summary of PLF for FY 2009-10

Particulars	Tariff order of FY 09-10	Actuals submitted by TPCL*	Approved by JSERC Revised
Unit-II	80.27%	74.75%	74.75%
Unit-III	80.27%	79.39%	79.39%

* Submitted by TPCL as additional information on May 06, 2010

Gross Generation

Petitioner's submission

6.14 In the present petition, the petitioner has submitted the gross generation for FY 2009-10 on the basis of proposed PLF of the two Units. The Gross generation has been calculated by the petitioner as 789.18 MUs for Unit-II and 843.58MUs for Unit-III.

Commission's analysis

6.15 On the basis of the approved PLF and capacity of the two units, the Commission approves the gross generation of 785.66 MUs for Unit-II and 834.58 MUs for Unit-III.

Auxiliary Consumption

Petitioner's submission

6.16 The Petitioner has submitted that in accordance with the terms and conditions of PPA, the tariff shall be adjusted with the actual auxiliary consumption. The petitioner also submitted that the auxiliary consumption for both Unit-II and Unit-III is estimated at 10.45%, which is as per the actual figures of April 2010 to February 2010, which is marginally higher than the auxiliary consumption of 10.40% approved by the Commission in its previous tariff order.

6.17 The Petitioner has submitted that the higher auxiliary consumption is on account of additional coal mill during monsoon to ensure flame stability during boiler operation and to enhance reliability of Units.

Commission's analysis

6.18 At the behest of the Commission, the petitioner submitted the actual data for the month of March'10. The auxiliary consumption as per the actual data is little higher than the estimated figures submitted with the petition.

- 6.19 The Commission has considered the actual data for computation of annual auxiliary consumption and has thereby approved the auxiliary consumption at 10.58% for both the Units. However, the Commission is concerned with the higher auxiliary consumption recorded by both the Units and directs the petitioner to take adequate steps to confine the same within the JSERC specified norms of 9%.

Table 22 : Summary of Auxiliary Consumption (%) for FY 2009-10

Particulars	Tariff order Of FY 09-10	Actual submitted by TPCL*	Approved by JSERC (Revised)
Unit-II	10.40%	10.58%	10.58%
Unit-III	10.40%	10.58%	10.58%

* Submitted by TPCL as additional information on May 06, 2010

Net Generation

Petitioner's submission

- 6.20 The Petitioner submitted the net generation at 706.71 MU for Unit-II and 755.43 MU for Unit-III for FY 2009-10 in the Petition of FY 2010-11.

Commission's analysis

- 6.21 The Commission approves the net generation of 702.67 MUs for Unit-II and 746.24 MUs for Unit-III based on the approved PLF and auxiliary consumption for FY 2009-10.

Station Heat Rate

Petitioner's submission

- 6.22 The Petitioner submitted the SHR of 2680 kcal/kWh for both the units as was approved by the Commission in the Tariff Order of FY 2009-10.

Commission's analysis

- 6.23 The Commission retains the SHR of 2680 kcal/kWh for both the Units for FY 2009-10 subject to the condition that the same would be trued up when the actual data is made available along with the next tariff petition.

Specific Oil Consumption

Petitioner's submission

- 6.24 The Petitioner has submitted a revised specific oil consumption of 0.97 ml/kWh for each of the Units for FY 2009-10 in the petition of FY 2010-11.

Commission's analysis

6.25 The Commission approves the specific oil consumption as proposed by the petitioner, which is lower than that specified by 'Generation Tariff Regulations, 2004'. The specific oil consumption is subject to the true-up, as and when the actual data is available.

Gross Calorific Value (GCV) of Primary and Secondary Fuel

Petitioner's submission

- 6.26 The Petitioner has stated that the coal is primarily sourced from West bokaro colliery of TSL and Mahanadi Coal Fields, Orissa (MCL Coal).
- 6.27 The Petitioner has stated that coal was also procured from various other sources to make-up for the shortfall in supply of Middling coal as severe crisis had arisen from there.
- 6.28 The Petitioner submitted that the coal stock during April to October was low due to shortfall in supply of middling coal. Therefore, Tata Power decided to procure from Aryan Coal Benefication Korba Colliery (RJC Coal).Also, carry-forward stock of imported coal from FY 2008-09 was blended with MCL Coal and used during FY 10.
- 6.29 The Petitioner has considered the GCV of blended coal as the GCV of imported Coal for the purpose of computation of energy charges.
- 6.30 The table below details the GCV of Coal procured from various sources as submitted by the Petitioner for Unit-II and Unit-III for conducting the revised estimate exercise for FY 2009-10.

Table 23 : GCV of coal (Kcal/Kg) submitted by the Petitioner for FY 2009-10

Type of Coal	Unit-II*	Unit-III*
MCL Coal	2813	2813
Middling Coal	4403	4366
Imported Coal	3354	3338
RJC Coal	2885	2881

* Submitted by TPCL as additional information on May 06, 2010

6.31 It has submitted the GCV of secondary fuel at 9100 kcal/kl.

Commission's analysis

6.32 The Commission has taken into account the actual month-wise information furnished with the additional data for calculating the actual GCV of fuel. As per the actual figures of FY 2009-10, the GCV for various coal types is averaged over the entire year and approved, as tabulated hereunder:

Table 24: GCV (Kcal/kg) approved by the Commission for FY 2009-10

Type of Coal	Unit-II	Unit-III
MCL Coal	2829	2809
Middling Coal	4405	4374
Imported Coal	3138	3329
RJC Coal	2877	2873

6.33 The Commission approves the GCV of secondary fuel at 9100 kcal/kl, as submitted by the petitioner.

Price of Primary and Secondary fuel

Petitioner's submission

6.34 The landed cost of Coal proposed by the Petitioner in the Petition of FY 2009-10 is given in the following table:

Table 25: Landed Coal Cost Submitted by the Petitioner (Rs/Ton) for FY09-10

Type of Coal	Unit-II	Unit-III
MCL Coal	1057	1056
Middling Coal	2053	2050
Imported Coal	6416	6411
RJC Coal	1950	1950

6.35 The price of secondary fuel is submitted as Rs 38982 /kilolitre for Unit-II and Rs 39770/ Kl for Unit-III for FY 2009-10.

Commission's analysis

6.36 To determine the actual rate and quantity consumed of the primary and secondary fuel, the Commission directed TPCL to furnish monthly coal cost and consumption for various fuel sources for FY 2009-10. TPCL submitted the monthly data for primary and secondary fuel and also submitted the annual post-audited data for cost and consumption of various fuels by way of additional information for FY 2009-10.

6.37 The Commission after scrutinizing the additional data submitted by TPCL approves the following coal costs for Unit-II and Unit-III for FY 2009-10

Table 26: Landed Coal Cost as Approved by the Commission (Rs/tonne) for FY2009-10

Type of Coal	Unit-II	Unit-III
MCL Coal	1064	1068
Middling Coal	2044	2035
Imported Coal	6607	6607
RJC Coal	1889	1928

Transit Loss

Petitioner's submission

6.38 As per the Petitioner, the PPA with TSL specifies that fuel costs shall mean the actual landed cost of primary and secondary fuel consumed by the power station, including all agreed transport losses.

Commission's analysis

6.39 The Commission has not considered transit loss separately since the actual landed cost of fuel is inclusive of any transit losses that may have been incurred.

Summary of Plant Parameters & Fuel Cost Determinants

6.40 The summary of Plant parameters and fuel cost determinants for the two Units of Jojobera plant of TPCL submitted by the Petitioner and approved by the Commission for FY 2009-10 is given below:

Table 27: Plant parameters & Fuel cost determinants (Revised estimate for FY 2009-10)

Parameters	Unit	Unit II		Unit III	
		Submitted by TPCL*	Approved by JSERC (Revised)	Submitted by TPCL*	Approved by JSERC (Revised)
Capacity	MW	120	120	120	120
Plant Load Factor	%	74.75%	74.75%	79.39%	79.39%
Auxiliary Consumption	%	10.58%	10.58%	10.58%	10.58%
Station Heat Rate	Kcal/Kwh	2680	2680	2680	2680
GCV of Coal (IB Valley/West Bokaro /RJC/Imported)	Kcal/kg	2813/4403/ 2885/3354	2829/4405/ 2877/3138	2813/4366/ 2881/3338	2809/4374/ 2873/3329
GCV of oil	Kcal/l	9100	9100	9100	9100
Specific oil consumption	ml/Kwh	0.97	0.97	0.97	0.97

Consumption of Indian coal	MT	560164	560024	606761	606622
Consumption of Imported Coal	MT	12888	12388	12089	12089
Oil consumption	Kl	762	762	810	810
Price of Coal (IB Valley/West Bokaro /RJC/Imported)	Rs/MT	1064/2044/ 1889/6607	1064/2044/ 1889/6607	1068/2035/ 1928/6607	1068/2035/ 1928/6607
Price of Oil	Rs/KL	39500	39500	39849	39849
Total Coal Cost	Rs Cr	102.25	102.22	109.56	109.54
Total Oil cost	Rs Cr	3.01	3.01	3.23	3.23
Net Fuel Cost	Rs Cr	105.26	105.24	112.79	112.77
Energy Charges	Rs/Unit	1.50	1.50	1.51	1.51

* Submitted by TPCL as additional information on May 06, 2010

Operation & Maintenance Expenses

Petitioner's submission

6.41 The Petitioner has submitted the O&M expense as per the previous tariff order wherein the Commission had approved O&M expenses of Rs.22.23 Cr for Unit-II and Rs 20.14 Cr for Unit-III and accordingly the petitioner submitted the same amount for the purpose of tariff revision for FY 2009-10.

Commission's analysis

6.42 In accordance with the terms of PPA, the O&M expenditure is to be allowed at the rate of 3% of original project cost to be escalated by 7% each year and the Commission in its previous tariff order has allowed the O&M accordingly. Since, the original project cost has not underwent any change, the Commission retains the O&M expenses approved by it its previous tariff order.

Depreciation

Petitioner's submission

6.43 The Petitioner has stated that Commission had approved a depreciation charge of Rs 32.54 Cr for Unit-II and Rs 32.19 Cr for Unit-III and accordingly, the same has been considered for annual performance review for FY 2009-10.

Commission's analysis

- 6.44 As in case of O&M expenses, the depreciation charge is also computed on the basis of original project cost. Since the original project cost has not underwent any change, the Commission retains the depreciation charge as approved in its previous tariff order at Rs 32.54 Cr for Unit-II and Rs 32.19 Cr for Unit-III for FY 2009-10.

Interest on Loan

Petitioner's submission

- 6.45 The Petitioner has submitted that the Commission in the Tariff Order of FY 2009-10 had approved an interest rate of 13.02% for Unit-II and 12.33% for Unit-III and accordingly computed an interest of Rs 2.00 Cr for Unit-II and Rs 5.90 Cr for Unit-III. The same has been submitted for annual performance review for FY 2009-10.

Commission's analysis

- 6.46 The Commission in the Tariff Order of FY 2009-10 had approved the interest amount of Rs 2.00 Cr for Unit-II and Rs 5.88 Cr for Unit-III for FY 2009-10. The Commission approves the same amount for the purpose of revised estimation for FY 2009-10.

Interest on Working Capital

Petitioner's submission

- 6.47 The PPA states that: "*Working capital is estimated as per GoI norms and the interest thereon at the prevailing SBI advance rate.*" Accordingly, working capital has been calculated after considering the following norms for generating stations.
- (a) Fuel costs for one month, reasonable fuel stocks as actually maintained but limited to 15 days for pit head stations and 30 days for non-pit head stations;
 - (b) The cost of 60-day inventory for any fuel other than coal;
 - (c) Operation & Maintenance expenses for one month, and
 - (d) The project's receivables equivalent to two months' average billing for Capacity Payment and Energy Payment.
- 6.48 The interest on working capital has been considered as 12.25%, which the Petitioner submitted was the prevailing SBI Advance Rate as on 1st April 2009. Accordingly, the Petitioner has calculated the interest on working capital for both the units

6.49 Accordingly in the petition of FY 2010-11, the Petitioner has submitted the interest on working capital as Rs 5.41 Cr as against Rs 5.25 Cr approved by the Commission in the Tariff order of FY 2009-10 for Unit-II and Rs 5.78 Cr as against Rs 5.37 approved by the Commission for Unit-III.

Commission's analysis

6.50 The Commission has calculated the interest on working capital as per the approved expenses and receivable as revised in this tariff order. The Commission approves an interest on working capital of Rs 5.36 Cr for Unit-II and Rs 5.69 Cr for Unit-III for FY 2009-10 in accordance with the terms and conditions of PPA.

Table 28: Interest on Working Capital (Rs. Cr) for FY 2009-10

Particulars	Unit-II	Unit-III
Coal stock – 1 month	8.52	9.13
Secondary Fuel – 2 months	0.50	0.54
O&M- 1 month	1.85	1.68
Receivables- 2 months	32.90	35.09
Total	43.77	46.44
Interest on Working capital	5.36	5.69

Return on Equity (RoE)

Petitioner's submission

6.51 As per the PPA, the Petitioner is entitled to a RoE of 16% at a base PLF of 68.5%. Additional RoE is given for generation above 68.5% PLF. The PPA specifies the following mechanism for incentive in the RoE vis-à-vis PLF achieved in a financial year: For each 1.0% (or fraction thereof, on *pro rata* basis) the PLF is greater than the Guaranteed PLF of 75%, the RoE for such year shall be increased by

- (a) 0.5% if the PLF is between 68.5% and 73.5%;
- (b) 0.6% if the PLF is between 73.5% and 75.5%; and
- (c) 0.7% if the PLF is between 75.6% and 95%.

The PPA also contains a disincentive clause for poor performance on this parameter. For each 1.0% that the PLF is below the Minimum Plant Load Factor, the RoE for such year shall decrease by 0.25%.

6.52 In the petition of FY 2010-11, the Petitioner has stated that the estimated PLF of Unit-II is 75.07% and that of Unit-III is 80.25%. Accordingly,, the RoE along with PLF incentive is submitted as Rs 25.16 Cr for Unit-II and Rs 28.88 Cr for Unit-III for FY 2009-10.

Commission's analysis

6.53 The Commission, in accordance with the terms and conditions of PPA, has calculated the RoE based on the approved PLF of 74.75% for Unit-II and 79.39% for Unit-III and accordingly approves the RoE of Rs 24.91 Cr for Unit-II and Rs 28.13 for Unit-III for FY 2009-10.

Income Tax

Petitioner's submission

6.54 The Petitioner has submitted that the Commission in the Tariff Order of FY 2009-10 had computed MAT by grossing up RoE at the prevailing MAT rate of 11.33%. However, after February 2009, the MAT rate increased to 16.995% and the same rate has been adopted by the petitioner for ARR of FY 2010.

6.55 In the Petition of FY 2010-11, the Petitioner has submitted that the MAT amounts to Rs 5.15 Cr for Unit-II and Rs 5.91 Cr for Unit III during FY 2009-10

Commission's analysis

6.56 The Commission has calculated the Income tax on the basis of revised RoE approved for FY 2009-10. Accordingly, the Commission approves MAT payable by the Petitioner in FY 2009-10 as Rs 5.10 Cr for Unit II and Rs 5.76 Cr for Unit III, subject to truing-up.

Summary of Fixed Cost Determinants and Generation Tariff

6.57 The table below shows the revised fixed cost determinants and generation tariff for FY 2009-10:

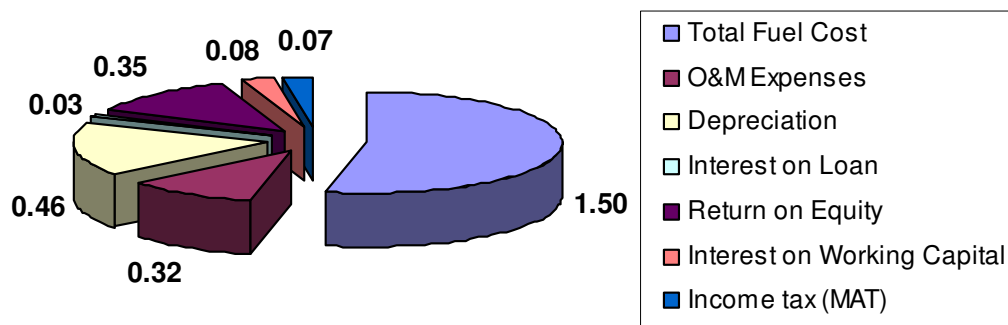
Table 29 : Fixed cost determinants and Generation Tariff for FY 2009-10 for Unit-II

Parameters	Unit	Unit II		
		Tariff Order FY 2009-10	Estimates by TPCL	Approved by JSERC Revised
O&M charges	Rs Cr	22.23	22.23	22.23
Depreciation	Rs Cr	32.54	32.54	32.54
Interest on Loan	Rs Cr	2.00	2.00	2.00
Return on Equity	Rs Cr	29.64	25.16	24.91

Interest on Working Capital	Rs Cr	5.25	5.41	5.36
Income Tax	Rs Cr	3.79	5.15	5.10
Total Fixed cost	Rs Cr	95.45	92.49	92.15
Energy Cost	Rs Cr	99.35	106.50	105.25
Total Cost	Rs Cr	194.79	198.99	197.39
Net generation	MUs	756.04	706.71	702.67
Generation Tariff	Rs/Unit	2.58	2.82	2.81

6.58 The pictorial representation of cost components for generation tariff of Rs 2.81/Kwh for Unit-II approved by the Commission for FY 2009-10 is presented below:

Cost Components for Unit-II for FY 2009-10 (Rs/Unit)



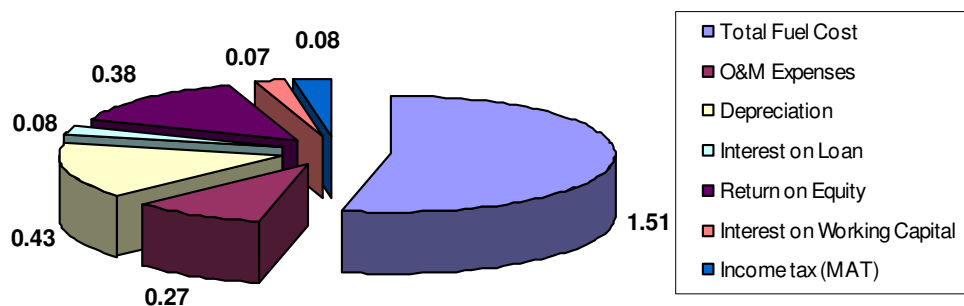
6.59 The table below shows the revised fixed cost determinants and Generation tariff for FY 2009-10:

Table 30 : Fixed cost determinants and Generation Tariff (Revision for FY 2009-10) for Unit-III

Parameters	Unit	Unit III		
		Tariff Order FY 2009-10	Estimates by TPCL	Approved by JSERC (Revised)
O&M charges	Rs Cr	20.14	20.14	20.14
Depreciation	Rs Cr	32.19	32.19	32.19
Interest on Loan	Rs Cr	5.90	5.90	5.88
Return on Equity	Rs Cr	28.74	28.88	28.13
Interest on Working Capital	Rs Cr	5.37	5.78	5.69
Income Tax	Rs Cr	3.67	5.91	5.76
Total Fixed cost	Rs Cr	96.02	98.81	97.80
Energy Cost	Rs Cr	99.34	114.97	112.77
Total Cost	Rs Cr	195.34	213.80	210.57
Net generation	MUs	756.04	755.43	746.24
Generation Tariff	Rs/Unit	2.58	2.83	2.82

6.60 The pictorial representation of cost components for generation tariff of Rs 2.82/Kwh for Unit-III approved by the Commission for FY 2009-10 is presented below:

Cost Components for Unit-III for FY 2009-10 (Rs/Unit)



A7: TARIFF DETERMINATION FOR FY 2010-11

- 7.1 On the basis of its past performance and future trends and also on the basis of previous tariff order approved by the Commission, TPCL submitted the performance projections for FY 2010-11. The projections for FY 2010-11 are also based on the principles outlined in the PPA.
- 7.2 The Commission scrutinized the petition filed by TPCL for FY 2010-11 for cost estimation and operational parameters. The component-wise description of the Petitioner's submission and the Commission's analysis on the same is given below.

Basis of Fuel Cost and Fixed Cost Determination

Petitioner's submission

- 7.3 The Petitioner has submitted its proposal of energy and fixed charges as per the terms and conditions of the PPA signed between the Petitioner and TSL in 1997 and also on the basis of methodology adopted by the Commission in its previous tariff order.

Commission's analysis

- 7.4 As stated earlier, the Commission has decided to determine the tariff for FY 2010-11 in accordance with the provisions of the PPA. For parameters involved in tariff determination that have not been specified in the PPA and with 'Generation Tariff Regulations, 2004' for parameters not specified in PPA.

Plant Load Factor (PLF)

Petitioner's submission

- 7.5 The Petitioner has projected the operational performance based on the demand projection of TSL. It has considered an annual shutdown of 28 days for Unit-II during the month of November'10 for carrying out major maintenance activities and statutory shutdown of 12 days for Unit-III during the month of March'11. The Petitioner has submitted that scheduling of shutdown for both the units has been done after discussion with TSL.
- 7.6 For FY 2010-11, the Petitioner has projected the PLF to be 79.10% for Unit-II and 83.72% for Unit-III.

Commission's analysis

- 7.7 The Commission accepts the PLF of 79.10% for Unit-II and 83.72% for Unit-III subject to the condition that the same would be trued up on the basis of actual PLF for FY 2010-11. However, the Commission is concerned with the low PLF of both the Units and directs the petitioner to take adequate steps to run both the Units at atleast 85% as indicated in the directives section of this Order.

Gross Generation

Petitioner's submission

7.8 The Petitioner has submitted 831.46 MUs for Unit-II and 880.06 MUs for Unit-III based on the proposed PLF for FY 2010-11.

Commission's analysis

7.9 The Commission approves the gross generation of 831.50 MUs for Unit-II and 880.06 MUs for Unit-III on the basis of approved PLF for FY 2010-11.

Auxiliary Consumption

Petitioner's submission

7.10 The Petitioner has stated that TPCL and TSL have agreed that the tariff will be adjusted with actual auxiliary consumption and also the Commission had approved auxiliary consumption of 10.40% for FY 2009-10 in its previous tariff order. Therefore, TPCL has considered the same for both the Units for the purpose of projections for FY 2010-11.

Commission's analysis

7.11 Since the auxiliary consumption specified in the petition for Unit II and Unit-III is lower than that actual auxiliary consumption submitted by the petitioner for FY 2009-10, the Commission approves the auxiliary consumption of 10.40% for both the Units for FY 2010-11. However, the Commission is concerned with the higher auxiliary consumption recorded by both the Units and directs the petitioner to take adequate steps to confine the same within the JSERC specified norms of 9%.

Net Generation

Petitioner's submission

7.12 The Petitioner has projected net generation for FY 2010-11 to be 744.98 MUs for Unit-II and 788.53 for Unit-III, after taking into account its projections for gross generation and auxiliary consumption.

Commission's analysis

7.13 The Commission has computed and approved the net generation at 745.02 MUs for Unit-II and 788.54 MUs for Unit-III on the basis of approved values of gross generation and auxiliary consumption.

Station Heat Rate (SHR)

Petitioner's submission

- 7.14 The Petitioner has projected the station heat rate of 2680 kcal/kWh for each of the Units, as was approved by the Commission for FY 2009-10 in the tariff order of FY 2009-10.

Commission's analysis

- 7.15 The SHR specified in the petition for FY 2010-11 is lower than that specified in the PPA, therefore, the Commission approves the SHR as 2680 kcal/kWh for Unit II and III as given in the tariff petition subject to the condition that the same would be trued up when the actual data is made available along with the next petition.

Specific Oil Consumption

Petitioner's submission

- 7.16 The specific oil consumption for FY 2010-11 is proposed by the Petitioner to be 0.97 ml/kWh for both the Units.

Commission's analysis

- 7.17 The Commission approves the specific oil consumption as that submitted by the petitioner, it being less than the specific oil consumption of 2ml/kWh specified by Generation Tariff Regulation, 2004.

Gross Calorific Value (GCV) of Primary and Secondary fuel

Petitioner's submission

- 7.18 The Petitioner has stated that for FY 2010-11, the coal will be primarily sourced from West Bokaro colliery of Tata steel(Middling Coal) and Mahanadi Coalfields, Orissa (MCL Coal) and in case of shortfall in supply of Middling or MCL coal, RJC Coal would also be procured to meet the generation target of Tata Steel Ltd. The Petitioner has proposed the GCV as 4400 kcal/kg, 2800 kcal/kg, 2800 kcal/kg for Middling coal, MCL Coal and RJC Coal respectively for both the units for FY 2010-11.

- 7.19 The GCV of secondary fuel is submitted as 9100 ml/kWh for both the units of Jojobera plant for FY 2010-11.

Commission's analysis

- 7.20 Gross Calorific value of a fuel refers to the amount of heat released on burning one unit of the fuel and a higher GCV indicates better quality of fuel and also lowers fuel cost.

- 7.21 With the intent of determining the projections for FY 2010-11 on the basis of established historic trend in GCV, the Commission asked the Petitioner to furnish additional information on the actual GCV of fuels consumed during FY 2009-10. As per the actual data of FY 2009-10 for Unit-II & III, the GCV of coal from various fuel sources are averaged over the entire year. The GCV of MCL, West Bokaro and RJC comes out to 2829 Kcal/kg, 4405 kcal/Kg and 2877 kcal/kg respectively and the same have been approved for FY 2010-11 for Unit-II.
- 7.22 For Unit-III, the average annual GCV of MCL, West Bokaro and RJC comes out to 2809 Kcal/Kg, 4374 Kcal/Kg and 2873 Kca/Kg respectively and the same have been approved for FY 2010-11 for Unit-III.
- 7.23 In case, the actual GCV of FY 2010-11 differ from the Commission's approved figures, the same would be trued up when the actual data for FY 2010-11 is made available to the Commission.
- 7.24 The proposed GCV of secondary fuel at 9100 kcal/kl has been accepted by the Commission as the actual GCV of secondary fuel in FY 2009-10 was the same.
- 7.25 The table below summarises the GCV of various types of coal submitted by the Petitioner and approved by the Commission for both the units of FY 2010-11

Table 31: GCV of various types of fuel (Kcal/kg) for Unit-II and Unit-III for FY 2010-11

Particulars	Unit-II		Unit-III	
	Submitted by TPCL	Approved by JSERC	Submitted by TPCL	Approved by JSERC
Middling Coal	4400	4405	4400	4374
MCL Coal	2800	2829	2800	2809
RJC Coal	2800	2877	2800	2873
LDO	9100	9100	9100	9100

Price of Primary and Secondary Fuel

Petitioner's submission

- 7.26 The Petitioner has projected the landed cost of fuel by considering the prevailing rate of fuel during January-February 2010 and thereafter applying an escalation rate of 6%-10% by considering the past trends of fuel prise rise and upon the fuel source.
- 7.27 The Petitioner has projected the landed price of Middling coal to be Rs 2260/MT, MCL coal to be Rs 1200/MT, RJC coal to be Rs 2200/MT for both the units.
- 7.28 The price of secondary fuel is taken to be Rs 45000/kilolitre.

Commission's analysis

- 7.29 Since fuel cost is an uncontrollable factor for the Petitioner and the actual rate of fuel paid by the Petitioner needs to be factored into the fuel cost calculation, the Commission asked the Petitioner to submit monthly data regarding cost of coal for FY 2009-10.
- 7.30 In order to rationalize the projected cost of fuel in FY 2010-11, the Commission has decided to follow the historic trend of fuel prices and hence it has retained the actual prices of fuels of FY 2009-10 as the approved price of fuels for FY 2010-11.
- 7.31 In case the actual fuel prices of FY 2010-11 differ from the Commission's approved figures, the same would be trued up once actual data for FY 2010-11 is made available to the Commission.
- 7.32 The table below details the Coal cost approved by the Commission for both the units of FY 2010-11:

Table 32: Landed Cost of Coal approved by the Commission (Rs/MT) for FY 2010-11

Type of Coal	Unit-II	Unit-III
MCL Coal	1064	1068
Middling Coal	2044	2035
RJC Coal	1889	1928

- 7.33 The Commission has approved the cost of secondary fuel as Rs. 39500/Kl for Unit-II and Rs. 39849/Kl for FY 2010-11.

Transit Loss

Petitioner's submission

- 7.34 As per the Petitioner, the PPA with TSL specifies that fuel costs shall mean the actual landed cost of primary and secondary fuel consumed by the power station, including all agreed transport losses.

Commission's analysis

- 7.35 The Commission has not considered any transit loss since the landed cost of fuel is inclusive of any transit losses that may be incurred.

Summary of Plant Parameters & Fuel Cost Determinants

7.36 The summary of Plant parameters and fuel cost determinants for the two Units submitted by the Petitioner and approved by the Commission for FY 2010-11 is given below

Table 33: Plant parameters & Fuel cost determinants (FY 2010-11)

Parameters	Unit	Unit II		Unit III	
		Submitted by TPCL	Approved by JSERC	Submitted by TPCL	Approved by JSERC
Capacity	MW	120	120	120	120
Plant Load Factor	%	79.10	79.10	83.72	83.72
Auxiliary Consumption	%	10.40%	10.40%	10.40%	10.40%
Station Heat Rate	Kcal/Kwh	2680	2680	2680	2680
GCV of Coal (MCL/West Bokaro/RJC)	Kcal/Kg	2800/ 4400/ 2800	2829/4405/ 2877	2800/4400/ 2800	2809/4374/ 2873
GCV of oil	Kcal/l	9100	9100	9100	9100
Specific oil consumption	ml/Kwh	0.97	0.97	0.97	0.97
Coal consumption	MT	571265	569203	604631	606668
Oil consumption	Kl	807	807	854	854
Price of Coal (MCL/West Bokaro/RJC)	Rs/MT	1200/2260/ 2200	1064/2044/ 1889	1200/2260/ 2200	1068/2035/ 1928
Price of Oil	Rs/KL	45000	39500	45000	39849
Total Coal Cost	Rs Cr	111.61	100.05	118.14	106.14
Total Oil cost	Rs Cr	3.63	3.19	3.84	3.40
Net Fuel Cost	Rs Cr	115.24	103.24	121.98	109.81
Energy Charges	Rs/Unit	1.55	1.37	1.55	1.39

Operation & Maintenance Expenses

Petitioner's submission

7.37 The Petitioner has projected the O&M expenses of the two thermal stations as per the terms of the PPA. As per the PPA, the O&M expenditure inclusive of insurance is considered at 3% of the project cost, escalated by 7% per annum. The completed project cost for Unit II is 431.34 Cr and for Unit III is Rs 418.14 Cr. Unit II commenced with its operations in February 2001 and Unit III in February 2002.

7.38 Taking these factors into account, the Petitioner has projected the O&M expenses for FY 2010-11 to be Rs 23.79 Cr for Unit II and Rs21.55 Cr for Unit III for FY 2010-11.

Commission's analysis

- 7.39 In view of the existing PPA, the Commission has approved the O&M expenses on the basis of norms followed by the Petitioner.
- 7.40 Taking the same capital cost of the two Units as proposed the Petitioner, the O&M expenses computed by the Commission for FY 2010-11 as per the norms of the PPA amounts to Rs 23.79 Cr and Rs 21.55 Cr for Unit II and Unit III respectively.

Depreciation

Petitioner's submission

- 7.41 The Petitioner has submitted that as per the PPA, depreciation is calculated at the rates mentioned for different category of assets in the gazette notification issued by GOI and the accumulated depreciation is utilised for the repayment of the loans/bonds.
- 7.42 The Petitioner has adopted depreciation norms for various classes of assets as specified in the notification issued by Ministry of Power on "Depreciation Norms for Generating Companies" dated 29th March 1994.
- 7.43 According to the Petitioner, the depreciation rate used for cost computation is 7.84% on plant and machinery (the most dominant fraction of the asset base) and other rates for other classes of assets.
- 7.44 The Petitioner has projected depreciation of Rs 32.54 Cr for Unit-II and Rs 32.17 Cr for Unit-III. The table below summarises the depreciation schedule submitted by the Petitioner for Unit-II and Unit-III for FY 2010-11.

Table 34: Depreciation schedule submitted by the Petitioner for Unit-II for FY 2010-11

Asset Class	Asset Class Rate	Acquisition Value	Depreciation	Depreciation for FY 11	Accumulated depreciation for FY 11	Balance Depreciable Value
Land	0.00%	0.93	0.00	0.00	0.00	0.00
Plant & machinery	7.84%	410.16	369.15	32.16	321.57	47.58
Building & Civil works	3.02%	2.08	1.87	0.06	0.63	1.24
Vehicles, Battery & ACs	33.40%	9.21	8.29	0.00	8.29	0.00
Office furniture & others	12.77%	2.92	2.63	0.00	2.63	0.00
Fixed Tools (3 years life)	18.00%	0.00	0.00	0.00	0.00	0.00
Fixed Tools (5 years life)	30.00%	0.03	0.02	0.00	0.02	0.00
Cable & Other works	5.27%	6.01	5.41	0.32	3.17	2.24
Total		431.34	387.37	32.54	336.31	51.06

Table 35: Depreciation schedule submitted by the Petitioner for Unit-III for FY 2010-11

Asset Class	Asset Class Rate	Acquisition Value	Depreciation	Depreciation for FY 11	Accumulated depreciation for FY 11	Balance Depreciable Value
Land	0.00%	0.93	0.00	0.00	0.00	0.00
Plant & machinery	7.84%	405.11	364.59	31.76	285.84	78.75
Building & Civil works	3.02%	2.97	2.67	0.09	0.81	1.87
Vehicles, Battery & ACs	33.40%	0.97	0.87	0.00	0.87	0.00
Office furniture & others	12.77%	2.92	2.63	0.00	2.63	0.00
Fixed Tools (3 years life)	18.00%	0.00	0.00	0.00	0.00	0.00
Fixed Tools (5 years life)	30.00%	0.06	0.05	0.00	0.05	0.00
Cable & Other works	5.27%	6.12	5.51	0.32	2.90	2.60
Total		418.14	376.32	32.17	293.10	83.22

Commission's analysis

7.45 Depreciation is calculated on the historical cost of the asset at the straight-line method over the useful life of the asset. According to the 'Generation Tariff Regulations, 2004', depreciation is allowed up to a maximum of 90% of the historical cost of the asset. As for the rate of depreciation, keeping in view the fact that the PPA was signed in 1997, the Commission has referred to the depreciation schedule notified by the Ministry of Power in 1994, since it was the schedule prevalent at the time of PPA execution.

7.46 Accordingly, the Commission has computed depreciation charges as Rs 32.54 Cr for Unit II and Rs 32.17 Cr for Unit III for FY 2010-11.

Interest on Loan*Petitioner's submission*

7.47 The Petitioner has submitted that the required debt funding for the project has been met through various loans. As per the PPA, repayment of debt is considered on half yearly basis. The PPA states that: "Interest on loans is estimated at 8.0% for foreign loan and 13.5% for local loans. Actual will be payable on finalisation of the loan/bond agreement. Interest is calculated on loans less accumulated deemed repayment. Accumulated deemed repayment is calculated to match claim of accumulated Electricity Act depreciation at the end of each year."

- 7.48 The Petitioner has submitted that repayment of loan for Unit-II will be completed by the end of FY 2009-10. Therefore, there will be no outstanding loan left for Unit II in FY 2010-11 and interest on loan would be NIL.
- 7.49 For Unit-III, the Petitioner has stated that the Commission in the Tariff Order of FY 2009-10 had approved an interest rate of 12.33% for Unit-III. Accordingly, it has computed the interest on loan of Rs 1.96 Crores for Unit-III for FY 2010-11.

Commission's analysis

- 7.50 For calculation of interest on loans, the Commission had considered the weighted average of the actual interest rates of loans from different sources. Since the actual loan amount taken for Unit III did not add up to 70% of its capital cost as is requirement as per the 'Generation Tariff Regulations, 2004' as well as specified in the PPA, the difference between the two was treated as a normative debt amount at an interest rate of 13.02%, the interest rate mentioned in the PPA for domestic loans. Along with the interest rate on the actual loan taken for Unit III, the weighted average interest rate for Unit III amounts to 12.33%.
- 7.51 For FY 2010-11, the Commission has calculated the interest on loan to be Rs1.95 Cr for Unit III.

Table 36: Interest on Loan for Unit-III for FY 2010-11 (Rs. Cr)

S. No	Description	Unit III	
		Submitted by TPCL	Approved by JSERC
1	Total Cost of Project	418.14	418.14
2	Total Normative Loan	292.70	292.70
3	Total Normative Equity	125.44	125.44
4	Rate of Interest	12.33%	12.33%
	Interest for FY 2010- 11	1.96	1.95

Interest on Working Capital

Petitioner's submission

- 7.52 The PPA states that: "Working capital is estimated as per GoI norms and the interest thereon at the prevailing SBI advance rate." Accordingly, working capital has been calculated after considering the following norms for generating stations.
- Fuel costs for one month, reasonable fuel stocks as actually maintained but limited to 15 days for pit head stations and 30 days for non-pit head stations;
 - The cost of 60-day inventory for any fuel other than coal;

- (c) Operation & Maintenance expenses for one month, and
- (d) The project's receivables equivalent to two months' average billing for Capacity Payment and Energy Payment.

7.53 The interest on working capital has been considered as 11.75%, which the Petitioner submitted is the prevailing SBI Advance Rate. Accordingly, the Petitioner requests the Commission to approve Rs 5.57 Cr and Rs 5.82 Cr as the respective interest on working capital for Units II and Unit III respectively for FY 2010-11.

Commission's analysis

7.54 The Commission has computed the working capital base for both Units for FY 2010-11 in line with the PPA between the TPCL and TSL. The rate of interest on working capital is taken to be the short-term Prime Lending Rate of State Bank of India as on 28th February 2010 which is 11.75%.

7.55 Accordingly, the Commission has computed the interest on working capital to be Rs 5.20 Cr for Unit II and Rs 5.45 Cr for Unit III for FY 2010-11.

Table 37: Interest on Working Capital (Rs Cr) approved by the Commission for FY 2010-11

Particulars	Unit-II	Unit-III
Coal stock – 1 month	8.34	8.87
Secondary Fuel – 2 months	0.53	0.57
O&M- 1 month	1.98	1.80
Receivables- 2 months	33.45	35.14
Total	44.30	46.37
Interest on Working capital	5.20	5.45

Return on Equity (RoE)

Petitioner's submission

7.56 As per the PPA, the Petitioner is entitled to a RoE of 16% at a base PLF of 68.5%. Additional RoE is given for generation above 68.5% PLF. The PPA specifies the following mechanism for incentive in the RoE vis-à-vis PLF achieved in a financial year: For each 1.0% (or fraction thereof, on *pro rata* basis) the PLF is greater than the Guaranteed PLF of 75%, the RoE for such year shall be increased by

- (a) 0.5% if the PLF is between 68.5% and 73.5%;
- (b) 0.6% if the PLF is between 73.5% and 75.5%; and

(c) 0.7% if the PLF is between 75.6% and 95%.

The PPA also contains a disincentive clause for poor performance on this parameter. For each 1.0% that the PLF is below the Minimum Plant Load Factor, the RoE for such year shall decrease by 0.25%.

7.57 For FY 2010-11, the Petitioner has projected PLF of 79.10% for Unit-II and 83.72% for Unit-III. Hence, it has submitted the return on equity with PLF incentive as Rs 28.75 Cr for Unit-II and Rs 31.93 Cr for Unit-III.

Commission's analysis

7.58 Keeping in mind the PPA between the Petitioner and TSL, the Commission has approved the PLF-linked incentive on RoE as proposed by the Petitioner.

7.59 The Commission has computed the RoE based on the approved values of PLF for Unit-II and Unit-III for FY 2010-11 and has approved the RoE of Rs 28.75 Cr for Unit-II and Rs 31.93 Cr for Unit-III for FY 2010-11.

Income Tax

Petitioner's submission

7.60 The Petitioner submitted that the Commission had approved the Minimum Alternative Tax (MAT) computed on RoE and for the computation of MAT the RoE was grossed up by the prevailing MAT rate.

7.61 The Petitioner has computed income tax based on the MAT rate of 19.9305% for FY 2010-11. The income tax proposed by the Petitioner works out to Rs 7.16 Cr for Unit-II and Rs 7.95 Cr for Unit-III.

Commission's analysis

7.62 Since the rates of MAT has gone up from 15% to 18% in Union Budget for 2010-11, the Commission has calculated and approved the MAT payable by the Petitioner in FY 2010-11 to be Rs 7.16 Cr on Unit II and Rs 7.95 Cr on Unit III, by applying a rate of 19.9305%.

Summary of Fixed Cost Determinants and Generation Tariff

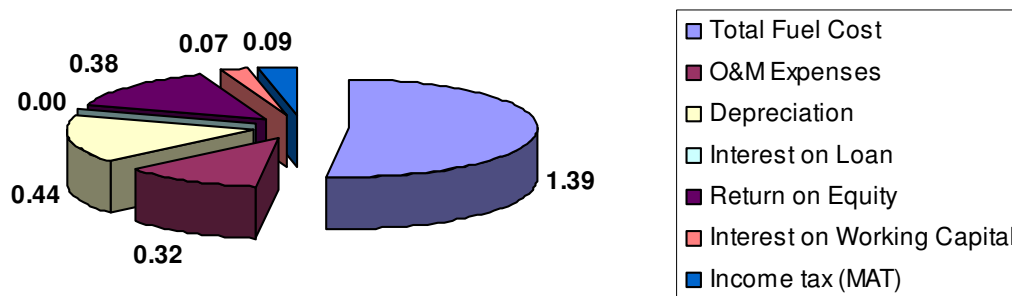
7.63 The table below shows the fixed cost determinants and Generation tariff for FY 2010-11, in terms of the Petitioner's submission and the Commission's approved costs for Unit-II.

Table 38: Fixed cost determinants and Generation Tariff for FY 2010-11

Parameters	Units	Unit II	
		Submitted by TPCL	Approved by JSERC
O&M charges	Rs Cr	23.79	23.79
Depreciation	Rs Cr	32.54	32.54
Interest on Loan	Rs Cr	0.00	0.00
Return on Equity	Rs Cr	28.75	28.75
Interest on Working Capital	Rs Cr	5.57	5.20
Income Tax	Rs Cr	7.16	7.16
Total Fixed cost	Rs Cr	97.80	97.44
Energy Cost	Rs Cr	115.24	103.24
Total Cost	Rs Cr	213.04	200.68
Net generation (MUs)	MUs	744.98	745.02
Generation Tariff	Rs/Unit	2.86	2.69

7.64 The pictorial representation of cost components for generation tariff of Rs 2.69/Kwh for Unit-II approved by the Commission for FY 2010-11 is presented below:

Cost Components for Unit-II for FY 2010-11 (Rs/Unit)



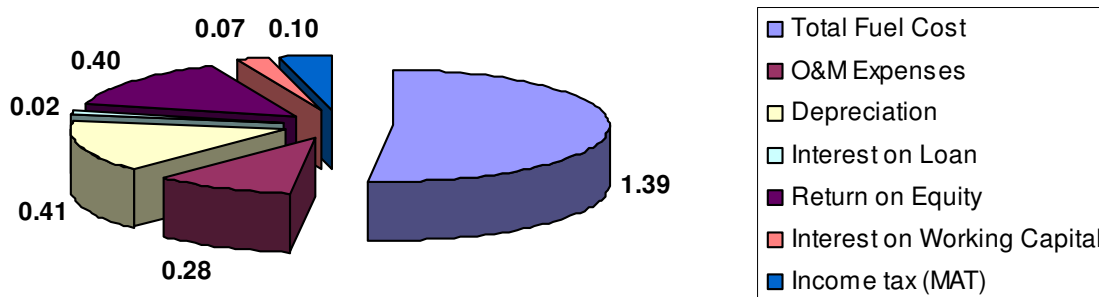
7.65 The table below shows the fixed cost determinants and Generation tariff for FY 2010-11, in terms of the Petitioner's submission and the Commission's approved costs for Unit-III.

Table 39: Fixed cost determinants and Generation Tariff for FY 2010-11

Parameters	Units	Unit III	
		Submitted by TPCL	Approved by JSERC
O&M charges	Rs Cr	21.55	21.55
Depreciation	Rs Cr	32.17	32.17
Interest on Loan	Rs Cr	1.96	1.95
Return on Equity	Rs Cr	31.93	31.93
Interest on Working Capital	Rs Cr	5.82	5.45
Income Tax	Rs Cr	7.95	7.95
Total Fixed cost	Rs Cr	101.38	101
Energy Cost	Rs Cr	121.98	109.81
Total Cost	Rs Cr	223.36	210.82
Net generation (MUs)	MUs	788.53	788.54
Generation Tariff	Rs/Unit	2.83	2.67

7.66 The pictorial representation of cost components for generation tariff of Rs 2.67/Kwh for Unit-III approved by the Commission for FY 2010-11 is presented below:

Cost Components for Unit-III for FY 2010-11(Rs/unit)



A8: STATUS OF EARLIER DIRECTIVES

Directives as per TO 2009-10	Status	Views of the Commission
<p>Basis for Tariff determination</p> <p>The Commission directed the Petitioner to file the next tariff petition for FY 2010-11 within one month of the issue of this order and to ensure that the subsequent filing of the ARR for the ensuing year is done by 1st November every year prior to the tariff period.</p>	<p>The petitioner sought extension from the Commission and submitted the ARR & Tariff filing on 10th March 2010.</p>	<p>The petitioner has complied with the directive after seeking one month's extension.</p>
<p>Improvement in performance of operational parameters</p> <p>The Commission had observed that the operational performance of Unit-II and III can be improved further to the extent of CERC approved operation norms for thermal stations.</p> <p>The Commission had directed the Petitioner to submit an improvement plan for two units within three months of the issue of the order.</p>	<p>The Petitioner has submitted the operational improvement plan of Unit-II & Unit-III of Jojobera plant on April 23, 2010.</p>	<p>The petitioner has complied with the directive.</p>
<p>Loan restructuring</p> <p>The Commission had directed Tata Power to explore ways with Financial Institutions to restructure outstanding loan at lower interest rate. Tata Power was to submit a cost-benefit analysis on the same to the Commission within three months of the issue of order.</p>	<p>Tata Power submitted that and that there is not much scope remaining for refinancing the outstanding loan as the loan of Unit-II will be fully repaid by the end of FY 2009-10 and that for Unit-III by the end of FY 2010-11.</p> <p>Therefore, Tata Power has requested the Commission to allow them to continue with the approved rate of interest for the remaining outstanding loan of Unit-II and Unit-III.</p>	<p>The Commission accepts the request made by the Petitioner.</p>
<p>Adjustments of Bills & payments/receipt as per revised cost of power sold to TSL</p> <p>The Commission directed Tata Power to reconcile the payment due/receipts with Tata Steel within 3 months by</p>	<p>The Petitioner has raised separate bills for Unit-II and Unit-III from February</p>	<p>The petitioner has complied with the directive.</p>

Directives as per TO 2009-10	Status	Views of the Commission
<p>raising a supplementary bill for the reconciled amount.</p> <p>The Commission also directed the Tata Power to raise separate monthly bills for Unit-II and Unit-III as against the current practice of combined billing</p>	<p>2010.</p>	
<p>The Commission had directed Tata Power to renegotiate the PPA for Unit-II & III with Tata Steel based on the terms and conditions of JSERC regulations within 6 months of the date of issue of order. Tata Power has been directed to submit the ARR filing for FY 2011-12 as per the new agreement (to be ratified by the Commission).</p>	<p>An Appeal has been filed to Appellate Tribunal of Electricity and Tata Power will abide by the directions issued by ATE in this regard.</p>	<p>The Commission is in the process of revising the Generation Regulations and the same would be applicable to all the generation stations.</p>

A9: NEW DIRECTIVES

Maintaining unit-wise Accounts

9.1 The Petitioner is directed to maintain separate accounts for Unit-II and Unit-III of Jojobera power station. Further, the accounts should be audited annually and form a part of the ARR petition.

Performance of generating units

9.2 The Commission has observed that the performance of the two Units of Jojobera plant with respect to some of the operational parameters is lower than those of the other similarly placed plants in the country. In particular, the SHR, the PLF, normative annual plant availability factor (as per CERC Tariff Regulations, 2009) and the auxiliary consumption can be improved further to the extent of CERC approved operational norms for thermal stations of such nature.

9.3 The Commission directs the TPCL to take note from similar comparison of 110/120 MW, as stated below, and take appropriate measures to improve the operational parameters for both the units.

Parameter	TPCL FY 09-10	TPCL FY 09-10	TPL	Tanda	Talcher
Name of the Unit	Unit-II	Unit-III	D Station	4x110	4x60+2x110
Location	Jamshedpur	Jamshedpur	Sabarmati, Gujarat	Uttar Pradesh	Orissa
Capacity (MW)	120	120	110/ 120 MW	4x110	4x60+2x110
Fuel	Coal	Coal	Coal	Coal	Coal
Year of Commissioning	Feb'2001	Feb'2002	1978	Taken over from UPSEB by NTPC in Jan, 2000	Taken over from OSEB by NTPC on 3.06.1995
PLF (%)	74.75%	79.39%	91.6 (FY 2007-08)	92.24% FY 09-10	90.87%
Availability (%)	88.79%	91.84%		90.78%	90.67%
Station Heat Rate (kcal/kg)	2624	2639	2565	-	-
Auxiliary Consumption (%)	10.58%	10.58%	9%	10%	9.92%

Trading of Surplus Power

9.4 The Commission directs the Petitioner to increase the PLF to 85% for both the Units by FY 2011-12 so that the surplus power can be sold to other utilities.

Quality of imported coal

- 9.5 The Commission observes that the quality of imported coal obtained in the FY 2008-09 and FY 2009-10, is inferior with a GCV of only 2993 kcal/kg and 2980 kcal/kg for the respective years. At the same time, the cost of imported coal of Rs 6734 for FY 2008-09 and Rs 6607 for FY 2009-10 is exorbitant. TPCL is directed to look into the reason for supply of such inferior quality of coal and submit a report to the Commission within next three months.

Adjustment of Bills & payments/receipt as per revised cost of power sold to TSL

- 9.6 The Commission directs the Petitioner to reconcile the payment due/receipts with TSL, in view of the revised Generation Tariff for power sold to TSL, as determined by the Commission in this order within three months. The Generation Company is required to generate a supplementary bill for the reconciled billed amount and submit the same to TSL.
- 9.7 The Commission also directs the Generation Company to ensure that, henceforth, the monthly billing by TPCL, for the power sold to TSL is done unit-wise.

Data adequacy in next Tariff petition and timelines

- 9.8 The Commission directs TPCL to come up with the next tariff petition for FY 2011-12 removing the various data deficiencies highlighted throughout the tariff order along with the unit-wise audited accounts for FY 2009-10 and latest actual figures of FY 2010-11.
- 9.9 The Commission also directs the Generation Company to file the next tariff petition for FY 2011-12 by 1st November 2010 and also ensure submission of subsequent ARR & tariff filings for the ensuing year are done by 1st November every year prior to the tariff period.

This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on this the 22nd day of July, 2010.

Date: 22nd July, 2010

Place: Ranchi

(T.MUNIKRISHNAIAH)
Member (E)

(MUKHTIAR SINGH)
CHAIRPERSON

A10: ANNEXURES

ANNEXURE-I

List of participating members of public in the public hearing

Sl. No.	Name	Address / Organisation if any
1	V.P. Singh	JUSCO
2	Amit Kumar Agrawal	JUSCO
3	S. Banarjee	TELCO
4	C.B. Jayaranjan	TELCO
5	Suraj Bhotika	TELCO
6	Satish KR	TELCO
7	A Prakash	TELCO
8	K.C. Jha	Kadma
9	A.K. Lodh	Kadma
10	C.D. Kundh	Kadma
11	Rajesh Sharma	Sonari
12	Rajesh Prasad	Prakash Nagar
13	Gopal Jha	Birsanagar
14	P.K. Barne	Bagan Area
15	Ajay	Bagan Area
16	Rajesh Kumar	Sonari
17	A.K. Mishra	A-G Sonari
18	Raja Biswa	TPC- Sonari
19	V.Ranjan	95, Duples, V. Hertage
20	P.K. Bajdhi	New Barides , Jamshedpur