

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



Petition No. 38/2007

In the matter of:

Petition for approval of Aggregate Revenue Requirement and Multi Year Generation Tariff for Indraprastha Power Generation Company Limited for the F.Y. 2007-08 to F.Y. 2010-2011.

AND

In the matter of:

Indraprastha Power Generation Company Limited
Himadri, Rajghat Power House Complex
New Delhi – 110 002.

Before

Delhi Electricity Regulatory Commission

Coram:

Sh. Berjinder Singh, Chairman & Sh. K. Venugopal, Member

Date of Order: 14th December, 2007

ORDER

The Commission having deliberated upon the Multi Year Tariff Petition filed for the Control Period of F.Y. 2008-2011, alongwith the Business Plan for the said Control Period, and also the subsequent filing by the Petitioner during the course of the proceedings, and having considered the responses received from stakeholders, in exercise of the power vested under the Delhi Electricity Regulatory Commission (Terms & Conditions for Determination of Generation Tariff) Regulations, 2007, read with the provisions of Electricity Act, 2003, hereby pass this Order signed, dated and issued on 14th day of December, 2007.

The Petitioner shall take immediate steps to implement the said Order, so as to make the revised tariffs applicable from 1st January, 2008.

This Order may be amended, reviewed or modified in accordance with the provision of the Electricity Act, 2003 and the Regulations made thereunder.

This Order shall be subject to the final outcome of Appeal No. 81 of 2007 before the Appellate Tribunal for Electricity.

-Sd-

(K. Venugopal)
MEMBER

-Sd-

(Berjinder Singh)
CHAIRMAN

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A1:INTRODUCTION

- 1.1 This Order relates to the Multi Year Tariff Petition filed by Indraprastha Power Generation Company Limited (IPGCL) for determination of generation tariff for its three generating stations for the period FY08 to FY11 and for true-up of the tariff determined by the Commission for FY07.
- 1.2 Before 2001, Delhi Vidyut Board (hereinafter referred to as 'DVB') was the sole entity handling all functions of generation, transmission and distribution of electricity in the National Capital Territory of Delhi. However, the Government of National Capital Territory of Delhi notified the Delhi Electricity Reform (Transfer Scheme) Rules, 2001 (hereinafter referred to as 'Transfer Scheme') on November 20, 2001 and provided for unbundling of the functions of DVB into different entities handling generation, transmission and distribution of electricity.

Indraprastha Power Generation Company Limited

- 1.3 All the assets, liabilities, rights and interest of DVB in the Indraprastha Thermal Power Station, Rajghat Power House and Indraprastha Gas Turbine Power Station were transferred to Indraprastha Power Generation Company Limited (hereinafter referred to as the 'Petitioner' or 'IPGCL').
- 1.4 IPGCL is wholly owned by the Government of National Capital Territory of Delhi and operates three generating stations:
- (a) Indraprastha Thermal Power Station (IP Station) having a capacity of 247.5 MW;
 - (b) Rajghat Thermal Power House (RPH) having a capacity of 135 MW; and
 - (c) Indraprastha Gas Turbine Power Station (GTPS) having a capacity of 282 MW.
- 1.5 IPGCL has filed its Petition before the Delhi Electricity Regulatory Commission (hereinafter referred to as the 'Commission') for determination of generation tariff for the above mentioned three stations for the Control Period (FY08 to FY11) under Section 62, 64 and 86 of the Electricity Act, 2003 (hereinafter referred to as the 'Act'), read with the Delhi Electricity Regulatory Commission (Terms and Conditions for Determination of Generation Tariff) Regulations, 2007 issued by the Commission.
- 1.6 This Tariff Order relates to the determination of generation tariff of the Petitioner for the Control Period under the Multi Year Tariff regime.
- 1.7 The Commission has reviewed the operational and financial performance of the plant for FY07 and done the true-up for various parameters based on the review and analysis of the past records, information, submissions, necessary clarifications submitted by the Petitioner and views expressed by various stakeholders.

Delhi Electricity Regulatory Commission

- 1.8 The Delhi Electricity Regulatory Commission was constituted by the Government of National Capital Territory of Delhi (hereinafter referred to as the 'Government') on March 3, 1999 and it became operational from December 10, 1999.
- 1.9 The Commission's approach to regulation is driven by the Electricity Act 2003, the National Electricity Plan, the National Tariff Policy and the Delhi Electricity Reforms Act 2000 (hereinafter referred to as 'DERA'). The Act mandates the Commission to take measures conducive to the development and management of the electricity industry in an efficient, economic and competitive manner.

Functions of the Commission

- 1.10 The Commission derives its powers from DERA as well as the Act. The major functions assigned to the Commission under the DERA are as follows:
- (a) to determine the tariff for electricity, wholesale, bulk, grid or retail and for the use of the transmission facilities;
 - (b) to regulate power purchase, transmission, distribution, sale and supply;
 - (c) to promote competition, efficiency and economy in the activities of the electricity industry in the National Capital Territory of Delhi;
 - (d) to aid and advise the Government on power policy;
 - (e) to collect and publish data and forecasts;
 - (f) to regulate the assets and properties so as to safeguard the public interest;
 - (g) to issue licenses for transmission, bulk supply, distribution or supply of electricity;
 - (h) to regulate the working of the licensees; and
 - (i) to adjudicate upon the disputes and differences between licensees.
- 1.11 The functions assigned to the Commission under the Act are as follows:
- (1) "Section 86. The State Commission shall discharge the following functions, namely: -
- (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.
- (2) The State Commission shall advise 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.”
- 1.12 As part of the tariff related provisions of the Act, the State Electricity Regulatory Commission (SERC) has to be guided by the National Electricity Policy and the National Tariff Policy.

Tariff Orders Issued by the Commission

- 1.13 After its inception, the Commission issued an Order on “Rationalisation of Tariff for DVB” on January 16, 2001.
- 1.14 The Commission issued its Order on the Annual Revenue Requirement (ARR) for 2001-02 and Tariff Determination Principles for DVB for the period 2002-03 to 2005-06 on May 23, 2001.
- 1.15 The Commission issued its first Tariff Order after the notification of the Transfer Scheme and Policy Directions, on February 22, 2002 based on a Joint Petition for determination of the Bulk Supply Tariff (BST) and opening loss levels for the distribution companies.
- 1.16 After the Transfer Scheme of DVB was made effective (July 1, 2002), the Commission issued a Tariff Order on June 26, 2003 for approval of ARR of Delhi Transco Limited and determination of BST to be charged to the Discoms for 2002-03 (9 months) and 2003-04. This Order also contained details about the generation plants, as no separate ARR filing was envisaged for the generation companies Indraprastha Power Generation Company Limited (IPGCL) and Pragati Power Corporation Limited (PPCL) under DERA.
- 1.17 The Commission issued the first Tariff Order for generation companies IPGCL and PPCL for the FY05 on June 9, 2004. It has subsequently issued Tariff Orders for FY06 and FY07 for both generation companies on July 7, 2005 and September 22, 2006 respectively.
- 1.18 The Commission issued an order on the Review Petition filed by the Petitioner against the Tariff Order for FY07 on March 30, 2007.
- 1.19 The Petitioner has appealed to the Honourable Appellate Tribunal for Electricity (ATE) against some of the issues present in the orders issued by the Commission for FY07 on September 22, 2006 and March 30, 2007. The matter is sub-judice and the decision taken by the Hon’ble ATE shall be considered by the Commission, when the final judgement is made.

- 1.20 The present Tariff Order shall determine the Aggregate Revenue Requirement of IPGCL from FY08 to FY11 and determine generation tariffs for each plant, to be applicable for the Control Period, as defined in the Delhi Electricity Regulatory Commission (Terms and Conditions of Generation Tariff) Regulations, 2007.

Multi Year Tariff Framework

- 1.21 The power sector in Delhi was privatized with effect from July 1, 2002 and tariffs in Delhi were governed by the Policy Directions issued by Government, vide its notification of 22nd November 2001 and as amended on 31st May 2002.
- 1.22 Although the Act was passed in 2003, it ensured that provisions of the enactments specified in the Delhi Electricity Reforms Act 2000 (Delhi Act No. 2 of 2001), not inconsistent with the provisions of the Act remained applicable to Delhi, as it was part of the Schedule referred to in Section 185 of the Act.
- 1.23 As the validity of these notifications ended on March 31, 2007, the Commission decided to adopt Multi Year Tariff (MYT) principles for determination of tariffs, in line with the provisions in Section 61 of the Act.
- 1.24 The Commission designed the MYT framework in the State and set long term performance targets for entities engaged in generation, transmission and distribution. Simultaneously, the Commission segregated costs into two categories- first category which are expected to be easily controlled by the entity and a second category over which the entity does not have significant control. The uncontrollable parameters for the generation business, based on general principles are: the gross calorific value and the price of fuel, both of which shall impact the variable cost of generation.
- 1.25 The Commission shall also provide for true-up of Employee Expenses based on the recommendations of the 6th Pay Commission. All other components of the fixed costs are controllable in nature and shall not be revised later, based on actuals/ subsequent submissions made by the Petitioner.
- 1.26 The MYT framework is also designed to provide predictability and reduce regulatory risk. This can be achieved by approval of a detailed capital investment plan for each entity, considering the expected growth in demand over the Control Period. The longer time span enables the Generation Company to propose its investment plan with details on the possible sources of financing and the corresponding capitalization schedule for each investment. This also enables them to retain any over-achievement due to better performance than the target levels specified by the Commission, during the Control Period.

Multi Year Tariff Regulations

- 1.27 The Commission issued a Consultative Paper and Draft MYT Regulations for Generation, Transmission and Distribution to all concerned stakeholders, including the Government, the Generation Companies, Transmission and Distribution Licensees, consumers, etc. These documents detailed the principles, approach and methodology to be adopted for the determination of tariff for various entities under the MYT framework and also highlighted the various issues which were to be discussed and finalized for successful implementation of the MYT principles.
- 1.28 These Draft Regulations and MYT Consultative Paper were issued on October 11, 2006 and a notice to this effect was published in leading newspapers seeking comments from public and stakeholders.
- 1.29 The Commission issued Regulations vide notification dated May 30, 2007 specifying Terms and Conditions for Determination of Tariff for Generation, Transmission and Distribution of electricity under the Multi Year Tariff (MYT) framework for the period FY08 – FY11 after going through Public Hearing process.

Filing of Tariff Petition for the Control Period**Procedural Background**

- 1.30 IPGCL filed its Multi Year Tariff Petition for determination of Generation Tariff for the Control Period (FY08 – FY11) on August 10, 2007 before the Commission. The Commission admitted the Petition on August 14, 2007 and sent a list of queries for additional information/ clarification on various issues in the Petition.

Interaction with the Petitioner

- 1.31 The Commission interacted regularly with the Petitioner, in both written and oral form, to seek clarifications and justification on various issues essential for the analysis of the tariff petition.
- 1.32 The Commission conducted multiple validation sessions with the Petitioner between August and October 2007, during which the discrepancies and additional information required by the Commission were highlighted. The Petitioner submitted its replies to the list of queries of the Commission raised in these sessions.
- 1.33 The Commission held various meetings/ data validation sessions with the Petitioner between August and October 2007 to validate the data submitted for true-up and provide documentary evidence to substantiate its claims regarding various submissions. The Commission and the Petitioner also discussed key issues related to the petition, which included norms of operation of the plant, details of fuel expenses submitted to the Commission, loan details, etc.

- 1.34 The Petitioner submitted its replies, as shown below, in response to the queries raised by the Commission in these sessions, which have been considered during approval of the Aggregate Revenue Requirement of the Petitioner.

Table 1.1: List of Correspondence with IPGCL

Sl No	Date	Letter No.	Subject
1	10 Aug 2007	F.17/750	Filing of ARR for the Control Period 2007-2011
2	16 Aug 2007	F.30/IPGCL/CS/270	MYT Petition for the Control Period 2007-11
3	1 Sept 2007	D(T)/F-17/828	MYT Petition for FY 2007-11 & Tariff determination
4	10 Sept 2007	MD/35A/217	MYT Petition for the Control Period 2007-11 Revised Formats
5	13 Sept 2007	F.17/D(T)/371	MYT Petition for FY 2007-11 & Tariff Determination
6	14 Sept 2007	D(T)/865	MYT Petition for FY 2007-11 and Tariff Determination
7	21 Sept 2007	D(T)/F-17/884	IPGCL MYT Petition for the period FY 2007-08 to FY 2010-11
8	21 Sept 2007	D(T)/F-17/885	IPGCL MYT Petition for the period FY 2007-08 to FY 2010-11
9	21 Sept 2007	D(T)/F-17/888	IPGCL MYT Petition for the period FY 2007-08 to FY 2010-11
10	22 Sept 2007	D(T)/F-17/895	ARR Petition for FY 2006-07 & Tariff Determination
11	3 Oct 2007	D(T)/F-17/927	MYT Petition for the Control Period for FY 2007-08 to 2011-12
12	9 Oct 2007	D(T)/F-17/944	MYT Petition for the Control Period for FY 2007-08 to 2011-12 and tariff determination
13	15 Oct 2007	D(T)/F-17/974	Allowing of variable cost of GT Station for the year 2005-06
14	22 Oct 2007	F-30/IPGCL/CS/466	MYT Petition of IPGCL for the period 2007-2011
15	2 Nov 2007	D(T)/F-17/1019	ARR petition for MYT – Capital Investment Plan

Public Hearing

- 1.35 The Petitioner published a Public Notice on August 24, 2007 detailing the salient features of its tariff petition in the following newspapers:
- Hindustan Times (English)
 - Financial Express (English)
 - Indian Express (English)
 - Jansatta (Hindi)

(e) The Daily Milap (Urdu)

- 1.36 Copies of the Public Notice in English, Hindi and Urdu are enclosed in Annexure No. 1 to this order.
- 1.37 The notice invited suggestions and objections from the public on the tariff petition filed by the Petitioner in accordance with Section 64 (3) of the Act. The interested parties/stakeholders were asked to file their objections and suggestions on the petition by September 14, 2007.
- 1.38 The Petitioner/ Commission received objections from 3 respondents which were replied to by the Petitioner by September 21, 2007, and a copy of the replies was also submitted to the Commission. All parties, who had filed their objections /suggestions, were informed about the date, time and venue for presenting their case in the public hearing.
- 1.39 A public hearing was held at the Commission's Court Room on September 24, 2007 to discuss the issues related to the tariff petition filed by the Petitioner for determination of generation tariff for the Control Period, and for true-up of FY07.
- 1.40 The issues and concerns voiced by various objectors have been carefully examined by the Commission. The major issues discussed during the public hearing, through the objections raised by the respondents and the observations made by the Commission, have been summarized in Section A2.

Layout of the Order

- 1.41 This Order is organised into five chapters:
- (a) the first chapter provides a historical background including information regarding the Commission, a snapshot of the MYT framework and details of the tariff setting process;
 - (b) the second chapter gives a detailed account of the Public Hearing process, including the objections raised by various stakeholders, Petitioner's responses and the Commission's views on the responses.
 - (c) the third chapter details the process of true-up for the previous year (FY07); and
 - (d) the fourth chapter analyses the Aggregate Revenue Requirement for the Control Period and determination of Generation Tariffs for the Control Period.
 - (e) the fifth chapter presents the Directives of the Commission and Summary of the Generation Tariffs for IPGCL stations.

A2:OBJECTIONS AND ISSUES RAISED DURING THE PUBLIC HEARING PROCESS

- 2.1 The public hearing process is a platform to understand the problems and concerns of various stakeholders. The Commission has encouraged transparent and participative approach in the hearings, which are used to obtain necessary inputs required for tariff determination.
- 2.2 The Commission directed the Petitioner to make available copies of their MYT Petitions and issue a public notice inviting comments/objections from various stakeholders including the general public.
- 2.3 The following stakeholders filed written objections to the ARR and tariff petitions and the issues raised along with the replies given to the objections by Petitioner are discussed in contextual sections that follow.
- (a) North Delhi Power Limited (NDPL)
 - (b) BSES Rajdhani Power Limited (BRPL)
 - (c) BSES Yamuna Power Limited (BYPL)
- 2.4 The Petitioner submitted its responses to the various comments/ objections and a public hearing was held in the Commission's office on September 24, 2007 wherein respondents put forth their comments and objections before the Petitioner. The respondents were given an opportunity to be heard during the public hearing.
- 2.5 The Commission expressed concern at the inconsistency of data submitted and pointed out differences in values for several parameters in various submissions of the Petitioner in response to the queries raised during the analysis of the MYT Petition.
- 2.6 The major comments/ objections raised by various stakeholders and the Commission in response to the MYT petition submitted, the replies given by the Petitioner and the views of the Commission have been summarized below under various categories as below:

Norms of Operation

Objections

- 2.7 The distribution companies NDPL, BRPL and BYPL expressed their dissatisfaction over the Petitioner's claims of not being able to meet the norms of operation specified in the MYT Regulations.

- 2.8 NDPL has submitted that all the three stations have been already provided with relaxed targets for their norms of operation in the MYT Regulations issued by the Commission, and are capable of achieving those targets.
- 2.9 BRPL and BYPL requested the Petitioner to submit details of its operating parameters including the Station Heat Rate (SHR), Plant Load Factor (PLF), availability, auxiliary consumption, and specific oil consumption etc for the last five years. They also highlighted lack of any plans for revamping of the plants to improve their performance. The stakeholders have requested the Commission to consider the norms of operation stipulated in the MYT Regulations for determination of tariffs for these plants .
- 2.10 All the distribution companies have objected to passing the inefficiencies of the Petitioner to the consumers through tariffs, and have requested the Commission to reject the proposals of the Petitioner for relaxation of norms of operation during determination of tariffs for the Control Period.

Petitioner's Response

- 2.11 The Petitioner has submitted that all stations of IPGCL were in bad state in the pre-unbundling era and it has taken substantial steps to improve the performance of these stations. The Petitioner presented the trend of improved performance in each of the stations, and requested the Commission to consider its precarious situation due to lack of funds.
- 2.12 It also submitted details of renovation and modernisation plans prepared for residual life extension for IPGCL stations. However, the plans could not be implemented due to lack of approvals by the GoNCTD (Government of National Capital Territory of Delhi) and MoEF (Ministry of Environment and Forest).
- 2.13 The Petitioner submitted the following details regarding the different norms of operation for the three plants under its control:

IP Station

- (a) The plant is over 37 years old and has not had any major renovation and modernisation activity in the past due to the stipulated closure of IP Station. A comprehensive renovation and modernization (R&M) programme was prepared for Rs.453.00 Cr for residual life extension, which could not be implemented due to non-clearance from MoEF. Similarly another R&M scheme was proposed in 2005, but not implemented due to non approval from GoNCTD, which has now decided to shut down the plant by 2010. Hence, the Petitioner is now carrying out only need based R&M to safely operate the plant till decommissioning.
- (b) The availability of the plant has improved from 44.66% in FY03 to 74.81% in FY07 and forced outages have been reduced to below 10% in FY07.

- (c) In absence of major R&M works and inadequate funds it has limited control in improving the performance of the plant and requested the Commission to approve relaxed norms of operation as submitted for recovery of fixed costs and incentives during the Control Period.
- (d) The PLF of the station has improved from a low of 28.65% in FY03 to 43.92 % in FY07. For the Control Period the PLF of the station is projected to be 43.83% as the plant will be operated at part load due to the age and condition of the plant.
- (e) The auxiliary consumption of the IP Station has deteriorated from 11.95% in FY03 to 15.51% in FY07 due to the plant being run at part loads due to age and condition of the plant, during which the auxiliaries operate at 100% load leading to higher auxiliary consumption.

Rajghat Power House

- (a) A Residual Life Assessment (RLA) study for the plant was carried out in FY07 by BHEL, and the final report is awaited.
- (b) The plant was facing constant problems in the Unit I due to vibration and axial shift in the turbines. A major overhauling of Unit I was carried out by M/s BHEL during April 2006 to July 2006, during which the turbine rotor was replaced with a new rotor. Major overhauling of Boiler and Turbine in Unit II had been carried out between 6th July 2005 and 8th November 2005.
- (c) The PLF of the plant has deteriorated from 71.68% in FY03 to 53.69% in FY07 due to problems faced in Unit I and II. However, the SHR of the station has improved from 3670 kCal/ kWh to 3201 kCal/ kWh during the same period.

Gas Turbine Power Station

- (a) This station has faced certain technical problems in the steam turbine units which have led to a higher heat rate. The same has been raised with BHEL and is expected to be resolved soon.
- (b) The heat rate and PLF have been poor due to insufficient gas supply from GAIL and non-requisitioning of total generation by SLDC.

2.14 The Petitioner has also expressed concern at the large number of trippings due to grid disturbances, which has led to an increase in the heat rate of plants. In view of all the above, the Petitioner expressed limited ability to improve the performance of the old plant, and requested the Commission to approve relaxed norms, as submitted in the MYT Petition.

Commission's Observations

- 2.15 The Commission has analysed the submissions of the Petitioner on various norms of operation of its three plants. It is of the view that the poor performance of the plant due to technical problems or gas supply constraints are to be mitigated by the Petitioner and shall not be passed on to consumers, except in *force majeure* events.
- 2.16 The norms of operation provided in the MYT Regulations have been determined considering the current state of each plant, and the expected performance improvements during the Control Period and these norms are comparatively lenient to norms specified by the CERC. The Commission has considered the proposed capital investment of the Petitioner during the Control Period, the norms of operations as per the MYT Regulations, for the determination of tariff for each plant during the Control Period.

Specific Coal Consumption**Objections**

- 2.17 BYPL and BRPL have submitted that the specific coal consumption for the Control Period for IP Station and RPH are more than 40% and 20% higher than the all India average level as obtained from CEA.

Petitioner's Response

- 2.18 The Petitioner has submitted that the coal consumption of the power station is dependent on the heat rate of the station and varies according to the capacity and age of the plant. The figures of all India average specific coal consumption considered by CEA include data for units of 210 MW & 500 MW and cannot be compared with IP Station and RPH.

Commission's Observations

- 2.19 The Commission is of the view that the vintage and size of plants has been considered while specifying the norms, including the Station Heat Rate of the plants in the MYT Regulations. The Commission shall consider the specific coal consumption based on the approved SHR and the gross generation of each plant.

Specific Oil Consumption**Objections**

- 2.20 BYPL and BRPL have submitted that the specific oil consumption for the Control Period for IP Station and RPH are well beyond the norms and pushing up the variable cost.

Petitioner's Response

- 2.21 The Petitioner has submitted that because of frequent tripping caused by grid disturbances as well as outages caused due to age and inadequate R&M of the plant, the plant has to use frequent oil firing during start up, due to which the oil consumption of the power station is high.

Commission's Observations

- 2.22 The Commission is of the view that the vintage and size of plants has been considered while specifying the specific oil consumption in the plants in the MYT Regulations. The norms specified in the MYT Regulations had been determined duly considering the normal operating conditions of the plant. The same has been considered for determination of tariffs during the Control Period.

Gas Supply Arrangement**Objections**

- 2.23 NDPL has submitted that the Petitioner should make suitable arrangements for fuel supply to ensure continuous supply of fuel. It submitted that in case of non-supply of fuel, the extra burden on account of alternative arrangements of fuel purchase should be compensated by the original supplier and should not be recovered from consumers.

Petitioner's Response

- 2.24 The Petitioner submitted details of its fuel supply arrangements for gas supply to GTPS. Initially, IPGCL had signed a long-term agreement with GAIL for daily supply of APM gas. However, with decontrol of gas supplies, allocation of APM gas to IPGCL was reduced and the balance was replaced with gas from the PMT field. The Petitioner claimed that there has been a 15-20% cut on a daily basis on the supply by GAIL, due to which it signed a fall-back arrangement with GAIL for meeting the gas shortage. However, since all the above sources have been unable to meet the gas demand in FY07, it resorted to purchases from spot markets.

Commission's Observations

- 2.25 The Commission, in its previous Tariff Order, had directed the Petitioner to make greater efforts to arrange for gas at competitive rates. The Petitioner has not submitted any details of steps taken to comply with the Commission's directives on efficient fuel procurement. The Commission expresses concern at the irregular fuel supply and the repeated request of the Petitioner to true-up actual expenses and relax norms of operation considering the fuel supply constraints.

- 2.26 The Commission is of the view that the risks on account of fuel supply issues are to be mitigated by the Petitioner and cannot be passed on to consumers. It therefore, expects the Petitioner to handle its fuel supply from various sources more prudently and consume cheaper gas first for generation.

Advance Against Depreciation

Objections

- 2.27 BRPL and BYPL have stated that the Petitioner has proposed no capital investment and have therefore, objected to provision of Advance Against Depreciation (AAD) claimed in tariffs.

Petitioner's Response

- 2.28 The Petitioner submitted that AAD is required to fund the new capital expenditure for RPH and GTPS, which has been planned in order to meet the stipulations of the requirement of environmental authorities, for replacing obsolete spare parts and to improve reliability of the stations. The Petitioner requests the Commission to approve the AAD, as it corresponds to essential investment and no extraneous investment has been planned to burden the consumers of Delhi.

Commission's Observations

- 2.29 The Commission is of the view that any requirement of AAD on account of capital expenditure approved by the Commission, will be considered for determination of tariff.

Coal Transit Loss

Objections

- 2.30 BRPL and BYPL have requested the Commission to analyse the coal transit loss of 3.80% proposed for the Control Period. They have stated that reasons mentioned for the loss such as weightment error, theft, pilferage, etc are controllable and should be curtailed by the Petitioner.

Petitioner's Response

- 2.31 The Petitioner submitted that it is using washed coal in compliance with the directive given by the Honourable Supreme Court to use coal with a maximum of 34% ash content. The coal is procured from Bina collieries and transported through Indian Railways, thereby leading to evaporation, windage losses, etc. It submits that CERC has specified norms of 0.80% for transportation losses for normal coal. Since, the Petitioner is using washed coal, the surface moisture content increases to approximately 4%. The Petitioner therefore requests the Commission to approve the proposed transit losses due to the requirement of washed coal for its plants.

Commission's Observations

- 2.32 The Commission noted the reasons for the coal transit loss and directed the Petitioner to improve its coal stock management and monitor the transit losses regularly to reduce the same. Using washed coal at the plant is likely to improve the functioning of coal handling plant and the coal mills and also results in better availability of the boiler with consequent improvement in PLF and reduction in auxiliary power consumption.
- 2.33 The NTPC plants at Dadri and Badarpur are using washed coal and have been provided with a transit loss of 0.8% as specified in the Regulations issued by the CERC. The Commission has maintained the coal transit loss at 0.8% as per the norms specified in the MYT Regulations.

O&M Expenses**Objections**

- 2.34 BRPL and BYPL have expressed concern on the high O&M costs for the IP Station, which is almost 30% above the CERC norms for coal-based generation plants. It requests the Commission to disallow the high costs, especially in view of the low PLF of the plant.

Petitioner's Response

- 2.35 The Petitioner stated that the stations inherited by it were not in good condition and had sizeable manpower associated with them. The company has incurred substantial costs on account of wage and maintenance for the stations. It also reasoned the increase in service tax rates and inflation as factors for increase in O&M costs. It also submitted that it has taken steps to streamline its workforce and control overall O&M expenditure, which has led to a reduction in O&M costs over the years.

Commission's Observations

- 2.36 The Commission is of the opinion that the CERC norms for coal-based stations cannot be applied to IP Station or RPH due to the vintage and size of the plants. The Commission has previously approved consolidated O&M Expenses for the Petitioner, considering the recommendations of CEA and suitable escalations on account of inflation.
- 2.37 The Commission has approved the O&M Expenses of each station considering the vintage and size of generating units, the recommendations of the CEA and the expected performance levels of the plant.

A3:TRUE-UP FOR FY07

Background

- 3.1 The Commission had approved the Annual Revenue Requirement and determined the Generation Tariff for each generating station under IPGCL for FY07 in its Tariff Order issued on September 22, 2006. The Tariff Order was based on the provisional data submitted by the Petitioner for costs to be incurred and revenues likely to be generated during FY07.
- 3.2 The Petitioner submitted its prayer for truing up values for FY07 as a part of the Multi Year Tariff petition submitted on August 10, 2007.
- 3.3 Despite several discrepancies and information gaps in the petition, the Commission admitted the same in order to expedite the tariff determination process. The Commission issued a deficiency note to the Petitioner highlighting the shortcomings in the petition and directed the latter to submit clarifications and further information.
- 3.4 The Petitioner subsequently submitted various documents and responded to the queries raised by the Commission during the detailed analysis of the Petition. The additional information submitted during the course of the analysis was inconsistent and the claims of the Petitioner varied with each submission. Under such circumstances, it is very difficult for the Commission to rely on the Petitioner's submission for the purpose of tariff determination. The Commission held discussions with the Petitioner and finalized the data to be considered for tariff determination.

Summary for True-Up of FY07

- 3.5 A snapshot of the true-up petition submitted by the Petitioner, combining the details for its three plants, is shown below.

Table 3.1: Summary of True Up for FY07

Particulars	Units	Petition	Approved	Actuals
Gross Generation	MU	3200	3250	2999
Net Generation	MU	2931	3004	2735
Total Fixed Cost	Rs Cr	287.46	198.96	234.09
Total Variable Cost	Rs Cr	579.39	555.16	562.15
Total Cost	Rs Cr	866.85	754.13	796.24
Fixed Cost per Unit	Rs/kWh	0.98	0.66	0.86
Variable Cost per Unit	Rs/kWh	1.98	1.85	2.06
Total Cost per Unit	Rs/kWh	2.96	2.51	2.91

- 3.6 The truing up was carried out individually for each generating station of IPGCL for FY07. The details of the true up are as provided in the sections below.

True-Up of Indraprastha Power Station

- 3.7 A summary of the true-up petition for FY07 submitted by the Petitioner for its Indraprastha Power Station (IP Station) is shown in table below.

Table 3.2: Summary of True Up for FY07

Particulars	Units	Petition	Approved	Actuals
Gross Generation	MU	900	950	952
Plant Load Factor	%	41.50	43.80	43.92
Net Generation	MU	778	839	805
Total Fixed Cost	Rs Cr	89.08	54.94	61.81
Total Variable Cost	Rs Cr	189.98	176.95	210.81
Total Cost	Rs Cr	279.06	231.89	272.62
Fixed Cost per Unit	p/kWh	114.51	65.45	76.82
Variable Cost per Unit	p/kWh	244.20	210.81	262.01
Total Cost per Unit	p/kWh	358.71	276.25	338.83

Norms of Operation

- 3.8 The Petitioner submitted details of the operating parameters of the plant, which have been analysed in detail by the Commission for true-up, as detailed below:

Station Heat Rate

- 3.9 The Commission had approved the Station Heat Rate (SHR) of IP Station as 3235 kCal/ kWh for FY07, and had considered the same for determination of variable cost of generation from IP Station.
- 3.10 The Petitioner had submitted a provisional SHR of 3825 kCal/ kWh achieved by the IP Station in FY07 as part of its true-up petition. The Petitioner subsequently submitted actual heat rate for FY07 as 3801 kCal/ kWh and has requested the Commission to approve the same.
- 3.11 The Commission analysed the submissions of the Petitioner and directed it to submit details to support its claim for a higher SHR. The Petitioner submitted that the heat rate for IP Station was calculated on the basis of actual coal consumption of the year (with adjustments for transit and handling losses) wherein the calorific value of the coal had been taken on the 'as-fired basis'.
- 3.12 The Petitioner has submitted IP Station's inability to achieve SHR of 3235 kCal/kWh as approved by the Commission in the Tariff Order for FY07 and has stated that the plant has been in operation for more than 38 years and is not in a condition to run at its full rated capacity.

- 3.13 The Commission had deliberated on this issue in great detail in its Tariff Order of FY07 issued on September 22, 2006 and also in the review order for FY07 issued on March 30, 2007. The Commission re-iterates that due to non-availability of design heat rate data of the units of the IP Station, it cannot estimate the reasonable heat rate in accordance with the principles recommended by the CEA. Therefore, the Commission has retained the earlier approved figure of 3235 kCal / kWh based on the PPA signed by the Petitioner and DTL.
- 3.14 The detail of the submission by the Petitioner and the allowed heat rate by the Commission is as given in the table below.

Table 3.3: Station Heat Rate for FY07

(Values in kCal/kWh)	Petition	Order	Actuals	True-Up
Station Heat Rate	3493	3235	3802	3235

Availability

- 3.15 The Commission had approved the target availability for full recovery of annual fixed cost as 50% in the Tariff Order for FY07 issued on September 22, 2006. It stated that recovery of annual fixed cost below this level will be on pro rata basis.
- 3.16 The Commission has considered the availability of IP Station in FY07 to be 43.92% as certified by the SLDC. Despite a lower availability of the plant vis-à-vis the previously approved value of 50% availability, the Commission has noted that generation from the IP Station exceeds the target levels approved for FY07, as no backing down has been ordered in this case.
- 3.17 Since the beneficiaries have not lost out on the energy obtained from the plant, the Commission considers this as a special case and has decided to provide a relaxation, thereby allowing recovery of full fixed costs. However, the Commission expects that this may not be quoted as a precedent in future.

Plant Load Factor

- 3.18 The Commission had calculated the Plant Load Factor (PLF) of IP Station for FY07 as 43.80% considering gross generation of 950 MU, based on the recommendations given by the CEA. The Petitioner has submitted the actual PLF achieved in FY07 as 43.92%, which is marginally higher than the value approved by the Commission due to pro-active, consistent and regular maintenance being carried out by the Petitioner.
- 3.19 The Commission has calculated the PLF for the IP Station as 42.00% by using the net generation value submitted by the SLDC and the approved level of auxiliary consumption. The Commission acknowledged the improvement achieved in the PLF of the plant with respect to the initial ARR petition and further reiterates that adoption and implementation of good station operation and maintenance practices can contribute in improving the performance and reducing cost.

- 3.20 The PLF achieved by the plant as submitted by the Petition and as calculated by the Commission, for determination of fuel costs is shown in table below.

Table 3.4: Plant Load Factor for FY07

(Values in %)	Petition	Order	Actuals	True-Up
Plant Load Factor	41.50	43.80	43.92	42.00

Auxiliary Consumption

- 3.21 The Commission had approved the auxiliary consumption for the IP Station as 11.64% in FY07. The Petitioner submitted details of actual auxiliary consumption in FY07 as 15.51%. It has not submitted any supporting documentation or the calculations for determination of auxiliary consumption.
- 3.22 The Petitioner has cited the vintage of the plant and the fact that the plant is operating at part loads as the primary reasons for higher auxiliary power consumption. The Petitioner requested the Commission to true-up the auxiliary power consumption based on actuals.
- 3.23 The Commission observes that auxiliary consumption in the plant in FY07 is higher than the value proposed by the Petitioner in its ARR petition for FY07 (13.56%). Since the Petitioner seems to have not taken any steps to reduce the auxiliary consumption, the Commission views that the Petitioner is required to make serious efforts in reducing its auxiliary consumption and improve performance.
- 3.24 The Commission has therefore approved the auxiliary consumption in FY07 to be at the same level as approved earlier (11.64%) which is also in line with the PPA between the Petitioner and the TRANSCO. The details of auxiliary consumption submitted and approved by the Commission are given in table below:

Table 3.5: Auxiliary Consumption for FY07

(Values in %)	Petition	Order	Actuals	True-Up
Auxiliary Consumption	13.56	11.64	15.51	11.64

Gross and Net Generation

- 3.25 The Commission had approved gross generation from IP Station in FY07 as 950 MU based on targets specified by the CEA. The Petitioner has submitted its gross generation in FY07 as 952.31 MU with auxiliary consumption of 15.51%. The Petitioner has requested the Commission to approve the actual generation achieved for true up for FY07.

- 3.26 The Commission has approved the net and gross generation for FY07 based on the details of energy sent out (net generation) submitted by SLDC and the approved level of auxiliary consumption. The generation detail for FY07 as submitted by the Petitioner and as approved by the Commission is given below.

Table 3.6: Gross and Net Generation for FY07

Particulars	Petition	Order	Actuals	True-Up
Net Generation (MU)	778	839	805	805
Auxiliary Consumption (%)	13.56	11.64	15.51	11.64
Gross Generation (MU)	900	950	952	911
Plant Load Factor (%)	41.50	43.80	43.92	42.00

Fuel Cost

- 3.27 The Petitioner submitted that fuel expenses incurred by it are based on the estimated weighted average Gross Calorific Value (GCV) of fuel used: coal (3803 kCal/kg) and fuel oil (10,680 kCal/l).
- 3.28 The Commission has calculated the total coal cost for FY07 using the unit cost of coal based on fuel bills submitted by the Petitioner (Rs.1906.52 per Metric Tonne) and the quantity of coal required for generation from IP Station.
- 3.29 The Petitioner has requested the Commission to approve transit and moisture losses of 4.02% which are significantly higher than the approved value of 0.80%.
- 3.30 The Commission has calculated the net coal requirement for generation after factoring the generation from the fuel oil consumed in the plant. The total coal requirement for IP Station was obtained after considering the effect of 0.80% losses on account of transit loss.
- 3.31 The Petitioner has provided the Commission with last five years data (2002-03 to 2006-07) on SHR, PLF, auxiliary consumption, gross generation etc. The analysis of the data provided does not yield credible inference as the trend of the data is unreliable. The PLF and auxiliary consumption of the plant have increased during the last five years but the SHR for the plant has deteriorated. The PLF has improved from 28.65% in 2002-03 to 43.92% in 2006-07, and the auxiliary consumption has risen from 11.95% to 15.51%. However, during the same period, the SHR of the plant has deteriorated from 3443 kCal/kWh to 3797 kCal/kWh. The plant availability factor has also improved significantly during the period, from 44.66% to 74.81%.
- 3.32 Faced with such inconsistent data from which no conclusion can be drawn, and the views expressed in Chapter 2 of this Order, the Commission has considered the operating parameters as per the PPA signed between DTL and IPGCL.

- 3.33 The details of the total fuel cost as submitted by the Petitioner and approved by the Commission for FY07 is shown in the table below.

Table 3.7: Truing-Up of Fuel Costs for FY07

Particulars	Unit	Petition	Order	Actuals	True-Up
Primary Fuel – Coal					
GCV of Coal	kCal/kg	3805	3835	3803	3803
Coal Consumed	MT	800,927	776,777	925,626	750,908
Transit Loss	%			4.02	0.80
Gross Quantity of Coal	MT	800,927	776,777	964,365	756,963
Price of Coal	Rs/MT	2033.64	1986.68	1906.52	1906.52
Cost of Coal	Rs Cr	162.88	154.32	183.86	144.32
Secondary Fuel - LDO					
Specific Oil Consumption	ml/kWh	10.00	9.29	9.88	9.29
LDO Consumed	Kl	9,000	8,826	9,408	8,460
GCV of Oil	kCal/kl	10,686	10,686	10,680	10,680
Price of LDO	Rs/kl	30109.00	25645.82	28653.80	28653.80
Cost of LDO	Rs Cr	27.10	22.63	26.96	24.24
Total Fuel Cost	Rs Cr	189.98	176.95	210.81	168.56

Variable Cost

- 3.34 The Commission has determined the variable cost of generation from IP Station, considering the approved norms of operation and total fuel cost as detailed above. Based on the actual fuel prices, gross calorific value and considering the station heat rate of 3235 kCal/kWh (on GCV basis), the Commission has allowed the variable cost of 209.47 paise per kWh for FY07.
- 3.35 The total variable cost as estimated by the Petitioner and approved by the Commission for FY07 is given in table below.

Table 3.8: Variable Costs for FY07

Particulars	Units	Petition	Order	Actuals	True-Up
Gross Generation	MU	900	950	952	911
Auxiliary Consumption	%	13.56	11.64	15.51	11.64
Net Generation	MU	778	839	805	805
Total Fuel Cost	Rs Cr	189.98	176.95	210.81	168.56
Variable Cost	p/kWh	244.20	210.81	262.01	209.47

Fixed Cost

- 3.36 The Commission has examined all components of fixed cost for IP Station for the purpose of truing-up for FY07. The details for each component, as submitted by the Petitioner and approved by the Commission are given below:

Operations and Maintenance Expenses

- 3.37 The Commission had approved Operations and Maintenance Expenses (O&M) comprising of Employee Expenses, Repair and Maintenance Expenses (R&M) and Administrative & General (A&G) Expenses, of Rs.40.16 Cr for FY07 against the Petitioner's projection of Rs.63.75 Cr. The Petitioner has now submitted its O&M Expenses to be Rs.37.32 Cr for FY07 and requested the Commission for truing-up the same.
- 3.38 The Commission has noted the difference in O&M Expenses submitted by the Petitioner in its ARR petition the true-up petition for FY07. The Commission has approved total O&M Expenses of the IP Station for FY07 as Rs.37.32 Cr as submitted by the Petitioner.
- 3.39 The Commission had previously approved consolidated O&M Expenses for the Petitioner, and hence shall adjust and provide the difference of Rs.2.85 Cr in O&M Expenses of IP Station (between the previously approved value and the trued-up value for FY07) in the true up of O&M Expenses of RPH (Rs.2.00 Cr) and GTPS (Rs.0.85 Cr).
- 3.40 The O&M Expenses as submitted by the Petitioner and approved by the Commission for FY07 are shown in the table below.

Table 3.9: Operations & Maintenance Expenses for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Repair & Maintenance Expenses	-	-	14.23	14.23
Employee Expenses	-	-	20.22	20.22
Administrative & General Expenses	-	-	2.86	2.86
Operations & Maintenance Expenses	63.75	40.16	37.32	37.32

Depreciation

- 3.41 The depreciation applicable for tariff determination is based on the value of Gross Fixed Assets (GFA) of the station. In the Tariff Order for IPGCL issued on June 9, 2004, the Commission had approved the value of GFA under IP Station at the end of FY05 as Rs.30.50 Cr, which was retained at Rs.30.50 Cr after truing-up.

- 3.42 Since the Petitioner had not proposed any asset capitalization in FY06, the Commission had approved GFA of Rs.30.50 Cr in its FY06 Tariff Order, considering no additions in assets. However, in its true-up petition for FY06, the Petitioner submitted new asset addition of Rs.39.07 Cr to its opening GFA of Rs.30.50 Cr. The Commission approved the asset additions during the year and approved the closing GFA in FY06 as Rs.69.57 Cr.

Table 3.10: Depreciation Approved in Previous Tariff Orders

Particulars (Rs Cr)	Petition	Order	Audited	True-Up
	FY05			
Gross Block	30.50	30.50	30.50	30.50
Less: Accumulated Depreciation	29.02	29.02	29.02	29.02
New Additions during the year	0.00	0.00	0.00	0.00
Net Fixed Assets	1.48	1.48	1.48	1.48
Weighted Avg Rate of Depreciation	NA	NA	NA	NA
Depreciation	2.51	1.20	0.17	0.00
	FY06			
Gross Block	30.50	30.50	30.50	30.50
Less: Accumulated Depreciation	31.53	30.22	29.19	29.02
New Additions during the year	0.00	0.00	39.07	39.07
Net Fixed Assets	-	-	40.38	40.55
Weighted Avg Rate of Depreciation	-	-	-	4%
Depreciation	3.45	2.34	1.31	0.78

- 3.43 In its Tariff Order for FY07, the Commission approved GFA at Rs.69.57 Cr with no new asset additions during the year. The Petitioner in its true-up petition has provided the Commission with incorrect GFA figures, due to erroneous calculation done in the formats submitted. The Petitioner for FY07 has submitted the opening value of its GFA as Rs.62.15 Cr and proposed no asset addition.
- 3.44 The Petitioner has calculated depreciation for FY07 using the methodology and the depreciation rates specified in the MYT Regulations. The Commission clarifies that the depreciation rates provided in the MYT Regulations are applicable for the Control Period and has calculated the depreciation for FY07 using the same methodology as used in previous Tariff Orders.
- 3.45 The Commission has considered Rs.69.57 Cr as the opening balance of GFA and no asset addition during FY07. The Commission has approved depreciation of Rs.2.78 Cr for FY07 after considering an average depreciation rate of 4.00% for coal-based thermal power stations. The details of depreciation amount approved by the Commission are as per the table below.

Table 3.11: Depreciation for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Gross Block	69.57	69.57	62.15*	69.57
Less: Accumulated Depreciation	30.50	29.80	29.80	29.80
New Additions during the year	0.00	0.00	0.00	0.00
Weighted Average Rate of Depreciation	NA	4%	NA	4%
Depreciation	0.23	2.78	5.11	2.78

* Figure submitted by the Petitioner (erroneous)

Interest Expenses

- 3.46 The Petitioner has submitted that the secured loans payable by IPGCL to Holding Company, based on the details of the Transfer Scheme as on July 1, 2002 was Rs.210 Cr. This loan had been allocated station wise, based on the GFA of each station and share of IP Station is Rs.1.81 Cr. The Petitioner has further submitted that it availed Plan Fund Loan of Rs.6.30 Cr from GoNCTD in FY07, with a rate of interest of 11.5%.
- 3.47 The Petitioner has also submitted that it has provided rebate of 2% to the TRANSCO for timely payment of bills. It has requested the Commission to consider this rebate as part of its interest and financing expenses and approve the same during the true-up for FY07.
- 3.48 The Petitioner has submitted total interest expenses in FY07 as Rs.5.11 Cr (excluding rebate of Rs.4.16 Cr provided to the TRANSCO).
- 3.49 The Commission directed the Petitioner to submit copies of sanction letters of various unsecured loans taken from GoNCTD. It has considered all details of loan amount, payment schedule and actual interest rates to determine the actual interest charges payable by the Petitioner in FY07.
- 3.50 Since the moratorium period for the secured loans ended on June 30, 2006 the Petitioner has made one biannual payment during the financial year FY07. The Commission has considered this interest payment for approval of interest expenses. The interest expenses approved by the Commission for true up of FY07 are Rs.4.23 Cr.
- 3.51 The Commission expressed its views on the rebate on payments in the Tariff Order issued on September 22, 2006 wherein it stated that *“rebate offered by the Petitioner to TRANSCO is a commercial arrangement so as to expedite receipt of payment. The Commission has considered receivables for 2 months based on the projected sales keeping in view the norms for realisation of payment, for estimating the working capital requirement and the interest is allowed accordingly. The rebate on timely payment is therefore a trade-off with the interest on 2 months receivables considered in working capital requirement, hence does not merit any separate consideration.”*

- 3.52 The rebate provided for timely payment of bills is an established practice for generation companies and has also been considered in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, which states: *“For payment of bills of capacity charges and energy charges through a letter of credit on presentation, a rebate of 2% shall be allowed. If the payments are made by a mode other than through a letter of credit but within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.”*
- 3.53 The draft PPA entered into between IPDCL and DTL provided for a rebate of 2.5% only on the amount paid by cheque or through LC (Letter of Credit) within 7 days from the date of presentation of bills by GENCO to Bank and DTL. This provision (Clause 5.4) has been made by the Petitioner voluntarily and hence cannot be reopened at this stage.
- 3.54 The Commission had re-iterated its views in the review order issued on March 30, 2007. Therefore, the Commission retains the same opinion on the rebate provided to DTL and has not allowed the same for determination of tariff. The detailed analysis of determination of interest charges and the values approved by the Commission for true up of FY07 is shown below:

Table 3.12: Interest Expenses for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Secured Loans				
Opening Balance	1.81	1.81	1.81	1.81
Additions during the year	0.00	0.00	0.00	0.00
Repayments during the year	0.10	0.10	0.10	0.10
Closing Balance	1.71	1.71	1.71	1.71
Rate of Interest	12.00%			
Interest Charges	0.16	0.16	0.21	0.11
Unsecured Loans				
Opening Balance	38.10	38.10	37.30	35.90
Additions during the year	40.00	0.00	6.30	6.30
Repayments during the year	2.63	2.63	2.63	2.63
Closing Balance	75.47	35.47	40.97	39.57
Rate of Interest	11.50% – 13.00%			
Interest Charges	6.38	4.34	4.90	4.12
Total Interest Charges	6.54	4.50	5.11	4.23
Rebate to Customers	4.18	0.00	4.16	0.00
Total	10.72	4.50	9.27	4.23

Interest on Working Capital

3.55 The Petitioner has calculated its working capital requirements considering the following components:

- (a) Cost of coal for 2 months
- (b) Cost of liquid fuel for 2 month
- (c) O&M Expenses for 1 month
- (d) Receivables equivalent to 2 months average billing
- (e) Spares at 1% of project cost

3.56 The Petitioner has considered the interest rate for working capital to be 11.75% p.a. for true-up of FY07. The Commission has considered an interest rate of 10.25%, based on the State Bank of India (SBI) Prime Lending Rate (PLR) on April 1, 2006 to determine the interest on Working Capital.

3.57 The details regarding determination of Interest on Working Capital, are shown below:

Table 3.13: Interest on Working Capital for FY07

Particulars	Norm	Petition	Order	Actuals	True-Up
Cost of Fuel	2 Month	27.15	25.72	30.64	24.05
Cost of Secondary Fuel	2 Month	4.52	3.77	4.49	4.04
O & M Expenses	1 Month	5.31	3.35	3.11	3.11
Maintenance Spares		25.50	0.00	0.85	0.71
Receivables	2 months	46.51	38.65	45.44	36.68
Total Working Capital	Rs Cr	108.99	71.49	84.53	68.59
Rate of Interest	%	10.75%	10.25%	11.75%	10.25%
Interest on Working Capital	Rs Cr	11.72	7.33	9.93	7.03

Total Fixed Cost

3.58 The total fixed cost for FY07 as submitted by the Petitioner and as approved by the Commission after truing-up various cost elements is summarized in the table below:

Table 3.14: Total Fixed Cost for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
O&M Expenses	63.75	40.16	37.32	37.32
Depreciation	0.23	2.78	5.11	2.78
Advance Against Depreciation	2.50	0.00	0.00	0.00

Interest Charges	6.54	4.50	5.11	4.23
Rebate to Customers	4.18	0.00	4.16	0.00
Return on Equity	0.17	0.17	0.17	0.17
Interest on Working Capital	11.72	7.33	9.93	7.03
Income Tax	-	-	-	-
Total Fixed Cost	89.08	54.94	61.81	51.53
Fixed Cost Per Unit (p/kWh)	114.51	65.45	76.82	64.04

Annual Revenue Requirement for FY07

- 3.59 The Annual Revenue Requirement (ARR) of the Indraprastha Thermal Power Station for FY07, as approved by the Commission after truing-up of all expenses is shown below:

Table 3.15: Annual Revenue Requirement of IP Station for FY07

Particulars	Petition	Order	Actuals	True-Up	Reference
Generation					
Gross Generation (MU)	900	950	952	911	Table 3.6
Auxiliary Consumption (%)	13.56	11.64	15.51	11.64	Table 3.5
Net Generation (MU)	778	839	805	805	Table 3.6
Expenditure (Rs Cr)					
Variable Cost (Fuel Cost)	189.98	176.95	210.81	168.56	Table 3.8
O&M Expenses	63.75	40.16	37.32	37.32	Table 3.9
Depreciation	0.23	2.78	5.11	2.78	Table 3.11
Advance Against Depreciation	2.50	0.00	0.00	0.00	-
Interest on Loans	6.54	4.50	5.11	4.23	Table 3.12
Rebate to Customers	4.18	0.00	4.16	0.00	Table 3.12
Interest on Working Capital	11.72	7.33	9.93	7.03	Table 3.13
Return on Equity	0.17	0.17	0.17	0.17	-
Income Tax	0.00	0.00	0.00	0.00	-
Less: Non Tariff Income	0.00	0.00	0.00	0.00	-
Annual Revenue Requirement	279.06	231.89	272.62	220.09	-

- 3.60 The ARR of the Petitioner for FY07, after true-up of various components is lower than the value approved by the Commission in the Tariff Order for FY07 issued on September 22, 2006. The Petitioner shall refund the excess amount recovered from beneficiaries in the future bills with carrying cost of 9% which was the allowed rate by the Hon'ble ATE in order dated July 21, 2006.
- 3.61 The refund of these costs to various beneficiaries shall be in the ratio of the capacity allocation (in MW) from the IP Station to each beneficiary in FY07, vide Order no. F.17(115)/Engg./DERC/2006-07/ issued by the Commission on March 31, 2007.

True-Up of Rajghat Power House

- 3.62 A summary of the true-up petition for FY07 submitted by the Petitioner for Rajghat Power House (RPH) is shown in table below.

Table 3.16: Summary of True Up for FY07

Particulars	Units	Petition	Approved	Actuals
Gross Generation	MU	800	800	635
Plant Load Factor	%	67.60	67.60	53.69
Net Generation	MU	700	710	558
Total Fixed Cost	Rs Cr	84.06	58.46	70.96
Total Variable Cost	Rs Cr	141.13	137.12	112.35
Total Cost	Rs Cr	225.19	195.58	183.30
Fixed Cost per Unit	p/kWh	120.08	82.36	127.14
Variable Cost per Unit	p/kWh	201.62	193.20	201.30
Total Cost per Unit	p/kWh	321.69	275.56	328.45

Norms of Operation

- 3.63 The Petitioner submitted details of the operating parameters of the plant, which have been analysed in detail by the Commission for true-up, as detailed below:

Station Heat Rate

- 3.64 The Petitioner had submitted its Station Heat Rate (SHR) of 3167 kCal/kWh in its ARR petition for FY07 considering the expected improvement in working of the plant and adjusting for the impact of transit loss and high moisture content of coal. The Commission had however approved a higher value of SHR (3200 kCal/kWh) based on the PPA signed by IPGCL and DTL.
- 3.65 The Petitioner in its true-up petition has submitted the actual SHR of 3210 kCal/kWh achieved by RPH during FY07, and requested the Commission to approve the same.
- 3.66 The Commission observes that the Petitioner has achieved a heat rate which is higher than the level submitted by the Petitioner itself in its previous ARR petition.
- 3.67 The Commission has not accepted the request to true-up the SHR as per actuals and has considered the heat rate to be 3200 kCal/kWh based on the PPA signed by IPGCL and DTL. The Commission further states that the Petitioner is expected to improve its performance, as committed in its ARR petition of FY07. The SHR of the plant is high due to low operating levels, which need to be improved.
- 3.68 The details of SHR of RPH for FY07, as submitted by the Petitioner and approved by the Commission are as shown below:

Table 3.17: Station Heat Rate for FY07

(Values in kCal/kWh)	Petition	Order	Actuals	True-Up
Station Heat Rate	3167	3200	3210	3200

Availability

- 3.69 The Commission had approved the target availability (cumulative for FY06 and FY07) for full recovery of annual fixed cost as 60% in the Tariff Order for FY07 issued on September 22, 2006. It stated that recovery of annual fixed cost below this level will be on pro rata basis.
- 3.70 The Commission has considered the availability of RPH in FY07 to be 54.56% as certified by the SLDC, and hence approved for recovery of fixed cost on pro-rata basis for FY07 corresponding to the lower availability.

Auxiliary Consumption

- 3.71 The Commission had approved auxiliary consumption of RPH to be 11.28% for FY07, considering the Petitioner's commitment to achieve the same, during the ARR and tariff determination process for FY05, as detailed in the Tariff Order for IPGCL for FY05 issued on June 9, 2004.
- 3.72 The Petitioner has submitted its actual auxiliary consumption for FY07 as 12.10%. The auxiliary consumption of RPH proposed by IPGCL in its tariff petitions, values approved by the Commission and the auxiliary consumption achieved by the Petitioner in the last four years are as follows:

Table 3.18: Auxiliary Consumption from FY04 to FY07

(Values in %)	FY04	FY05	FY06	FY07
Petition	12.63	12.35	12.68	12.50
Approved	11.28	11.28	11.28	11.28
Actuals	12.63	12.68	13.88	12.10

- 3.73 The Commission observes that there is only minor improvement in the auxiliary consumption of the plant, and believes that the Petitioner has not taken adequate steps to reduce the same. In addition, the Petitioner has given no substantial reason for non-achievement of the target level specified by the Commission. Hence, the Commission approves an auxiliary consumption of 11.28% as per the provisions of the PPA between the Petitioner and the TRANSCO.
- 3.74 The details of auxiliary consumption of RPH for FY07, as submitted by the Petitioner and approved by the Commission are as shown below:

Table 3.19: Auxiliary Consumption for FY07

(Values in %)	Petition	Order	Actuals	True-Up
Auxiliary Consumption	12.50	11.28	12.10	11.28

Gross and Net Generation

- 3.75 The Commission had considered the gross generation for RPH to be 800 MU, considering the target prescribed by the CEA. It approved net generation of 710 MU, considering the normative auxiliary consumption for the plant.
- 3.76 The Petitioner has submitted its actual gross generation for FY07, as 635 MU. The net generation from the plant, considering the actual auxiliary consumption of 12.10% is 558 MU. It has requested the Commission to approve the actual values for gross and net generation during true-up for FY07.
- 3.77 The Commission obtained details of the net energy sent out from RPH from the SLDC, which amounts to 558.07 MU. Hence, the Commission considered the net generation submitted by the Petitioner. It has however considered the approved auxiliary consumption to determine the gross generation amount to be considered for calculation of fuel costs.
- 3.78 The generation details for FY07 as submitted by the Petitioner and as approved by the Commission are given below.

Table 3.20: Gross and Net Generation for FY07

Particulars	Petition	Order	Actuals	True-Up
Net Generation (MU)	700	710	558	558
Auxiliary Consumption (%)	12.50	11.28	12.10	11.28
Gross Generation (MU)	800	800	635	629
Plant Load Factor %	67.60	67.60	53.69	53.19

Plant Load Factor

- 3.79 The Commission had considered the PLF of RPH for FY07 based on the submission of the Petitioner (67.60%). This value was as per the target fixed by the CEA and also considered the planned shutdown of Unit I for overhauling.
- 3.80 The Petitioner has now submitted the actual PLF of 53.69% achieved in FY07, and requested the Commission to approve the same. Based on the generation values provided by the SLDC, the Commission calculated the PLF of the plant to be 53.19% in FY07.

- 3.81 The Petitioner has submitted that the units of RPH have been shutdown for renovation and overhaul. The delay in overhauling was due to non-availability of critical spares with M/s BHEL. The turbine rotor which was scheduled to be delivered in December 2005 was actually delivered in February 2007.
- 3.82 The Commission believes that operational and contractual risks are on account of the Petitioner and shall not be passed on to the consumers. These risks are a part of their normal business and the generating company by virtue of being in this business is in the best position to mitigate such risks and not the consumers. The Commission expects the Petitioner to take steps to enforce the contract and take the issue up with BHEL.
- 3.83 The PLF achieved by the plant as submitted by the Petition and as calculated by the Commission is shown below.

Table 3.21: Plant Load Factor for FY07

(Values in %)	Petition	Order	Actuals	True-Up
Plant Load Factor	67.60	67.60	53.69	53.19

Fuel Cost

- 3.84 The Petitioner has submitted its annual fuel expenses based on the average Gross Calorific Value of fuel consumed in FY07: Coal (3808 kCal/kg), Light Diesel Oil (LDO) (10,580 kCal/ liter) and Low Sulphur Heavy Stock (LSHS)(10,350 kCal/kg).
- 3.85 The Petitioner has submitted the cost of coal for FY07 as Rs.1889.38 per Metric Tonne, based on actual bills paid. It has claimed transit and moisture losses of 3.70% on transportation of coal.
- 3.86 The Commission has calculated the net coal requirement for RPH considering the energy required to generate 629 MUs of electricity and adjusting for the energy obtained by consumption of secondary fuel. The gross coal requirement is obtained by factoring in the impact of transit loss to arrive at the net coal requirement.
- 3.87 In its FY07 Tariff Order, the Commission had taken into consideration the submission of the Petitioner and had approved the various operational norms as per the petition submitted. However, the actuals norms achieved for the year are worse than the approved norms and the Commission cannot true-up based on the achieved actuals. Hence, the Commission has considered the norms as approved in FY07 Tariff Order for the purpose of true-up.
- 3.88 The details of the total fuel cost, based on the volume and prices of various fuels, submitted by the Petitioner and approved by the Commission for FY07 is shown below:

Table 3.22: True-Up of Fuel Costs for FY07

Particulars	Unit	Petition	Order	Actual	True-Up
Primary Fuel – Coal					
GCV of Coal	kCal/ kg	3,852	3,875	3,808	3,808
Coal Consumed	MT	646,464	649,356	524,794	519,555
Transit Loss	%			3.70%	0.80%
Gross Quantity of Coal	MT	646,464	649,356	544,957	523,745
Price of Coal	Rs/ MT	2,035.60	1,986.71	1,889.38	1,889.38
Cost of Coal	Rs Cr	131.59	129.01	102.96	98.96
Secondary Fuel – LDO					
Specific Oil Consumption	ml/ kWh	1.50	1.50	1.74	1.50
LDO Consumed	kl	1,200	1,200	1,104	944
GCV of Oil	kCal/ kl	10,580	10,580	10,580	10,580
Price of LDO	Rs/kl	30,109	26,641	29,385	29,385
Cost of LDO	Rs Cr	3.61	3.20	3.24	2.77
Secondary Fuel – LSHS					
Specific Oil Consumption	g/ kWh	3.75	3.75	4.30	3.75
LSHS Consumed	MT	3,000	3,000	2,730	2,359
GCV of Oil	kCal/ kg	10,350	10,350	10,350	10,350
Price of LSHS	Rs/MT	19,745	16,390	22,491	22,491
Cost of LSHS	Rs Cr	5.92	4.92	6.14	5.31
Total Fuel Cost	Rs Cr	141.13	137.12	112.35	107.03

Variable Cost

- 3.89 The Commission has approved the variable cost of generation, based on the actual prices and gross calorific value of fuel used and considering the approved norms of operation as detailed above. The variable cost of generation for RPH in FY07, approved by the Commission is 191.79 paisa/kWh.
- 3.90 The details of the variable cost of generation as estimated by the Petitioner and as approved by the Commission for FY07 is given below:

Table 3.23: Truing-Up of Variable Costs for FY07

Particulars	Petition	Order	Actuals	True-Up
Gross Generation (MU)	800	800	635	629
Auxiliary Consumption (%)	12.50	11.28	12.10	11.28
Net Generation (MU)	700	710	558	558
Total Fuel Cost (Rs Cr)	141.13	137.12	112.35	107.03

Variable Cost (p/kWh)	201.62	193.20	201.30	191.79
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Fixed Cost

- 3.91 The Commission has examined all components of Fixed Cost for RPH for the purpose of true-up for FY07. The details for each component, as submitted by the Petitioner and approved by the Commission are given below.

Operations and Maintenance Expenses

- 3.92 The Commission had approved O&M Expenses for FY07 at Rs.25.76 Cr against the Petitioner's submission of Rs.40.02 Cr. The Petitioner has submitted its actual O&M Expenses incurred in FY07, as Rs.30.78 Cr. The Commission has noted the difference in O&M Expenses submitted by the Petitioner in its ARR petition and the true-up petition for FY07. The Petitioner submitted that the R&M Expenses are relatively high due to small size of units, poor condition at the time of unbundling and due to old age of the station.
- 3.93 The Commission in its Tariff Order for FY07 issued on September 22, 2006 had stated that *"O&M expenses of IPGCL are on a higher side and if the actual O&M costs are considered for the purpose of ARR and tariff determination, the per unit generation cost will increase substantially. Further, CEA has made its recommendation of normative O&M expenses considering all relevant parameters of operation taking into account the vintage and size of the generating units of these stations. The generating stations are expected to perform at an acceptable level to recover commensurate expenses. This is necessary to safeguard the interests of the consumers."*
- 3.94 Considering the above, the Commission has retained the same O&M Expenses as approved for FY07. However, the Commission has increased the O&M Expenses for RPH by Rs.2.00 Cr by considering adjustments from the O&M Expenses of IP Station.
- 3.95 The Commission has divided the total O&M Expenses into three components: R&M, employee and A&G Expenses, in the same ratio as submitted by the Petitioner. The details of the O&M Expenses submitted by the Petitioner and approved by the Commission for FY07 are shown in the table below.

Table 3.24: Operations & Maintenance Expenses for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Repair & Maintenance Expenses			12.46	10.43
Employee Expenses			15.06	12.61
Administrative & General Expenses			3.26	2.73
IP Station Adjustment				2.00
Operations & Maintenance Expenses	40.02	25.76	30.78	27.76

Depreciation

- 3.96 The depreciation applicable for tariff determination is based on the value of Gross Fixed Assets (GFA) under the station. In the Tariff Order for IPGCL issued on June 9, 2004, the Commission had approved the value of GFA under RPH at the end of FY05 as Rs.206.85 Cr, which was retained at Rs.206.85 Cr after true-up.
- 3.97 Since the Petitioner had not proposed any asset capitalization in FY06, the Commission had approved GFA of Rs.206.85 Cr in its FY06 Tariff Order, considering no additions in assets. However, in its true-up petition for FY06, the Petitioner submitted new asset addition of Rs.2.77 Cr. to its opening GFA of Rs.206.85 Cr. The Commission approved the asset additions during the year and approved the closing GFA in FY06 as Rs.209.62 Cr.

Table 3.25: Depreciation Approved in Previous Tariff Orders

Particulars (Rs Cr)	Petition	Order	Audited	True-Up
FY05				
Gross Block	206.85	206.85	206.85	206.85
Less: Accumulated Depreciation	81.26	81.26	81.26	81.26
New Additions during the year	0.00	0.00	0.00	0.00
Net Fixed Assets	125.59	125.59	125.59	125.59
Weighted Avg Rate of Depreciation	NA	4%	NA	4%
Depreciation	10.92	8.28	11.35	8.28
FY06				
Gross Block	225.15	206.85	206.85	206.85
Less: Accumulated Depreciation	92.18	89.54	92.61	89.54
New Additions during the year	0.00	0.00	2.77	2.77
Net Fixed Assets	132.97	117.31	117.01	120.08
Weighted Avg Rate of Depreciation	NA	4%	NA	4%
Depreciation	11.40	7.89	11.35	8.33

- 3.98 In its Tariff Order for FY07, the Commission approved GFA at Rs.209.62 Cr with new asset additions of Rs.7.50 Cr during the year. The Petitioner in its true-up petition has provided the Commission with incorrect GFA figures, due to erroneous calculation done in the formats submitted. The Petitioner for FY07 has submitted the opening value of its GFA as Rs.209.81 Cr and asset addition of Rs.15.53 Cr.
- 3.99 The Petitioner has calculated depreciation for FY07 using the methodology and the depreciation rates specified in the MYT Regulations. The Commission clarifies that the depreciation rates provided in the MYT Regulations are applicable for the Control Period and has calculated the depreciation for FY07 using the same methodology as used in previous Tariff Orders.

- 3.100 The Commission has considered Rs.209.62 Cr as opening balance of GFA and approves asset addition of Rs.15.53 Cr during FY07. The Commission has approved depreciation of Rs.8.70 Cr for FY07 after considering an average depreciation rate of 4.00% for coal-based thermal power stations. The details of depreciation amount approved by the Commission are as per the table below.

Table 3.26: Depreciation for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Gross Block	209.62	209.62	209.81*	209.62
Less: Accumulated Depreciation	103.96	97.87	98.13	97.87
New Additions during the year	10.50	7.50	15.53	15.53
Weighted Average Rate of Depreciation	5.66%	4.00%	NA	4.00%
Depreciation	12.02	8.53	7.92	8.70

* As submitted by the Petitioner (erroneous)

Interest Expenses

- 3.101 The Petitioner has submitted that the secured loans payable by IPGCL to Holding Company as on July 1, 2002 based on the Transfer Scheme was Rs.210.00 Cr. The component of loan applicable to RPH, based on gross fixed assets was Rs.89.33 Cr. The Petitioner has further submitted that it availed Plan Fund Loan of Rs.8.00 Cr from GoNCTD in FY07, with a rate of interest of 11.5%.
- 3.102 The Petitioner has also submitted that it has provided rebate of 2% to the TRANSCO for timely payment of bills. It has requested the Commission to consider this rebate as part of its interest and financing expenses and approve the same during the true-up for FY07.
- 3.103 The Petitioner has submitted interest expenses in FY07 as Rs.14.64 Cr (excluding rebate of Rs.2.92 Cr provided to the TRANSCO).
- 3.104 The Commission directed the Petitioner to submit copies of sanction letters of various loans taken from GoNCTD. It has considered all details of loan amount, payment schedule and actual interest rates to determine the actual interest charges payable by the Petitioner for FY07.
- 3.105 Since the moratorium period for secured loans ended on June 30, 2006, the Petitioner made one biannual payment during FY07. The Commission has considered the interest payments for approval of interest expenses. The interest charges approved by the Commission for true up of FY07 are Rs.8.64 Cr.

- 3.106 The Commission expressed its views on the rebate on payments in the Tariff Order issued on September 22, 2006 wherein it stated that “*rebate offered by the Petitioner to TRANSCO is a commercial arrangement so as to expedite receipt of payment. The Commission has considered receivables for 2 months based on the projected sales keeping in view the norms for realisation of payment, for estimating the working capital requirement and the interest is allowed accordingly. The rebate on timely payment is therefore a trade-off with the interest on 2 months receivables considered in working capital requirement, hence does not merit any separate consideration.*”
- 3.107 The rebate provided for timely payment of bills is an established practice for generation companies and has also been considered in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, which states: “*For payment of bills of capacity charges and energy charges through a letter of credit on presentation, a rebate of 2% shall be allowed. If the payments are made by a mode other than through a letter of credit but within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.*”
- 3.108 The draft PPA entered into between IPGCL and DTL provided for a rebate of 2.5% only on the amount paid by cheque or through LC (Letter of Credit) within 7 days from the date of presentation of bills by GENCO to Bank and DTL. This provision (Clause 5.4) has been made by the Petitioner voluntarily and hence cannot be reopened at this stage.
- 3.109 The Commission had re-iterated its views in the review order issued on March 30, 2007. Therefore, the Commission retains the same opinion on the rebate provided to DTL and has not allowed the same for determination of tariff. The detailed analysis of determination of interest charges and the values approved by the Commission for true up of FY07 is shown below:

Table 3.27: Interest Expenses for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Secured Loans				
Opening Balance	89.33	89.33	89.33	89.33
Additions during the year	0.00	0.00	0.00	0.00
Repayments during the year	4.96	4.96	4.96	4.96
Closing Balance	84.37	84.37	84.37	84.37
Rate of Interest	12.00%			
Interest Charges	7.89	7.89	10.42	5.40
Unsecured Loans				
Opening Balance	13.27	13.27	28.77	27.48
Additions during the year	10.00	7.50	8.00	8.00
Repayments during the year	1.99	1.99	1.98	2.02
Closing Balance	21.28	18.78	34.78	33.47

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Rate of Interest	11.5% - 13.00%			
Interest Charges	3.76	2.03	4.22	3.24
Total Interest Charges	11.65	9.92	14.64	8.64
Rebate to Customers	3.38	0.00	2.92	0.00
Total	15.03	9.92	17.56	8.64

Interest on Working Capital

3.110 The Petitioner has calculated its working capital requirements considering the following components:

- (a) Cost of coal for 2 months
- (b) Cost of liquid fuel for 2 month
- (c) O&M Expenses for 1 month
- (d) Receivables equivalent to 2 months average billing
- (e) Spares at 1% of project cost

3.111 The Commission has calculated the working capital requirement of the Petitioner considering the trued-up values for each of the components in FY07.

3.112 The Petitioner has considered the interest rate for working capital to be 11.75% p.a. for true-up of FY07. The Commission has considered an interest rate of 10.25%, based on the SBI PLR on April 1, 2006 to determine the interest on working capital.

3.113 The Commission has approved the interest on working capital as shown below:

Table 3.28: Interest on Working Capital for FY07

Particular	Norm	Petition	Order	Actual	Trued Up
Cost of Fuel	2 Month	21.93	21.50	17.16	16.49
Cost of Secondary Fuel	2 Month	1.59	1.35	1.56	1.35
O & M Expenses	1 Month	3.34	2.15	2.57	2.31
Maintenance Spares		16.01	0.00	2.30	2.22
Receivables	2 Months	37.57	32.60	30.55	27.60
Total Working Capital	Rs Cr	80.44	57.60	54.14	49.97
Rate of Interest	%	10.75	10.25	11.75	10.25
Interest on Working Capital	Rs Cr	8.65	5.90	6.36	5.12

Total Fixed Cost

3.114 The total fixed cost for FY07 as submitted by the Petitioner and as approved by the Commission after truing-up various cost elements is summarized in the table below:

Table 3.29: Total Fixed Cost for FY07

Particular (Rs Cr)	Petition	Order	Actuals	True-Up
O&M Expenses	40.02	25.76	30.78	27.76
Depreciation	12.02	8.53	7.92	8.70
Advance Against Depreciation	0.00	0.00	0.00	0.00
Interest Charges	11.65	9.92	14.64	8.64
Rebate to Customers	3.38	0.00	2.92	0.00
Return on Equity	8.34	8.34	8.34	8.34
Interest on Working Capital	8.65	5.90	6.36	5.12
Income Tax	-	-	-	-
Total Fixed Cost	84.06	58.46	70.96	58.56
Fixed Cost Per Unit (p/kWh)	120.08	82.36	127.14	104.93

Annual Revenue Requirement for FY07

3.115 The Annual Revenue Requirement (ARR) of the Rajghat Power House for FY07, as approved by the Commission after truing-up of all expenses is shown below:

Table 3.30: Annual Revenue Requirement for FY07

Particulars	Petition	Order	Actuals	True-Up	Reference
Generation					
Gross Generation (MU)	800	800	635	629	Table 3.20
Auxiliary Consumption (%)	12.50	11.28	12.10	11.28	Table 3.19
Net Generation (MU)	700	710	558	558	Table 3.20
Expenditure (Rs Cr)					
Fuel Cost	141.13	137.12	112.35	107.03	Table 3.23
O&M Expenses	40.02	25.76	30.78	27.76	Table 3.24
Depreciation	12.02	8.53	7.92	8.70	Table 3.26
Advance Against Depreciation	0.00	0.00	0.00	0.00	-
Interest on Loans	11.65	9.92	14.64	8.64	Table 3.27
Rebate to Customers	3.38	0.00	2.92	0.00	Table 3.27
Interest on Working Capital	8.65	5.90	6.36	5.12	Table 3.28
Return on Equity	8.34	8.34	8.34	8.34	-
Tax Expenses	-	-	-	-	-
Less: Non Tariff Income	-	-	-	-	-
Annual Revenue Requirement	225.19	195.58	183.30	165.59	

- 3.116 The ARR of the Petitioner for FY07, after true-up of various components is lower than the value approved by the Commission in the Tariff Order for FY07 issued on September 22, 2006. The Petitioner shall refund the excess amount recovered from beneficiaries in the future bills with carrying cost of 9% which was the allowed rate by the Hon'ble ATE in order dated July 21, 2006.
- 3.117 The refund of these costs to various beneficiaries shall be in the ratio of the capacity allocation (in MW) from the RPH to each beneficiary in FY07, vide Order no. F.17(115)/Engg./DERC/2006-07/ issued by the Commission on March 31, 2007.

True-Up of Gas Turbine Power Station

3.118 A summary of the true-up petition for FY07 submitted by the Petitioner for its Gas Turbine Power Station (GTPS) is shown in table below.

Table 3.31: Summary of Truing Up Petition for FY07

Particulars	Petition	Approved	Actuals
Gross Generation (MU)	1500	1500	1412
Plant Load Factor (%)	60.72	60.72	57.71
Net Generation (MU)	1454	1455	1373
Fixed Cost (Rs Cr)	114.32	85.57	101.32
Variable Cost (Rs Cr)	248.28	241.09	238.99
Total Cost (Rs Cr)	362.60	326.66	340.32
Fixed Cost per Unit (p/ kWh)	78.65	58.81	73.81
Variable Cost per Unit (p/ kWh)	170.82	165.70	174.11
Total Cost per Unit (p/ kWh)	249.47	224.51	247.92

Norms of Operation

3.119 The Petitioner submitted details of the operating parameters of the plant, which have been analysed in detail by the Commission for truing-up, as detailed below:

Station Heat Rate

3.120 The Commission had approved SHR of GTPS for FY07 as: 2450 kCal/kWh for combined cycle operation and 3125 kCal/kWh for open cycle operation.

3.121 The Petitioner submitted the SHR achieved by GTPS during FY07 as: 2528 kCal/kWh for combined cycle operations and 3366 kCal/kWh for open cycle operations, and has requested the Commission to approve the same for determination of variable cost of generation from the plant during the year.

3.122 The Petitioner submitted that the heat rate of GTPS is high due to non-performance of the Steam Turbine Generator /Waste Heat Recovery Unit, as M/S BHEL has not commissioned these units satisfactorily after overhauling. The gas turbine has been operating on open cycle and has been frequently started/ stopped on instructions from the SLDC, thereby leading to higher heat rate.

3.123 The Petitioner submitted that it has been facing daily cuts on gas supply by GAIL, causing part loading of its gas turbines, which results in almost 2% loss in performance.

- 3.124 It also submitted details of evacuation constraints faced by the plant due to insufficient evacuation capacity during off-peak hours. Hence, the gas turbines have had to be backed down by 10% for almost 10 hrs (2200 to 0800 hrs) daily in the past, which resulted in 1% further loss in performance.
- 3.125 The Commission has considered normative heat rate of 2450 kCal/kWh, as approved in the previous Tariff Order issued on September 22, 2006 on the basis of gross calorific value of gas. The details of heat rate submitted by the Petitioner and approved by the Commission are given below:

Table 3.32: Station Heat Rate for FY07

SHR (in kCal/ kWh)	Petition	Approved	Actuals	True-Up
Combined Cycle	2497	2450	2734	2450
Open Cycle	-	-	3366	3125

Availability

- 3.126 The Commission had approved the target availability for full recovery of annual fixed cost as 70% in the Tariff Order for FY07 issued on September 22, 2006. It stated that recovery of annual fixed cost below this level will be on pro rata basis.
- 3.127 The Commission has considered the availability of GTPS in FY07 to be 64.16% as certified by the SLDC, and hence approved for recovery of fixed cost on pro-rata basis for FY07.

Auxiliary Consumption

- 3.128 The Commission in its Tariff Order for FY07 had approved the auxiliary consumption at 3.00% of gross generation in combined cycle mode and 1.00% in open cycle mode of operation. The Petitioner has submitted details for the FY07 and has achieved auxiliary consumption of 2.80%.
- 3.129 The Commission has noted the improvement in auxiliary consumption of the plant, but has considered the previously approved value for truing up, as shown below

Table 3.33: Auxiliary Consumption for FY07

Auxiliary Consumption	Petition	Approved	Actuals	True-Up
Combined Cycle	3.10%	3.00 %	2.80 %	3.00 %
Open Cycle	NA	1.00%	NA	1.00%

Gross and Net Generation

- 3.130 The Commission had approved the gross and net generation for FY07 as 1500 MU and 1455 MU respectively, based on the approved values for the SHR, PLF and auxiliary consumption.
- 3.131 The Petitioner submitted the gross generation in FY07 as 1412.2 MU with auxiliary consumption 2.80%. It requests the Commission to approve the actual generation during truing up.
- 3.132 The net generation from the GTPS, based on the energy account obtained from SLDC is 1372.3 MU. Considering the approved value of auxiliary consumption in open and close cycle mode of operation of the plant, the Commission has determined the gross generation from the plant as 1406.6 MU.
- 3.133 The generation details for FY07 as submitted by the Petitioner and as approved by the Commission are given below:

Table 3.34: Generation Details for FY07

Particulars	Petition	Approved	Actuals	True-Up
Net Generation (MU)	1454	1455	1373	1372
Open Cycle Generation (MU)	NA	NA	NA	3.44
Combined Cycle Generation (MU)	NA	NA	NA	30.84
Auxiliary Consumption (%)	3.00	3.00	2.80	3.00
Gross Generation (MU)	1500	1500	1412	1407
Plant Load Factor (%)	60.72	60.72	57.71	56.94

Plant Load Factor

- 3.134 The Commission had approved the PLF for GTPS as 60.70%, based on the request of the Petitioner in its ARR petition for FY07. This PLF was approved, based on the targets specified by the CEA and after due consideration of the planned shutdown for overhauling of Unit I. This PLF had also been determined considering a 20% cut in the supply of gas by GAIL.
- 3.135 The Petitioner has submitted the actual PLF of GTPS in FY07 as 57.71% and requested the Commission to approve the same. It has submitted its inability to achieve the target PLF due to delay in renovation and overhaul of STG I and STG II by BHEL and floods at Hazira, which affected the gas supply to the plant.

- 3.136 The Commission notes that it has determined the PLF considering a 20% cut in gas supply, and this shall include the disruptions due to the floods at Hazira. In addition, the Commission is of the view that operational and contractual risks are on account of the Petitioner and shall not be passed through to the consumers. The Commission expects the Petitioner to take steps to enforce the contract and take the issue of delay in overhaul of STGs with BHEL.
- 3.137 Based on the generation values provided by the SLDC, the Commission calculated the PLF of the plant to be 56.94% in FY07.
- 3.138 The details of PLF of GTPS for FY07, as submitted by the Petitioner and values calculated by the Commission are as shown below:

Table 3.35: Plant Load Factor for FY07

(Values in %)	Petition	Approved	Actuals	True-Up
Plant Load Factor	60.72	60.72	57.71	56.94

Fuel Cost

- 3.139 The Petitioner has submitted its annual fuel expenses in FY07 considering the fuel consumed from various sources available to GTPS.
- 3.140 The Petitioner had initially not furnished any information on the quantity of gas purchased from various sources and their associated costs. The Commission directed the Petitioner to submit these details, which have been considered for the purpose of true-up the fuel costs.
- 3.141 The Petitioner submitted the following price details for the different categories of gas purchased in FY07: APM gas at Rs.4201.33 per 1000 SCM, PMT gas at Rs.4201.59 per 1000 SCM, Fallback R-LNG at Rs.202.34/ MMBTU and Spot R-LNG at Rs.488.45/ MMBTU.
- 3.142 The Commission has considered these cost details, based on the bills issued by GAIL and submitted by the Petitioner. The Commission has calculated the total fuel cost for FY07 using the gas prices submitted by the Petitioner and the quantity of gas required for achieving the approved gross generation based on the normative SHR and auxiliary consumption for the station. Based on the above, and considering the fuel requirement to be serviced in the order of increases prices: APM/ PMT gas, Fallback RLNG and Spot R-LNG, the Commission observes that there should not have been any requirement of Spot R-LNG by GTPS. However, as the Petitioner has already consumed and incurred cost on 7.08 MMSCMD of Spot R-LNG, the Commission has pro-rated the cost in the proportion of actual consumption of R-LNG and Spot R-LNG for true up.

- 3.143 The fuel cost approved by the Commission in Tariff Order for FY07 was Rs.241.09 Cr. The actual fuel cost incurred by the Petitioner is Rs.238.99 Cr. The Commission has approved fuel cost for FY07 as Rs.216.62 Cr as detailed below:

Table 3.36: Truing-Up of Fuel Costs for FY07

Particulars	Unit	Petition	Order	Actual	True-Up
APM Gas					
APM Gas Consumed	MMSCM	185.55	185.55	185.56	185.56
Gas Price	Rs/1000 SCM	4433.00	4433.00	4201.33	4201.33
APM Gas Cost	Rs Cr	82.25	82.25	77.96	77.96
PMT Gas					
PMT Gas Consumed	MMSCM	-	-	51.69	51.69
Gas Price	Rs/1000 SCM	4433.00	4433.00	4201.59	4201.59
PMT Gas Cost	Rs Cr	0.00	0.00	21.72	21.72
Total APM + PMT Gas	MMSCM	185.55	185.55	237.24	237.24
APM + PMT Gas Cost	Rs Cr	82.25	82.25	99.67	99.67
Fall Back R-LNG					
Fall Back R-LNG Consumed	MMSCM	219.85	210.670	168.26	141.44
	MMBTU	8,092,000	7,753,945	6,237,128	5,243,144
R-LNG Price	Rs/MMBTU	205.00	204.66	202.34	202.34
Fall Back R-LNG Cost	Rs Cr	165.89	158.69	126.20	106.09
Spot R-LNG					
Spot R-LNG Consumed	MMSCM	-	-	7.08	5.95
	MMBTU			266,982	220,676
Spot R-LNG Price	Rs/MMBTU			488.45	488.45
Spot R-LNG Cost	Rs Cr			13.04	10.78
Total Gas Consumed	MMSCM	405.40	396.22	412.58	384.63
Total Gas Cost	Rs Cr	248.14	240.95	238.92	216.54
Other Fuel					
Liquid Fuel HSD Consumed	KL	70	70	38	38
Price of Liquid Fuel	Rs/KL	20048.00	20048.00	19093.24	19093.24
Total Cost of Liquid Fuel	Rs Cr	0.140	0.140	0.073	0.073
Total Fuel Cost	Rs Cr	248.28	241.09	238.99	216.62

Variable Cost

- 3.144 The Commission has determined the variable cost of generation, considering actual fuel prices, gross calorific value and station heat rate of 2450 kCal/kWh (on GCV basis). The details of the variable cost, based on the truing-up for FY07 approved by the Commission are as follows:

Table 3.37: Truing-Up of Variable Costs for FY07

Particulars	Petition	Approved	Actuals	Trued-Up
Gross Generation (MU)	1500	1500	1412	1407
Auxiliary Consumption (%)	3.10	3.00	2.80	3.00
Net Generation (MU)	1454	1455	1373	1372
Total Fuel Cost (Rs Cr.)	248.28	241.09	238.99	216.62
Variable Cost (p/ kWh)	170.82	165.70	174.11	157.85

Fixed Cost

- 3.145 The Commission has examined all components of fixed cost for GTPS for the purpose of truing-up for FY07. The details for each component, as submitted by the Petitioner and approved by the Commission are given below:

Operations and Maintenance Expenses

- 3.146 The Commission had approved O&M Expenses of Rs.33.52 Cr for FY07 against the Petitioner's submission of Rs.49.74 Cr. The Petitioner has submitted its actual O&M Expenses incurred in FY07 as Rs.37.04 Cr and requested the Commission for truing-up of the same.
- 3.147 The Commission has noted the difference in O&M Expenses submitted by the Petitioner in its ARR petition and the true-up petition for FY07.
- 3.148 The Commission in its Tariff Order for FY07 issued on September 22, 2006 had stated that *"O&M expenses of IPGCL are on a higher side and if the actual O&M costs are considered for the purpose of ARR and tariff determination, the per unit generation cost will increase substantially. Further, CEA has made its recommendation of normative O&M expenses considering all relevant parameters of operation taking into account the vintage and size of the generating units of these stations. The generating stations are expected to perform at an acceptable level to recover commensurate expenses. This is necessary to safeguard the interests of the consumers."*
- 3.149 Considering the above, the Commission has retained the same O&M Expenses as approved for FY07. However, the Commission has increased the O&M Expenses for GTPS by Rs.0.85 Cr by considering adjustments from the savings in O&M Expenses of IP Station.

- 3.150 The Commission has divided the total O&M Expenses into the three components: R&M Expenses, Employee Expenses and A&G Expenses, in the same ratio as submitted by the Petitioner. The details for the O&M Expenses submitted by the Petitioner and approved by the Commission for FY07 are shown in the table below.

Table 3.38: Operations & Maintenance Expenses for FY07

(All Values in Rs Cr.)	Petition	Approved	Actuals	Trued-Up
Repair & Maintenance Expenses			17.00	15.39
Employee Expenses			12.00	10.86
Administrative & General Expenses			8.03	7.27
IP Station Adjustment				0.85
Operations & Maintenance Expenses	49.74	33.52	37.04	34.37

Depreciation

- 3.151 The depreciation applicable for tariff determination is based on the value of Gross Fixed Assets (GFA) under the station. In the Tariff Order for IPGCL issued on June 9, 2004, the Commission had approved the value of GFA under GTPS at the end of FY05 as Rs.272.65 Cr, which was retained at Rs.272.65 Cr after true-up.
- 3.152 Since the Petitioner had not proposed any asset capitalization in FY06, the Commission had approved GFA of Rs.272.65 Cr in its FY06 Tariff Order, considering no additions in assets. However, in its true-up petition for FY06, the Petitioner submitted new asset addition of Rs.14.92 Cr. to its opening GFA of Rs.272.65 Cr. The Commission approved the asset additions during the year and approved the closing GFA in FY06 as Rs.287.57 Cr.

Table 3.39: Depreciation Approved in Previous Tariff Orders

Particulars (Rs Cr)	Petition	Order	Audited	True-Up
FY05				
Gross Block	NA	272.65	272.65	272.65
Less: Accumulated Depreciation	NA	110.36	110.36	110.36
New Additions during the year	NA	0.00	0.00	0.00
Net Fixed Assets	NA	162.29	162.29	162.29
Weighted Avg Rate of Depreciation	NA	5%	NA	5%
Depreciation	NA	14.08	17.17	14.08
FY06				
Gross Block	NA	272.65	272.65	272.65
Less: Accumulated Depreciation	NA	124.44	127.53	124.44
New Additions during the year	NA	NA	14.92	14.92
Net Fixed Assets	NA	NA	160.04	163.13

Weighted Avg Rate of Depreciation	NA	5%	NA	5%
Depreciation	NA	16.53	17.51	14.01

- 3.153 In its Tariff Order for FY07, the Commission approved GFA at Rs.287.57 Cr with new asset additions of Rs.16.02 Cr during the year. The Petitioner in its true-up petition has provided the Commission with incorrect GFA figures, due to erroneous calculation done in the formats submitted. The Petitioner for FY07 has submitted the opening value of its GFA as Rs.281.47 Cr and asset addition of Rs.12.61 Cr.
- 3.154 The Petitioner has calculated depreciation for FY07 using the methodology and the depreciation rates specified in the MYT Regulations. The Commission observes that the depreciation rates provided in the MYT Regulations are applicable for the Control Period and has calculated the depreciation for FY07 using the same methodology as used in previous Tariff Orders.
- 3.155 The Commission has considered the Rs.287.57 Cr as the opening balance of GFA and approves asset addition of Rs.12.61 Cr during FY07. The Commission has approved depreciation of Rs.14.69 Cr for FY07 after considering an average depreciation rate of 5.00% for coal-based thermal power stations. The details of depreciation amount approved by the Commission are as per the table below.

Table 3.40: Depreciation for FY07

Particulars (Rs Cr)	Petition	Order	Actuals	True-Up
Gross Block	288.20	287.57	281.47*	287.57
Less: Accumulated Depreciation	144.77	138.45	145.04	138.45
New Additions during the year	16.02	16.02	12.61	12.61
Weighted Average Rate of Depreciation	NA	5%	NA	5.00%
Depreciation	18.06	14.78	17.30	14.69

* As submitted by the Petitioner (erroneous)

Interest Expenses

- 3.156 The Petitioner has submitted that the secured loans payable by IPGCL to Holding Company as on July 1, 2002 based on the Transfer Scheme was Rs.210 Cr. The loans had a moratorium of four years for both principal and interest payment. The component of loan applicable to GTPS, based on gross fixed assets was Rs.118.86 Cr. The Petitioner has further submitted that it availed Plan Fund Loan of Rs.16.70 Cr from GoNCTD in FY07, with a rate of interest of 11.5%.
- 3.157 The Petitioner has also submitted that it has provided rebate of 2% to the TRANSCO for timely payment of bills. It has requested the Commission to consider this rebate as part of its interest and financing expenses and approve the same during the true-up for FY07.

- 3.158 The Petitioner has submitted interest expenses in FY07 as Rs.19.86 Cr (excluding rebate of Rs.6.25 Cr provided to the TRANSCO).
- 3.159 The Commission directed the Petitioner to submit copies of sanction letters of various loans taken from GoNCTD. It has considered all details of loan amount, payment schedule and actual interest rates to determine the actual interest expenses payable by the Petitioner in FY07.
- 3.160 Since the moratorium period for secured loans ended on June 30, 2006, the Petitioner made one biannual payment during FY07. The Commission has considered these interest payments for approval of interest expenses. The interest expenses approved by the Commission for FY07 are Rs.14.52 Cr.
- 3.161 The Commission expressed its views on the rebate on payments in the Tariff Order issued on September 22, 2006 wherein it stated that *“rebate offered by the Petitioner to TRANSCO is a commercial arrangement so as to expedite receipt of payment. The Commission has considered receivables for 2 months based on the projected sales keeping in view the norms for realisation of payment, for estimating the working capital requirement and the interest is allowed accordingly. The rebate on timely payment is therefore a trade-off with the interest on 2 months receivables considered in working capital requirement, hence does not merit any separate consideration.”*
- 3.162 The rebate provided for timely payment of bills is an established practice for generation companies and has also been considered in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, which states: *“For payment of bills of capacity charges and energy charges through a letter of credit on presentation, a rebate of 2% shall be allowed. If the payments are made by a mode other than through a letter of credit but within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.”*
- 3.163 The draft PPA entered into between IPGCL and DTL provided for a rebate of 2.5% only on the amount paid by cheque or through LC (Letter of Credit) within 7 days from the date of presentation of bills by GENCO to Bank and DTL. This provision (Clause 5.4) has been made by the Petitioner voluntarily and hence cannot be reopened at this stage.
- 3.164 The Commission had re-iterated its views in the review order issued on March 30, 2007. Therefore, the Commission retains the same opinion on the rebate provided to DTL and has not allowed the same for determination of tariff. The detailed analysis of determination of interest charges and the values approved by the Commission for true up of FY07 is shown below:

Table 3.41: Interest Expenses for FY07

(All Values in Rs Cr.)	Petition	Approved	Actuals	True-Up
Secured Loans				
Opening Balance	118.86	118.86	118.86	118.86

(All Values in Rs Cr.)	Petition	Approved	Actuals	True-Up
Additions during the year	0.00	0.00	0.00	0.00
Repayments during the year	6.60	6.60	6.60	6.60
Closing Balance	112.26	112.26	112.26	112.26
Rate of Interest	12.00%			
Interest Charges	10.50	10.50	10.40	7.19
Unsecured Loans				
Opening Balance	59.75	60.68	64.31	59.74
Additions during the year	20.00	16.02	16.70	16.70
Repayments during the year	4.51	4.51	4.51	4.51
Closing Balance	75.23	72.19	76.50	71.92
Rate of Interest	13.00% - 11.50%			
Interest Charges	8.17	7.75	9.46	7.33
Total Interest Charges	18.67	18.25	19.86	14.52
Rebate to Customers	5.45	0.00	6.25	0.00
Total	24.12	18.25	26.11	14.52

Interest on Working Capital

3.165 The Petitioner has calculated its working capital requirements considering the following components:

- (a) Cost of fuel for 1 month
- (b) Cost of Liquid Fuel for 0.5 month
- (c) O&M Expenses for 1 month
- (d) Receivables equivalent to 2 months average billing
- (e) Spares at 1% of project cost

3.166 The Commission has calculated the working capital requirement of the Petitioner considering the trued-up values for each of the components in FY07.

3.167 The Petitioner has considered the interest rate for working capital to be 11.75% p.a. for true-up of FY07. The Commission has considered an interest rate of 10.25%, based on the SBI PLR on April 1, 2006 to determine the interest on working capital.

3.168 The Commission has approved the interest on working capital as shown below:

Table 3.42: Interest on Working Capital for FY07

(Values in Rs Cr)	Norm	Petition	Approved	Actuals	True-Up
Cost of Fuel	1 Month	20.69	20.09	19.92	18.05
Cost of Secondary Fuel	½ Month	0.00	0.00	0.00	0.00
O & M Expenses	1 Month	4.15	2.79	3.09	2.86
Maintenance Spares		19.92	0.00	3.58	3.80
Receivables	2 Months	60.43	54.44	56.72	49.82
Total Working Capital	Rs Cr	105.19	77.33	83.31	74.53
Rate of Interest	%	10.75	10.25	11.75	10.25
Interest on Working Capital	Rs Cr	11.31	7.93	9.79	7.64

Total Fixed Cost

3.169 The total fixed cost for FY07 as submitted by the Petitioner and as approved by the Commission after truing-up various cost elements is summarized in the table below.

Table 3.43: Total Fixed Cost for FY07

Particulars	Petition	Order	Actuals	True Up
O&M Expenses (Rs Cr)	49.74	33.52	37.04	34.37
Depreciation (Rs Cr)	18.06	14.78	17.30	14.69
Advance Against Depreciation (Rs Cr)	0.00	0.00	0.00	0.00
Interest Charges (Rs Cr)	18.67	18.25	19.86	14.52
Rebate to Customers (Rs Cr)	5.45	0.00	6.25	0.00
Return on Equity (Rs Cr)	11.09	11.09	11.09	11.09
Interest on Working Capital (Rs Cr)	11.31	7.93	9.79	7.64
Tax Expenses (Rs Cr)	-	-	-	-
Less: Non Tariff Income (Rs Cr)	-	-	-	-
Total Fixed Cost (Rs Cr)	114.32	85.57	101.32	82.32
Fixed Cost Per Unit (p/ kWh)	78.65	58.81	73.82	59.98

Annual Revenue Requirement for FY07

3.170 The Annual Revenue Requirement (ARR) of the Gas Turbine Power Station for FY07, as approved by the Commission after truing-up of all expenses is shown below:

Table 3.44: Annual Revenue Requirement of GTPS for FY07

Particulars	Petition	Approved	Actuals	True Up	Reference
Generation					
Gross Generation (MU)	1500	1500	1412	1407	Table 3.34
Auxiliary Consumption (%)	3.10	3.00	2.80	3.00	Table 3.33
Net Generation (MU)	1454	1455	1373	1372	Table 3.34
Expenditure (Rs.Cr)					
Fuel Cost	248.28	241.09	238.99	216.62	Table 3.37
O&M Expenses	49.74	33.52	37.04	34.37	Table 3.38
Depreciation	18.06	14.78	17.30	14.69	Table 3.40
Advance Against Depreciation	0.00	0.00	0.00	0.00	-
Interest on Loans	18.67	18.25	19.86	14.52	Table 3.41
Rebate to Customers	5.45	0.00	6.25	0.00	Table 3.41
Interest on Working Capital	11.31	7.93	9.79	7.64	Table 3.42
Return on Equity	11.09	11.09	11.09	11.09	-
Tax Expenses	-	-	-	-	-
Less: Non Tariff Income	-	-	-	-	-
Annual Revenue Requirement	362.60	326.66	340.31	298.93	-

- 3.171 The ARR of the Petitioner for FY07, after true-up of various components is lower than the value approved by the Commission in the Tariff Order for FY07 issued on September 22, 2006. The Petitioner shall refund the excess amount recovered from beneficiaries in the future bills with carrying cost of 9% which was the allowed rate by the Hon'ble ATE in order dated July 21, 2006.
- 3.172 The refund of these costs to various beneficiaries shall be in the ratio of the capacity allocation (in MW) from the GTPS to each beneficiary in FY07, vide Order no. F.17(115)/Engg./DERC/2006-07/ issued by the Commission on March 31, 2007.

A4: ANALYSIS OF AGGREGATE REVENUE REQUIREMENT FOR THE CONTROL PERIOD

Introduction

- 4.1 The Commission has analysed the Multi Year Tariff petition submitted by IPGCL for approval of Aggregate Revenue Requirement and determination of Generation Tariffs to be charged during the Control Period (FY08 – FY11).
- 4.2 The Commission held technical discussions to validate the data submitted by the Petitioner and sought further clarifications on various issues. The Commission has considered all information submitted by the Petitioner as part of the tariff petitions, audited accounts for FY07, responses to various queries raised during the discussions and also during the public hearing, for determination of tariffs.
- 4.3 IPGCL is wholly owned by the Government of National Capital Territory of Delhi and has a total generating capacity of 664.50 MW. It operates three generating stations, which are:
- (a) 247.5 MW Indraprastha Thermal Power Station (IP Station);
 - (b) 135 MW Rajghat Power House Station (RPH); and
 - (c) 282 MW Indraprastha Gas Turbine Power Station (GTPS)
- 4.4 The details of each of these stations are given below:

Table 4.1: Indraprastha Thermal Power Station

Details	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Capacity (MW)	Decommissioned	62.50	62.50	62.50	60
Date of Commissioning		1 Jan 1968	1 Mar 1968	30 Apr 1968	1 Jan 1974
Fuel		Washed Coal			
Fuel Source		NCL, Bina			

Table 4.2: Rajghat Power House

Details	Unit 1	Unit 2
Capacity (MW)	67.50	67.50
Date of Commissioning	May 1990	Jan 1990
Fuel	Washed Coal	
Fuel Source	NCL, Bina	

Table 4.3: Indraprastha Gas Turbine Power Station

Details	GT1	GT2	GT3	GT4	GT5	GT6	STG1	STG2	STG3
Capacity (MW)	30	30	30	30	30	30	34	34	34
Date of Commissioning	17 Jun 1986	20 Jun 1986	11 Aug 1986	3 Sept 1986	11 Nov 1986	20 Nov 1986	24 Apr 1996	12 Aug 1997	27 Dec 1996
Fuel	Gas	Gas	Gas	Gas	Gas	Gas	Waste Heat	Waste Heat	Waste Heat
Fuel Source	GAIL HBJ Pipeline								

- 4.5 A brief snapshot of the Multi Year Tariff petition, submitted by the Petitioner for the entire company for the Control Period (FY08 – FY11) is shown below:

Table 4.4: Summary of MYT Petition for IPGCL

Particulars	Units	FY08	FY09	FY10	FY11
Gross Generation	MU	3138	3138	3138	3138
Net Generation	MU	2881	2881	2881	2881
Total Fixed Cost	Rs Cr	282.20	299.27	303.89	313.87
Total Variable Cost	Rs Cr	632.13	651.16	688.54	728.15
Total Cost	Rs Cr	914.33	950.44	992.43	1042.03
Fixed Cost per Unit	p/kWh	97.97	103.89	105.50	108.96
Variable Cost per Unit	p/kWh	219.45	226.05	239.03	252.78
Total Cost per Unit	p/kWh	317.41	329.95	344.53	361.75

- 4.6 This chapter contains detailed analysis of the MYT petition submitted by the Petitioner and the various parameters approved by the Commission for determination of generation tariff for the three generating stations operated by IPGCL.

MYT Petition for IP Station

- 4.7 The Petitioner has submitted that it is transferring one-third of the power generated from Units 2, 3 and 4 to Haryana, as per the agreement signed between erstwhile DESU and DVB with the Government of Haryana. In view of the above, out of the total installed capacity of 247.5 MW, the power generated corresponding to capacity of 62.5 MW is transferred to Haryana, and the generation corresponding to 185 MW is supplied to Delhi. The Commission expects the Petitioner to ensure proper allocation of costs, so that neither consumers of Delhi nor Haryana cross-subsidize the other.
- 4.8 The Petitioner has prepared its MYT petition considering Delhi's share of the total capacity and has appropriated all costs associated with generation, on same basis to determine the generation cost to be applicable for the power sold to Delhi.

- 4.9 A summary of the MYT petition submitted by the Petitioner for IP Station is provided in table below.

Table 4.5: Summary of MYT Petition for IP Station

Particulars	Units	FY08	FY09	FY10	FY11
Gross Generation	MU	710	710	710	710
Net Generation	MU	600	600	600	600
Total Fixed Cost	Rs Cr	75.18	78.74	77.93	82.31
Total Variable Cost	Rs Cr	167.78	178.43	189.78	201.89
Total Cost	Rs Cr	242.96	257.17	267.71	284.20
Fixed Cost per Unit	p/kWh	125.29	131.21	129.87	137.17
Variable Cost per Unit	p/kWh	279.60	297.35	316.26	336.44
Total Cost per Unit	p/kWh	404.89	428.56	446.13	473.60

Norms of Operation

Availability

- 4.10 The Commission has set availability of 45% for the IP Station for recovery of fixed cost during the Control Period, based on the target specified in the MYT Regulations issued by the Commission.
- 4.11 The Commission notes that Unit No. 5 of IP Station has been under capital overhaul for over 3 months (since September 1, 2007). As per the industry practice the overhauling time is expected to be around a month. This is not a prudent utility practice and long outages of the machine may affect the recovery of the fixed cost by the generating company. The utility will not be in a position to recover the full fixed costs, in such cases.

Plant Load Factor

Petitioner's Submission

- 4.12 The Petitioner has proposed to achieve Plant Load Factor (PLF) of 43.82% for the station during the Control Period, vis-à-vis the norm of 45.00% specified in the MYT Regulations issued by the Commission.
- 4.13 The Petitioner has submitted that PLF of IP Station is low due to the fact that it has been in operation for more than 38 years and its performance has deteriorated with time. The Petitioner further submitted that the no major R&M has been done in the past due to lack of funds, which has led to poor performance, and forced the Petitioner to operate the plant on partial loading.

Commission's Analysis

- 4.14 The Commission had considered the vintage of the plant while specifying the norms of operation in the MYT Regulations. The Petitioner has submitted no reason for the request in further relaxation of the PLF, and hence, the Commission has approved the PLF during the Control Period to be 45%. This PLF has been used for calculation of gross generation, fuel quantity and variable cost to be approved for the Control Period. The details of the proposed and approved PLF are as shown below.

Table 4.6: Plant Load Factor for IP Station

(Values in %)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Plant Load Factor	43.82	43.82	43.82	43.82	45.00	45.00	45.00	45.00

Auxiliary Consumption**Petitioner's Submission**

- 4.15 The Petitioner has projected its auxiliary consumption during the Control Period to be 15.50%, considering the age and condition of the plant. The Petitioner has reasoned the auxiliary consumption to be high as the plant is often operated at part loads, during which auxiliaries of the plant operate at full capacities.
- 4.16 The Petitioner has requested the Commission to approve the relaxed level of auxiliary power consumption for the Control Period.

Commission's Analysis

- 4.17 The Commission observes that auxiliary consumption of the plant in FY07 has been higher than the value proposed by the Petitioner in its ARR petition for FY07 which was 13.56%. Since the Petitioner seems to have not taken any steps to reduce the auxiliary consumption, the Commission views that the Petitioner is required to make serious efforts in reducing its auxiliary consumption to achieve the target levels specified in the Regulations.

Table 4.7: Auxiliary Consumption for IP Station

(Values in %)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Auxiliary Consumption	15.50	15.50	15.50	15.50	11.64	11.64	11.64	11.64

Gross and Net Generation**Petitioner's Submission**

- 4.18 The Petitioner has projected gross generation during the Control Period to be 710 MU considering Delhi's share of 185 MW and projected PLF of 43.82%. The net generation, considering the proposed auxiliary consumption of 15.50% has been proposed to be 600 MU.

Commission's Analysis

- 4.19 The Commission has approved the gross and net generation for IP Station taking in to consideration the share of Delhi in the station, PLF of 45.00% and auxiliary consumption of 11.64% according to the norms for the Control Period.
- 4.20 The net generation for Control Period as submitted by the Petitioner and as calculated by the Commission is given below.

Table 4.8: Generation for IP Station

Particulars	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Gross Generation	710	710	710	710	729	729	729	729
Auxiliary Consumption (%)	15.50	15.50	15.50	15.50	11.64	11.64	11.64	11.64
Net Generation	600	600	600	600	644	644	644	644

Station Heat Rate**Petitioner's Submission**

- 4.21 The Petitioner has expressed IP Station's inability to achieve SHR of 3235 kCal/kWh during the Control Period, based on the target specified in the MYT Regulations. The Petitioner has pleaded that SHR for any generation station deteriorates with time and IP Station plant has been in operation for more than 38 years and is not in a condition to run at its full rated capacity due to technical constraints.
- 4.22 The Petitioner has also submitted that the units have outlived their useful life and are susceptible to frequent outages due to the poor physical condition of plant and lack of major R&M activities since a long time.

Commission's Analysis

- 4.23 The Petitioner had proposed its SHR for FY07 as 3493 kCal/ kWh in its ARR petition. However, it has reported actual heat rate for the year as 3801 kCal/ kWh in the true-up petition, with no concrete justification for the deterioration in performance. The Commission has retained the approved figure of 3235 kCal/kWh based on the values specified in the MYT Regulations, which was also agreed to by the Petitioner in line with the PPA submitted by TRANSCO.
- 4.24 The detail of the submission made by the Petitioner and the heat rate approved by the Commission is given in the table below:

Table 4.9: Station Heat Rate for IP Station

(SHR in kCal/ kWh)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Station Heat Rate	3825	3825	3825	3825	3235	3235	3235	3235

Determination of Energy Charges

- 4.25 The energy charges (variable cost) of the plant depends upon the operational and fuel parameters such as the Station Heat Rate, Auxiliary Consumption, Fuel Cost and the Gross Calorific Value of fuel used. The Commission has considered all these factors to determine the variable cost of generation from IP Station.

Fuel Cost

Petitioner's Submission

- 4.26 The Petitioner submitted the expenses towards annual fuel costs based on the estimated weighted average Gross Calorific Value (GCV) of coal at 3803 kCal/kg and fuel oil at 10,680 kCal/l.
- 4.27 The price of coal has been escalated at a rate of 7.66% per annum to arrive at the coal cost during the Control Period. The freight rate has been escalated at 5.18% per annum. The escalation rates have been proposed based on CERC's notification on escalation rates issued on April 4, 2007.
- 4.28 The Petitioner has estimated 3.00% loss in quantity of purchased coal due to extra surface moisture present in washed coal and 0.80% loss is on account of transit loss.
- 4.29 The Petitioner has proposed specific oil consumption of 9.88 ml/kWh during the Control Period. The price of secondary fuel oil has been escalated annually at 5% on actual prices for FY07 to arrive at prices for oil for each year of the Control Period.

- 4.30 The Petitioner submitted the following details for determination of fuel cost for the Control Period, as shown in the table below:

Table 4.10: Proposed Fuel Costs for IP Station

Particulars	Unit	FY08	FY09	FY10	FY11
Primary Fuel – Coal					
GCV of Coal	kCal/kg	3,803	3,803	3,803	3,803
Coal Consumed	MT	694,551	694,551	694,551	694,551
Transit Loss	%	3.80	3.80	3.80	3.80
Gross Quantity of Coal	MT	721,987	721,987	721,987	721,987
Price of Coal	Rs/MT	2031.48	2164.37	2306.26	2457.79
Cost of Coal	Rs Cr	146.67	156.26	166.51	177.45
Secondary Fuel – LDO					
Specific Oil Consumption	ml/kWh	9.88	9.88	9.88	9.88
LDO Consumed	KL	7,016	7,016	7,016	7,016
GCV of Oil	kCal/l	10,680	10,680	10,680	10,680
Price of LDO	Rs/Kl	30086.49	31590.81	33170.36	34828.87
Cost of LDO	Rs Cr	21.11	22.16	23.27	24.44
Total Fuel Cost	Rs Cr	167.78	178.43	189.78	201.89

Commission's Analysis

- 4.31 The Commission has accepted the GCV values for coal and secondary oil as submitted by the Petitioner. The Commission has approved specific fuel oil consumption at 9.29 ml/kWh, based on the norms specified in the MYT Regulations.
- 4.32 The Commission has calculated the net coal requirement based on the difference between the input fuel energy required to generate 710 MU of electricity and the energy provided by secondary fuel.
- 4.33 The Commission has considered coal transit loss of 0.8% to obtain the gross coal requirement for IP Station. The contention of the Petitioner that 0.8% loss in coal on account of transit and handling and 3% loss on account of surface moisture due to deshaling of coal have been provided for, by the Commission in its previous Tariff Orders is not correct. Commission has never allowed 3.8% loss in coal on account of transit and surface moisture loss in its previous Tariff Orders. It may also be noted that NTPC Dadri Thermal Plant which is running on 100% washed coal is also being allowed only 0.8% loss of coal by CERC. Similarly, NTPC Badarpur Plant which is using substantial quantity of washed coal is being allowed 0.8% fuel loss only.

- 4.34 Furthermore, it may also be noted that certain benefits accrue to the generating company on use of washed coal. For instance, the big boulders of coal get broken during washing of coal and stones also get removed. Thus the generating company saves on auxiliary power consumption due to the improvement in the functioning of coal handling plant and the coal mills as well as reduction in ash handled by the ash handling plant. The use of washed coal also results in better availability of the boiler with consequent improvement in PLF and reduction in auxiliary power consumption.
- 4.35 The Petitioner has considered escalation in coal price as 7.66% and freight rate escalation as 5.18% based on a CERC notification. The Commission notes that these rates have been specified by CERC for the purpose of bid evaluation and cannot be used for tariff determination. In addition these rates are revised by CERC at regular intervals, normally on a six-monthly basis, and hence cannot be used for the duration of four years (Control Period).
- 4.36 The details of the total fuel costs approved by the Commission for the Control Period are shown in the table below.

Table 4.11: Approved Fuel Costs for IP Station

Particulars	Unit	FY08	FY09	FY10	FY11
Primary Fuel – Coal					
GCV of Coal	kCal/kg	3803	3803	3803	3803
Coal Consumed	MT	601,917	601,917	601,917	601,917
Transit Loss	%	0.80	0.80	0.80	0.80
Gross Quantity of Coal	MT	606,771	606,771	606,771	606,771
Price of Coal	Rs/MT	1906.52	1906.52	1906.52	1906.52
Cost of Coal	Rs Cr	115.68	115.68	115.68	115.68
Secondary Fuel – LDO					
Specific Oil Consumption	ml/kWh	9.00	9.00	9.00	9.00
LDO Consumed	KL	6,563	6,563	6,563	6,563
GCV of Oil	kCal/kg	10,680	10,680	10,680	10,680
Price of LDO	Rs/KL	28653.80	28653.80	28653.80	28653.80
Cost of LDO	Rs Cr	18.81	18.81	18.81	18.81
Total Fuel Cost	Rs Cr	134.49	134.49	134.49	134.49

- 4.37 The fuel cost incurred by the Petitioner during the Control Period will be adjusted using the mechanism for Fuel Price Adjustment (FPA) as specified in the MYT Regulations. The weighted average price and the weighted average GCV of fuel to be taken for FPA shall be calculated considering the actual consumption of fuel and the corresponding price and GCV.

- 4.38 The Fuel Price Adjustment (FPA) applicable for calculation of Energy Charges for coal-based generating stations, is $FPA = A + B$

Where,

FPA – Fuel price Adjustment for a month in Paise/kWh Sent out;

A – Fuel price adjustment for Secondary Fuel oil in Paise/kWh sent out;

B – Fuel price adjustment for Coal in Paise/kWh sent out;

$$A = \frac{10 * SFC_n * (P_{om} - P_{os})}{(100 - AC_n)}$$

$$B = \frac{10}{(100 - AC_n)} * [SHR_n * \{(P_{cm}/K_{cm}) - (P_{cs}/K_{cs})\} - SFC_n * \{(K_{om} * P_{cm} / K_{cm}) - K_{os} * P_{cs}/K_{cs}\}]$$

Where,

SFC_n = Normative Specific Fuel Oil consumption in l/kWh;

SHR_n = Normative Gross Station Heat Rate in Kcal/kWh;

AC_n = Normative Auxiliary consumption in percentage;

P_{om} = Weighted average price of fuel oil on as consumed basis during the month in Rs./KL;

K_{om} = Weighted average Gross Calorific Value of fuel oils fired at boiler front for the month in Kcal/Litre;

P_{os} = Base value of price of fuel oils as taken for determination of base energy charge in Tariff Order in Rs./ KL;

K_{os} = Base value of Gross Calorific Value of fuel oils as taken for determination of base energy charge in Tariff Order in Kcal/Litre;

P_{cm} = Weighted average price of coal procured and burnt during the month at the power station in Rs. / MT;

K_{cm} = Weighted average Gross Calorific Value of coal fired at boiler front for the month in Kcal/kg

P_{cs} = Base value of price of coal as taken for determination of base energy charge in Tariff Order in Rs./ KL;

K_{cs} = Base value of Gross Calorific Value of coal as taken for determination of base energy charge in Tariff Order in Kcal/kg

- 4.39 The weighted average price of fuel oil (P_{os}), weighted average GCV of fuel oil (K_{os}) weighted average price of coal (P_{cs}), weighted average GCV of coal (K_{cs}) to be considered for the purpose of Fuel Price Adjustment (FPA) during the first year of the Control Period (FY08) has been calculated based on the approved values for consumption, prices and GCV of fuels from various sources.

Table 4.12: Weighted Average Price and GCV of Fuel

Coal		LDO	
Quantity (MT)	756,963	Quantity (kl)	8,460
GCV (kCal/kg)	3,803	GCV (kCal/kl)	10,680
Price (Rs/Ton)	1906.52	Price (Rs/kl)	28653.80

- 4.40 The Fuel Price Adjustment would be done on a monthly basis and suitable positive and negative adjustments in variable cost would be made in the bills submitted by the Petitioner.

Variable Cost

Petitioner's Submission

- 4.41 The Petitioner submitted the variable cost of generation for the Control Period, considering the projected fuel costs and the proposed net generation from the plant. The proposed variable costs are as follows:

Table 4.13: Proposed Variable Cost for IP Station

Particulars	Unit	FY08	FY09	FY10	FY11
Gross Generation	MU	710	710	710	710
Auxiliary Energy Consumption	%	15.50	15.50	15.50	15.50
Net Generation	MU	600	600	600	600
Total Fuel Cost	Rs Cr	167.78	178.43	189.78	201.89
Variable Cost	p/kWh	279.60	297.35	316.26	336.44

Commission's Analysis

- 4.42 The Commission analyzed the details of fuel supply for determination of fuel costs for the Control Period. The total fuel costs as approved by the Commission after, considering the projected fuel prices, gross calorific value and SHR of 3235 kCal/kWh (on GCV basis), is given in table below.

Table 4.14: Approved Variable Cost for IP Station

Particulars	Unit	FY08	FY09	FY10	FY11
Gross Generation	MU	729	729	729	729
Auxiliary Energy Consumption	%	11.64	11.64	11.64	11.64
Net Generation	MU	644	644	644	644
Total Fuel Cost	Rs Cr	134.49	134.49	134.49	134.49
Variable Cost (on ESO Basis)*	p/kWh	208.71	208.71	208.71	208.71

* Subjected to revision on account of fuel price adjustments (FPA)

Determination of Fixed Cost

- 4.43 The Commission analyzed all the components of fixed cost submitted by the Petitioner in detail to determine the applicable fixed cost for each year of the Control Period. The fixed cost include the following components according to the MYT Regulations:
- Operations and Maintenance Expenses;
 - Depreciation;
 - Advance Against Depreciation;
 - Return on Equity
 - Interest Expenses; and
 - Interest on Working Capital
- 4.44 The Petitioner has considered escalation rate of 5.18% on account of inflation, based on a CERC notification. The Commission notes that these rates have been specified by CERC for the purpose of bid evaluation and cannot be used for tariff determination. In addition these rates are revised by CERC at regular intervals, normally on a six-monthly basis, and hence cannot be used for the duration of four years (Control Period). The Commission has therefore considered the annual escalation on account of inflation to be at a rate of 4%, as considered in the previous tariff orders.

Operations and Maintenance Expenses

- 4.45 The Operation and Maintenance (O&M) Expenses have been determined by the Petitioner for each year of the Control Period and comprise of Employee Expenses, Repairs & Maintenance, Administrative & General Expenses, Water Cess, Property Tax, etc.
- 4.46 The Commission has projected the total O&M Expenses for the Control Period by considering base O&M Expenses, which has been calculated using the average of the base O&M Expenses in the last two years (FY06 and FY07).

Table 4.15: Base O&M Expenses

Particulars	FY06	FY07
O&M Expenses (Rs.Cr)	38.62	37.31
Average O&M (Rs.Cr)	37.97	

- 4.47 The average O&M Expenses thus obtained has been escalated by 4% annually to arrive at the O&M Expenses for the Control Period. These expenses have been proportionally allocated to Employee Expenses, Repairs & Maintenance, and Administrative & General Expenses.

Employee Expenses

Petitioner's Submission

- 4.48 The Petitioner has considered the following components for calculating Employee Expenses: salaries, dearness and other allowances, leave encashment, staff welfare expenses, etc.
- 4.49 The Petitioner has considered the estimated Employee Expenses for FY07 as the basis for forecasting Employee Expenses for the Control Period. It has escalated the salary costs by 40% of the provisional value for FY07 on account of the expected increase due to the recommendations of the 6th Pay Commission. It has submitted that the increase due to the implementation of the 6th Pay Commission recommendations would be effective from January 1, 2006 and therefore, requested the Commission for considering the arrears of FY06 and FY07 to be provided in FY08 and FY09.
- 4.50 The Petitioner has further escalated the estimated salary and allowances for FY07 (after considering the impact of the 6th Pay Commission) at an annual rate of 4% during the Control Period. It has calculated the Dearness Allowance (DA) for FY08 at 6% of the basic salary projected for the year, with 6% addition in DA in each subsequent year.

- 4.51 The Petitioner has escalated all expenses related to Medical Reimbursement, Travelling Allowance, Leave Travel Assistance and Staff Welfare Expenses in FY07 at an annual rate of 5.18% during the Control Period, considering the rate specified by CERC for escalation of fixed costs.
- 4.52 The Petitioner has requested the Commission to consider employee cost as uncontrollable and consider the increase on account of 6th Pay Commission or any change in law/ policy.

Commission's Analysis

- 4.53 The Commission has analysed the submission made by the Petitioner regarding its Employee Expenses related to Medical Reimbursement, Travelling Allowance, Leave Travel Assistance and Staff Welfare Expenses, etc.
- 4.54 The Commission has apportioned the average O&M Expenses and has escalated the Employee Expenses at an annual rate of 4% for the Control Period.
- 4.55 The Commission has recognised the uncontrollable nature of the 6th Pay Commission recommendations and has considered a 10% increase in total Employee Expenses, as shown below.

Table 4.16: Impact of 6th Pay Commission recommendations

Particulars (Rs. Cr.)	FY06	FY07	FY08	FY09	FY10	FY11
Employee Expenses	21.22	20.22	21.40	22.25	23.14	24.07
Likely increase due to the 6 th Pay Commission recommendations (10%)	0.53	2.02	2.14	2.23	2.31	2.41

- 4.56 Since the arrears on account of revision of employee costs are expected to be paid only in FY09, the Commission has considered the payment of arrears in tariff of FY09. Similarly, the increase in salaries has been considered for each year, but the impact of such increase has only been taken from FY09 onwards. The Commission shall true-up the impact on account of 6th Pay Commission recommendations based on the actual impact of the same.
- 4.57 The details of Employee Expenses, as submitted by the Petitioner and as approved by the Commission are shown in the table below:

Table 4.17: Employee Expenses for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Employee Expenses	34.32	37.17	35.67	38.89	21.40	22.25	23.14	24.07
Impact of 6 th Pay Commission recommendations	-	-	-	-	-	2.23	2.31	2.41

Arrears for FY06, FY07 & FY08	-	-	-	-	-	4.69	-	-
Total Employee Expenses	34.32	37.17	35.67	38.89	21.40	29.17	25.45	26.47

Repair and Maintenance Expenses

Petitioner's Submission

- 4.58 The Petitioner has considered expenses on R&M of plant and machinery, building, other civil works, hydraulic works, vehicles, furniture and fixtures, etc. for determining the R&M Expenses for the Control Period. The Petitioner has projected R&M Expenses for the Control Period by escalating the provisional costs in FY07 at an annual rate of 5.18%.
- 4.59 The Petitioner has requested the Commission to allow the proposed R&M Expenses for smooth operation of the plant and to achieve the target level of generation. The Petitioner has also submitted that the R&M expenditure will be relatively high due to small size of the units, poor condition at the time of unbundling and age of the plant.

Commission's Analysis

- 4.60 For obtaining the R&M Expenses applicable during the Control Period, the proportionally shared expenses of R&M have been escalated annually at 4%. The details of the proposed and approved R&M Expenses of IP Station are:

Table 4.18: R&M Expenses for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
R&M Expenses	14.97	15.75	16.56	17.42	15.06	15.66	16.29	16.94

Administrative and General Expenses

Petitioner's Submission

- 4.61 The Petitioner has considered the actual Administrative and General (A&G) Expenses for FY07 as the basis for forecasting the A&G Expenses for the Control Period. The Petitioner requests the Commission to approve the property tax and water-cess as pass-through on actual basis besides other expenses.

Commission's Analysis

- 4.62 The Commission has approved the A&G Expenses for each year of the Control Period by escalating the proportionally shared A&G Expenses for FY07 by 4% per annum.

- 4.63 The A&G expenses as proposed by the Petitioner and as approved by the Commission for the Control Period are as given in table below:

Table 4.19: A&G Expenses for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
A&G Expenses	2.55	2.68	2.81	2.97	3.03	3.15	3.28	3.41

- 4.64 The total O&M Expenses approved for the Control Period are shown in the table below:

Table 4.20: O&M Expenses for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
R&M Expenses	14.97	15.75	16.56	17.42	15.06	15.66	16.29	16.94
Employee Expenses	34.32	37.17	35.67	38.89	21.40	22.25	23.14	24.07
A&G Expenses	2.55	2.68	2.81	2.97	3.03	3.15	3.28	3.41
Impact of 6 th Pay Commission recommendations	-	-	-	-	-	6.92	2.31	2.41
Total O&M Expenses	51.84	55.59	55.04	59.28	39.48	47.98	45.02	46.82

Depreciation

Petitioner's Submission

- 4.65 The Petitioner has calculated depreciation for the Control Period based on the written down value method and using the depreciation rates specified in the MYT Regulations. The Petitioner has not proposed any asset addition in IP Station during the Control Period.

Commission's Analysis

- 4.66 During the policy direction period (FY03 – FY07), the Commission had calculated depreciation, using an average depreciation rate of 4% on the total GFA of IP Station, due to lack of asset details.
- 4.67 The Petitioner has now submitted break-up of its GFA as part of the petition, in line with the requirements of the MYT Regulations. However, the total opening balance of GFA of IP Station submitted by the Petitioner is different from the value approved by the Commission in its previous Tariff Order. In the absence of non availability of assets break-up in the past, the Commission is unable to determine the exact reasons for the mismatch.

- 4.68 Since the Commission is unable to determine the ‘correct’ opening balance for each asset category, it has determined the opening balance for each asset for FY08 using the total approved closing balance of GFA in FY07 and proportionately modifying the asset values as submitted by the Petitioner.
- 4.69 Depreciation has been calculated on each asset category, using the depreciation rates, as specified in the MYT Regulations. The depreciation as estimated by the Petitioner and as approved by the Commission for the Control Period are as follows:

Table 4.21: Depreciation for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Opening GFA*	57.04	52.72	49.07	45.96	69.57	69.57	69.57	69.57
New Addition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Closing GFA	52.72	49.07	45.96	43.32	69.57	69.57	69.57	69.57
Depreciation	4.32	3.66	3.10	2.64	5.88	5.88	5.88	5.88
Cumulative Depreciation	34.92	39.23	42.89	45.99	32.58	38.46	44.34	50.22

* As submitted by the Petitioner (erroneous)

Advance Against Depreciation

Petitioner’s Submission

- 4.70 The Petitioner has not projected any requirement for advance against depreciation (AAD) during the Control Period for IP Station.

Commission’s Analysis

- 4.71 The Commission has calculated the advance against depreciation for each year of the Control Period, using the principles specified in the MYT Regulations and considering the details of actual cumulative debt repayment and accumulated depreciation claimed by the Petitioner.
- 4.72 As submitted by the Petitioner and calculated by the Commission, there is no requirement of AAD for IP Station during the Control Period.

Return on Equity

Petitioner’s Submission

- 4.73 The Petitioner has estimated the Return on Equity (ROE) at 14% in line with the MYT Regulations. The proposed ROE of IP Station considering the average equity of Rs.1.20 Cr in each year of the Control Period is Rs.0.17 Cr.

Commission's Analysis

- 4.74 The Commission has calculated ROE at 14% on the equity base of Rs.1.20 Cr as submitted by the Petitioner. The details of proposed return on equity and that approved by the Commission are as follows:

Table 4.22: Return on Equity for IP Station

Values in Rs. Cr.	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Equity (Opening Balance)	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Additions during the year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity (Closing Balance)	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Average Equity	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Return on Equity	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17

Interest Expenses

Petitioner's Submission

- 4.75 The Petitioner has not proposed drawl of any fresh loan during the Control Period. It has submitted details of various plan fund loans drawn from Delhi Government at interest rates between 11.5% and 13.0%. The Petitioner has considered 2% rebate to customers for timely payments as part of interest costs for the Control Period.
- 4.76 The Petitioner has estimated the interest liability for each year of the Control Period, considering the opening balance of outstanding loans as on April 1, 2007 and the repayment schedule. The Petitioner has stated that the interest charges are decreasing during the Control Period due to reduction in the principal loan amount.

Commission's Analysis

- 4.77 The Commission has determined the interest costs for each year of the Control Period by considering the opening balance of loans, the actual repayment schedule and by applying the rate of interest applicable on various loans.
- 4.78 The Commission had re-iterated its views on the issue of rebate offered to customers in the review order issued on March 30, 2007. The same principle has also been followed by the CERC for determination of tariff for various generating stations, as detailed in Para 3.51 to Para 3.54 above.
- 4.79 The Commission notes that the same condition has been retained in the PPA signed by the Petitioner on March 31, 2007. Therefore, the Commission retains the same opinion on the rebate provided to DTL and has not allowed the same for determination of tariff.

- 4.80 The detailed analysis of determination of interest charges and the values approved by the Commission for true up of FY07 is shown below:

Table 4.23: Interest Expenses for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Secured Loans								
Opening Loans	1.71	1.51	1.31	1.11	1.71	1.51	1.31	1.11
Addition during year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Repayment during year	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Closing Loans	1.51	1.31	1.11	0.91	1.51	1.31	1.11	0.91
Rate of Interest	12.00%				12.00%			
Interest Payment	0.19	0.17	0.15	0.12	0.20	0.17	0.15	0.13
Unsecured Loans								
Opening Loans	40.97	37.91	34.86	31.81	36.51	33.46	30.41	27.36
Addition during year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Repayment during year	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
Closing Loans	37.91	34.86	31.81	28.75	33.46	30.41	27.36	24.31
Rate of Interest	13.00%-11.50%				13.00%-11.50%			
Interest Payment	4.57	4.22	3.86	3.51	4.57	4.22	3.86	3.51
Total Interest Charges	4.77	4.39	4.01	3.63	4.77	4.39	4.01	3.64
Rebate to Customers	4.70	4.98	5.19	5.52	0.00	0.00	0.00	0.00
Total	9.47	9.37	9.20	9.15	4.77	4.39	4.01	3.64

Interest on Working Capital

Petitioner's Submission

- 4.81 The Petitioner has considered the following components as part of its working capital requirements:
- Cost of fuel for 2 months;
 - Cost of liquid fuel for 2 months;
 - O&M Expenses for 1 month;
 - Receivables equivalent to 2 months average billing; and
 - Spares at 1% of project cost.

4.82 The working capital proposed by the Petitioner for the Control Period is as follows.

Table 4.24: Proposed Working Capital for IP Station

(Values in Rs Cr)	FY08	FY09	FY10	FY11
Cost of Fuel	24.45	26.04	27.75	29.57
Cost of Secondary Fuel	3.52	3.69	3.88	4.07
O & M Expenses	4.32	4.63	4.59	4.94
Maintenance Spares	0.85	0.85	0.85	0.85
Receivables	40.49	42.86	44.62	47.37
Total Working Capital	73.63	78.08	81.69	86.81

4.83 The Petitioner has computed the interest on working capital for the Control Period, considering the SBI Prime Lending Rate as on April 1, 2007 of 12.75% per annum.

Commission's Analysis

4.84 The Commission has estimated the working capital requirement of the Petitioner for the Control Period based on the following norms:

- (a) Cost of Coal for 1.5 months for pithead stations and for 2 months in non-pithead stations corresponding to the Target Availability;
- (b) Cost of Secondary Fuel Oil for 2 months corresponding to the Target Availability;
- (c) O&M Expenses for 1 month;
- (d) Receivables equivalent to 2 months of fixed and variable costs for sale of electricity calculated on the Target Availability;
- (e) Maintenance spares: 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation;

4.85 The Commission shall initiate appropriate action to include the provision for maintenance spares in working capital requirements in the MYT regulations.

4.86 The Commission has not considered any escalation in fuel costs in its calculation for working capital requirements for the Control Period. Though the variation in fuel costs would be adjusted automatically through the FPA mechanism, the Commission shall not true-up the working capital requirements due to the same. Hence, the Commission has escalated the working capital requirement for FY09, FY10 and FY11 at an annual rate of 4% to consider for the escalation in fuel costs.

- 4.87 The Commission has calculated the working capital requirement of the Petitioner considering the approved values of the above components for each year of the Control Period (and the above explained escalation), as shown below:

Table 4.25: Approved Working Capital for IP Station

(Values in Rs Cr)	FY08	FY09	FY10	FY11
Cost of Fuel	19.28	19.28	19.28	19.28
Cost of Secondary Fuel	3.13	3.13	3.13	3.13
O & M Expenses	3.29	4.00	3.75	3.90
Maintenance Spares	0.76	0.80	0.85	0.90
Receivables	32.04	33.49	32.97	33.28
Total Working Capital	58.50	60.71	59.99	60.50
4% escalation in Working Capital		63.14	64.89	68.05

- 4.88 The Commission has calculated the interest on working capital for the Control Period, considering an interest rate of 12.75% based on the existing SBI Prime Lending Rate for short term loans as of April 9, 2007. This rate is applicable from April 1, 2007 for calculation for interest on working capital for FY08.
- 4.89 The following table details the interest on working capital, as submitted by the Petitioner and as approved by the Commission, for the Control Period:

Table 4.26: Interest on Working Capital for IP Station

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Interest on Working Capital	9.39	9.96	10.42	11.07	7.46	8.05	8.27	8.68

Tax Expenses

Petitioner's Submission

- 4.90 The Petitioner has not projected tax expenses for the Control Period.

Commission's Analysis

- 4.91 The Commission has not considered any expenses on account of Income Tax or Fringe Benefit Tax, payable by the Petitioner during the Control Period, for calculation of fixed cost. Income Tax, if any, shall be treated as expense and shall be recoverable from the Beneficiaries.

- 4.92 Recovery of income tax shall be done directly by the Petitioner from the beneficiaries without making any application before the Commission. Any refund of income tax shall be adjusted with the tax payable in the year of its receipt, and not against the year for which it is applicable.
- 4.93 In case of any objections by the beneficiaries to the amounts claimed on account of income tax, they shall first make payments to the Petitioner and may subsequently make an application before the Commission regarding the same.

Fixed Cost

- 4.94 The fixed cost for IP Station for the Control Period, based on the analysis of various components by the Commission, as detailed above, is shown below:

Table 4.27: Total Annual Fixed Cost for IP Station

Particulars	FY08	FY09	FY10	FY11	Reference
O&M Expenses (Rs Cr)	39.48	47.98	45.02	46.82	Table 4.20
Depreciation (Rs Cr)	5.88	5.88	5.88	5.88	Table 4.21
Advance Against Depreciation (Rs Cr)	0.00	0.00	0.00	0.00	-
Return on Equity (Rs Cr)	0.17	0.17	0.17	0.17	Table 4.22
Interest Charges (Rs Cr)	4.77	4.39	4.01	3.64	Table 4.23
Interest on Working Capital (Rs Cr)	7.46	8.05	8.27	8.68	Table 4.26
Total Fixed Cost (Rs Cr)	57.76	66.47	63.35	65.18	-
Net Generation (MU)	644	644	644	644	Table 4.8
Fixed Cost Per Unit (p/ kWh)	89.64	103.16	98.31	101.15	-

Determination of Generation Tariff

- 4.95 The generation tariff applicable to the IP Station during the Control Period, based on the fixed and variable costs approved by the Commission, are shown below:

Table 4.28: Generation Tariff for IP Station for the Control Period

(Values in Rs Cr)	FY08	FY09	FY10	FY11	Reference
Fixed Costs	57.76	66.47	63.35	65.18	Table 4.27
Net Generation (MU)	644	644	644	644	Table 4.8
Fixed Cost per Unit (p/ kWh)	89.64	103.16	98.31	101.15	Table 4.27
Total Fuel Cost (Rs Cr)	134.49	134.49	134.49	134.49	Table 4.12
Variable Cost per Unit (p/ kWh)	208.71	208.71	208.71	208.71	Table 4.13
Total Cost (Rs Cr)	192.25	200.96	197.84	199.67	-
Total Cost per Unit (p/ kWh)	298.35	311.87	307.02	309.86	-

- 4.96 The total fixed cost (capacity charges) shall be recovered by the Petitioner at target availability specified by the Commission. The recovery of fixed cost below the level of target availability shall be on pro rata basis with no fixed cost payable at zero availability. For this purpose, the availability of the power station shall be certified by the SLDC. Any adjustment of recovery of annual fixed cost shall be based on the cumulative availability as certified by the SLDC at the end of the year. The fixed cost shall be recovered in 12 equal monthly instalments in proportion to allocated/contracted capacity.
- 4.97 Intra-state availability based tariff (ABT) is in operation in Delhi since April 1, 2007. Consequent to this, the variable cost shall be billed by the Petitioner to the beneficiaries based on the scheduled generation during the month from the station as per the rates approved by the Commission.
- 4.98 Incentive shall be payable at a flat rate of 25 paise/kWh for the scheduled generation achieved beyond the level corresponding to target PLF. However, the generating station shall comply with the SLDC instructions with respect to the backing down of the generation and such backing down shall not qualify for calculation of PLF for Incentive. Further, in case of non-compliance by generating stations to backing down instructions given by SLDC, generation during backing down period as instructed by SLDC shall not be considered for Incentive purpose. The SLDC shall at the end of the year, certify the generation level of generating stations which qualifies for Incentive purpose as per the above guidelines.
- 4.99 Deviations from the schedule are to be accounted for in accordance with the principles laid down in the order of the Commission regarding intra-state ABT.

MYT Petition for Rajghat Power House

4.100 A summary of the MYT petition submitted by the Petitioner for Rajghat Power House (RPH) is provided in table below.

Table 4.29: Summary of MYT Petition for Rajghat Power House

Particulars	Units	FY08	FY09	FY10	FY11
Gross Generation	MU	828	828	828	828
Net Generation	MU	728	728	728	728
Total Fixed Cost	Rs Cr	86.78	91.57	92.37	94.67
Total Variable Cost	Rs Cr	156.85	166.92	177.65	189.10
Total Cost	Rs Cr	243.63	258.49	270.02	283.77
Fixed Cost per Unit	p/kWh	119.13	125.70	126.79	129.95
Variable Cost per Unit	p/kWh	215.31	229.13	243.87	259.59
Total Cost per Unit	p/kWh	334.44	354.83	370.66	389.54

Norms of Operation

- 4.101 The Commission has considered the various submissions of the Petitioner as part of the MYT petition and during the public hearing process for approval of various norms of operation during the Control Period.
- 4.102 Since the Petitioner has not sought any relaxation in norms apart from the Station Heat Rate and Auxiliary Consumption, the Commission has considered all other norms of operation (availability and PLF) based on the values specified in the MYT Regulations. Issues relating to Auxiliary Power Consumption and Station Heat Rate are discussed below.

Auxiliary Consumption

Petitioner's Submission

- 4.103 The Petitioner has projected its auxiliary consumption during the Control Period to be 12.00%. The Petitioner has submitted that the auxiliary consumption of any power generating plant has direct linkage with the size of generating units. It has stated that CEA has recommended 11.50% to 12.00% as auxiliary power consumption for units having capacity less than 200 MW.
- 4.104 The Petitioner has requested the Commission to relax the auxiliary power consumption norm and to approve auxiliary consumption as proposed.

Commission's Analysis

- 4.105 The Commission had approved auxiliary consumption of RPH to be 11.28% for FY06 and FY07, considering the Petitioner's commitment to achieve the same, which was committed to by the Petitioner during the ARR and tariff determination process for FY05, as detailed in the Tariff Order for IPGCL for FY05 issued on June 9, 2004.
- 4.106 In view of the above, as well as the previous commitment of the Petitioner, the Commission has approved the auxiliary consumption of RPH during the Control Period as 11.28%

Table 4.30: Auxiliary Consumption for RPH

(Values in %)	Proposed				Approved			
	FY 08	FY 09	FY 10	FY 11	FY 08	FY 09	FY 10	FY 11
Auxiliary Consumption	12.00	12.00	12.00	12.00	11.28	11.28	11.28	11.28

Gross and Net Generation**Petitioner's Submission**

- 4.107 The Petitioner has projected gross generation during the Control Period to be 828 MU at projected PLF of 70.00%. The net generation, considering the proposed auxiliary consumption of 12.00% has been proposed to be 728 MU.

Commission's Analysis

- 4.108 The Commission has calculated the gross and net generation for RPH considering PLF of 70.00% and auxiliary consumption of 11.28% according to the operational norms prescribed in the MYT Regulations.
- 4.109 The details of gross and net generation from RPH during the Control Period as submitted by the Petitioner and as approved by the Commission are given below.

Table 4.31: Generation for RPH

Particulars	Proposed				Approved			
	FY 08	FY 09	FY 10	FY 11	FY 08	FY 09	FY 10	FY 11
Plant Load Factor (%)	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00
Gross Generation	828	828	828	828	828	828	828	828
Auxiliary Consumption (%)	12.00	12.00	12.00	12.00	11.28	11.28	11.28	11.28
Net Generation	728	728	728	728	734	734	734	734

Station Heat Rate**Petitioner's Submission**

- 4.110 The Petitioner has proposed to achieve SHR of 3250 kCal/kWh for RPH during the Control Period and requested the Commission to approve the same.

Commission's Analysis

- 4.111 The Commission notes that the Petitioner has not specified any reason for request of relaxation of heat rate of the RPH, as the ageing refers to IP Station and the gas supply constraints are valid for the GTPS.
- 4.112 The issue was discussed at length in the public hearing and the Commission provided opportunity to the Petitioner to submit suitable arguments to justify the request for relaxed norms of operation. The Petitioner mentioned that the plant has been facing technical problems in its turbines, which has been causing poor performance. The Petitioner submitted during the public hearing that the problem has been referred to BHEL and is expected to be solved soon, following which it shall be able to achieve the heat rate specified in the MYT Regulations.
- 4.113 The Commission believes that problems due to faulty installation of turbines and any impact on heat rate due to the same are risks best handled by the generation utility and cannot be passed on to consumers.
- 4.114 The Commission has also approved the capital expenditure plan and approved sufficient R&M Expenses for Rajghat Power House. In addition, the Commission had specified the SHR in MYT Regulations, considering the existing condition of the plant. Hence, the Petitioner's claim for further relaxation without any suitable justification does not merit consideration.
- 4.115 Therefore, the Commission has approved the SHR of 3200 kCal/kWh for RPH during the Control Period. The detail of the submission made by the Petitioner and the heat rate approved by the Commission is given in the table below:

Table 4.32: Station Heat Rate for RPH

(SHR in kCal/ kWh)	Proposed				Approved			
	FY 08	FY 09	FY 10	FY 11	FY 08	FY 09	FY 10	FY 11
Station Heat Rate	3250	3250	3250	3250	3200	3200	3200	3200

Determination of Energy Charges

4.116 The energy charges (variable cost) of the plant depends upon the operational and fuel parameters such as the Station Heat Rate, Auxiliary Consumption, Fuel Cost and the Gross Calorific Value of fuel used. The Commission has considered all these factors to determine the variable cost of generation from Rajghat Power House.

Fuel Cost

Petitioner's Submission

- 4.117 The Petitioner has submitted the expenses towards annual fuel costs based on the estimated weighted average Gross Calorific Value of each fuel: coal (3808 kCal/kg), LDO (10,580 kCal/l) and LSHS (10,350 kCal/kg).
- 4.118 The price of coal has been escalated at a rate of 7.66% per annum to arrive at the coal cost during the Control Period. The freight rate has been escalated at 5.18% per annum. The escalation rates have been proposed based on CERC's notification on escalation rates issued on April 4, 2007.
- 4.119 The Petitioner has estimated 3.00% loss in quantity of purchased coal due to extra surface moisture present in washed coal and 0.80% loss is on account of transit loss.
- 4.120 The Petitioner has proposed specific oil consumption of 1.50 ml/kWh for LDO and 4.00 g/kWh for LSHS during the Control Period. The price of secondary fuel has been escalated annually at 5% on actual prices for FY07 to arrive at prices for each year of the Control Period.
- 4.121 The Petitioner submitted the following details for determination of fuel cost for the Control Period, as shown in the table below:

Table 4.33: Proposed Fuel Costs for RPH

Particulars	Unit	FY08	FY09	FY10	FY11
Primary Fuel – Coal					
GCV of Coal	kCal/kg	3,808	3,808	3,808	3,808
Coal Consumed	MT	694,067	694,067	694,067	694,067
Transit Loss	%	3.80	3.80	3.80	3.80
Gross Quantity of Coal	MT	721,483	721,483	721,483	721,483
Price of Coal	Rs/MT	2012.51	2143.94	2284.27	2434.11
Cost of Coal	Rs Cr	145.20	154.68	164.81	175.62
Secondary Fuel - LDO					
Specific Oil Consumption	ml/kWh	1.50	1.50	1.50	1.50
LDO Consumed	KL	1,242	1,242	1,242	1,242

Particulars	Unit	FY08	FY09	FY10	FY11
GCV of Oil	kCal/kg	10,580	10,580	10,580	10,580
Price of LDO	Rs/KL	30854.71	32397.45	34017.32	35718.19
Cost of LDO	Rs Cr	3.83	4.02	4.22	4.44
Secondary Fuel - LSHS					
Specific Oil Consumption	g/kWh	4.00	4.00	4.00	4.00
LSHS Consumed	MT	3,311	3,311	3,311	3,311
GCV of Oil	kCal/kg	10,350	10,350	10,350	10,350
Price of LSHS	Rs/MT	23615.25	24796.01	26035.81	27337.60
Cost of LSHS	Rs Cr	7.82	8.21	8.62	9.05
Total Fuel Cost	Rs Cr	156.85	166.92	177.65	189.10

Commission's Analysis

- 4.122 The Commission has accepted the GCV for coal and secondary oil as submitted by the Petitioner. The Commission has approved specific fuel oil consumption at 1.50 ml/kWh for LDO and 3.75 g/kWh for LSHS, based on the norms specified in the MYT Regulations.
- 4.123 The Commission has calculated the net coal requirement as the difference between the energy required to generate 828 MU of electricity and the energy provided by LDO and LSHS.
- 4.124 The Commission has considered coal transit loss of 0.8% to obtain the gross coal requirement for RPH. The contention of the Petitioner that 0.8% loss in coal on account of transit and handling and 3% loss on account of surface moisture due to deshaling of coal have been provided for, by the Commission in its previous Tariff Orders is not correct. Commission has never allowed 3.8% loss in coal on account of transit and surface moisture loss in its previous Tariff Orders. It may also be noted that NTPC Dadri Thermal Plant which is running on 100% washed coal is also being allowed only 0.8% loss of coal by CERC. Similarly, NTPC Badarpur Plant which is using substantial quantity of washed coal is being allowed 0.8% fuel loss only.
- 4.125 Furthermore, it may also be noted that certain benefits accrue to the generating company on use of washed coal. For instance, the big boulders of coal get broken during washing of coal and stones also get removed. Thus, the generating company could save on auxiliary power consumption due to the improvement in the functioning of coal handling plant and the coal mills as well as reduction in ash handled by the ash handling plant. The use of washed coal is expected to result in better availability of the boiler with consequent improvement in PLF and reduction in auxiliary power consumption.

- 4.126 The Petitioner has considered escalation in coal price as 7.66% and freight rate escalation as 5.18% based on a CERC notification. The Commission notes that these rates have been specified by CERC for the purpose of bid evaluation and cannot be used for tariff determination. In addition these rates are revised by CERC at regular intervals, normally on a six-monthly basis, and hence cannot be used for the duration of four years (Control Period).
- 4.127 The details of the total fuel costs approved by the Commission for the Control Period are shown in the table below.

Table 4.34: Approved Fuel Costs for RPH

Particulars	Unit	FY 08	FY 09	FY 10	FY 11
Primary Fuel – Coal					
GCV of Coal	kCal/kg	3,808	3,808	3,808	3,808
Coal Consumed	MT	683,760	683,760	683,760	683,760
Transit Loss	%	0.80	0.80	0.80	0.80
Gross Quantity of Coal	MT	689,274	689,274	689,274	689,274
Price of Coal	Rs/MT	1889.38	1889.38	1889.38	1889.38
Cost of Coal	Rs Cr	130.23	130.23	130.23	130.23
Secondary Fuel – LDO					
Specific Oil Consumption	ml/kWh	1.50	1.50	1.50	1.50
LDO Consumed	KL	1,242	1,242	1,242	1,242
GCV of Oil	kCal/kl	10,580	10,580	10,580	10,580
Price of LDO	Rs/KL	29385.44	29385.44	29385.44	29385.44
Cost of LDO	Rs Cr	3.65	3.65	3.65	3.65
Secondary Fuel – LSHS					
Specific Oil Consumption	g/kWh	3.75	3.75	3.75	3.75
LSHS Consumed	MT	3,104	3,104	3,104	3,104
GCV of Oil	kCal/kg	10,350	10,350	10,350	10,350
Price of LSHS	Rs/MT	22490.71	22490.71	22490.71	22490.71
Cost of LSHS	Rs Cr	6.98	6.98	6.98	6.98
Total Fuel Cost	Rs Cr	140.86	140.86	140.86	140.86

- 4.128 The fuel cost incurred by the Petitioner during the Control Period will be adjusted using the mechanism for Fuel Price Adjustment (FPA) as specified in the MYT Regulations. The weighted average price and the weighted average GCV of fuel to be taken for FPA shall be calculated considering the actual consumption of fuel from various sources and the corresponding price and GCV.

4.129 The Fuel Price Adjustment (FPA) applicable for calculation of Energy Charges for coal-based generating stations, is $FPA = A + B$

Where,

FPA – Fuel price Adjustment for a month in Paise/kWh Sent out;

A – Fuel price adjustment for Secondary Fuel oil in Paise/kWh sent out;

B – Fuel price adjustment for Coal in Paise/kWh sent out;

$$A = \frac{10 * SFC_n * (P_{om} - P_{os})}{(100 - AC_n)}$$

$$B = \frac{10}{(100 - AC_n)} * [SHR_n * \{(P_{cm}/K_{cm}) - (P_{cs}/K_{cs})\} - SFC_n * \{(K_{om} * P_{cm} / K_{cm}) - K_{os} * P_{cs}/K_{cs}\}]$$

Where,

SFC_n = Normative Specific Fuel Oil consumption in l/kWh;

SHR_n = Normative Gross Station Heat Rate in Kcal/kWh;

AC_n = Normative Auxiliary consumption in percentage;

P_{om} = Weighted average price of fuel oil on as consumed basis during the month in Rs./KL;

K_{om} = Weighted average Gross Calorific Value of fuel oils fired at boiler front for the month in Kcal/Litre;

P_{os} = Base value of price of fuel oils as taken for determination of base energy charge in Tariff Order in Rs./ KL;

K_{os} = Base value of Gross Calorific Value of fuel oils as taken for determination of base energy charge in Tariff Order in Kcal/Litre;

P_{cm} = Weighted average price of coal procured and burnt during the month at the power station in Rs. / MT;

K_{cm} = Weighted average Gross Calorific Value of coal fired at boiler front for the month in Kcal/kg

P_{cs} = Base value of price of coal as taken for determination of base energy charge in Tariff Order in Rs./ KL;

K_{cs} = Base value of Gross Calorific Value of coal as taken for determination of base energy charge in Tariff Order in Kcal/kg

- 4.130 The weighted average price of fuel oil (P_{os}), weighted average GCV of fuel oil (K_{os}) weighted average price of coal (P_{cs}), weighted average GCV of coal (K_{cs}) to be considered for the purpose of Fuel Price Adjustment (FPA) during the first year of the Control Period (FY08) has been calculated based on the approved values for consumption, prices and GCV of fuels from various sources.

Table 4.35: Weighted Average Price and GCV of Primary Fuel

Particulars	Coal
Quantity (MT)	523,745
GCV (kCal/kg)	3,808
Price (Rs./Ton)	1889.38

Table 4.36: Weighted Average Price and GCV of Secondary Fuel

Particulars	LDO	LSHS
Quantity (KL)	944	2,359
GCV (kCal/KL)	10,580	10,040
Price (Rs./KL)	29,385.44	21,815.99
Weighted Average Price/(Rs/KL) P_{os}	23978.69	
Weighted Average GCV (kCal/ KL) K_{os}	10193.93	

- 4.131 The Fuel Price Adjustment would be done on a monthly basis and suitable positive and negative adjustments in variable cost would be made in the bills submitted by the Petitioner.

Variable Cost

Petitioner's Submission

- 4.132 The Petitioner submitted the projected variable cost of generation in its MYT petition, considering the projected fuel costs and the proposed net generation from the plant. The proposed variable costs are as follows:

Table 4.37: Proposed Variable Cost for RPH

Particulars	Unit	FY08	FY09	FY10	FY11
Gross Generation	MU	828	828	828	828
Auxiliary Energy Consumption	%	12.00	12.00	12.00	12.00
Net Generation	MU	728	728	728	728

Total Fuel Cost	Rs Cr	156.85	166.92	177.65	189.10
Variable Cost	p/kWh	215.31	229.13	243.87	259.59

Commission's Analysis

- 4.133 The Commission analyzed the details of fuel supply for determination of fuel costs for the Control Period. The total fuel costs as approved by the Commission after, considering the projected fuel prices, gross calorific value and SHR of 3200 kCal/kWh (on GCV basis), is as given in table below.

Table 4.38: Approved Variable Cost for RPH

Particulars	Unit	FY08	FY09	FY10	FY11
Gross Generation	MU	828	828	828	828
Auxiliary Energy Consumption	%	11.28	11.28	11.28	11.28
Net Generation	MU	734	734	734	734
Total Fuel Cost	Rs Cr	140.86	140.86	140.86	140.86
Variable Cost (on ESO Basis)*	p/kWh	191.79	191.79	191.79	191.79

* Subjected to revision on account of fuel price adjustments (FPA)

Determination of Fixed Cost

- 4.134 The Commission analyzed all the components of fixed cost submitted by the Petitioner in detail to determine the applicable fixed cost for each year of the Control Period. The fixed cost include the following components according to the MYT Regulations:

- (a) Operations and Maintenance Expenses;
- (b) Depreciation;
- (c) Advance Against Depreciation;
- (d) Return on Equity
- (e) Interest Expenses; and
- (f) Interest on Working Capital

- 4.135 The Petitioner has considered escalation in coal price as 7.66% and freight rate escalation as 5.18% based on a CERC notification. The Commission notes that these rates have been specified by CERC for the purpose of bid evaluation and cannot be used for tariff determination. In addition these rates are revised by CERC at regular intervals, normally on a six-monthly basis, and hence cannot be used for the duration of four years (Control Period).

- 4.136 The Petitioner has considered escalation rate of 5.18% on account of inflation, based on a CERC notification. The Commission notes that these rates have been specified by CERC for the purpose of bid evaluation and cannot be used for tariff determination. In addition these rates are revised by CERC at regular intervals, normally on a six-monthly basis, and hence cannot be used for the duration of four years (Control Period). The Commission has therefore considered the annual escalation on account of inflation to be at a rate of 4%, as considered in the previous tariff orders.

Operations and Maintenance Expenses

- 4.137 The Operation and Maintenance (O&M) Expenses have been determined by the Petitioner for each year of the Control Period and comprise of Employee Expenses, Repairs & Maintenance, Administrative & General Expenses, Water Cess, Property Tax, etc.
- 4.138 The Commission has projected the total O&M Expenses for the Control Period by considering base O&M Expenses, which has been calculated using the average of the base O&M Expenses in the last two years (FY06 and FY07).

Table 4.39: Base O&M Expenses

Particulars	FY06	FY07
O&M Expenses (Rs.Cr)	24.77	27.76
Average O&M (Rs.Cr)	26.27	

- 4.139 The average O&M Expenses thus obtained has been escalated by 4% annually to arrive at the O&M Expenses for the Control Period. These expenses have been proportionally allocated to Employee Expenses, Repairs & Maintenance, and Administrative & General Expenses.

Employee Expenses

Petitioner's Submission

- 4.140 The Petitioner has considered the following components for calculating Employee Expenses: salaries, dearness and other allowances, ex-gratia payments, contribution towards terminal benefits, leave encashment, staff welfare expenses, etc.
- 4.141 The Petitioner has considered the estimated Employee Expenses for FY07 as the basis for forecasting Employee Expenses for the Control Period. It has escalated the salary costs by 40% of the provisional value for FY07 on account of the expected increase due to the recommendations of the 6th Pay Commission. It has submitted that the increase due to the implementation of the 6th Pay Commission recommendations would be effective from January 1, 2006 and therefore, requested the Commission for considering the arrears of FY06 and FY07 to be provided in FY08 and FY09.

- 4.142 The Petitioner has further escalated the estimated salary and allowances for FY07 (after considering the impact of the 6th Pay Commission) at an annual rate of 4% during the Control Period. It has calculated the Dearness Allowance (DA) for FY08 at 6% of the basic salary projected for the year, with 6% addition in DA in each subsequent year.
- 4.143 The Petitioner has escalated all expenses related to Medical Reimbursement, Travelling Allowance, Leave Travel Assistance and Staff Welfare Expenses in FY07 at an annual rate of 5.18% during the Control Period, considering the rate specified by CERC for escalation of fixed costs.
- 4.144 The Petitioner has requested the Commission to consider employee cost as uncontrollable and consider the increase on account of 6th Pay Commission or any change in law/ policy.

Commission's Analysis

- 4.145 The Commission has analysed the submissions made by the Petitioner regarding its Employee Expenses related to Medical Reimbursement, Travelling Allowance, Leave Travel Assistance and Staff Welfare Expenses, etc.
- 4.146 The Commission has apportioned the average O&M Expenses and has escalated the Employee Expenses at an annual rate of 4% for the Control Period.
- 4.147 The Commission has recognised the uncontrollable nature of the 6th Pay Commission recommendations and has considered a 10% increase in total Employee Expenses, as shown below.

Table 4.40: Impact of 6th Pay Commission recommendations

Particulars (Rs. Cr.)	FY06	FY07	FY08	FY09	FY10	FY11
Employee Expenses	14.23	12.60	12.40	12.90	13.41	13.95
Likely increase due to the 6 th Pay Commission recommendations (10%)	0.36	1.26	1.24	1.29	1.34	1.40

- 4.148 Since the arrears on account of revision of employee costs are expected to be paid only in FY09, the Commission has considered the payment of arrears in tariff of FY09. Similarly, the increase in salaries has been considered for each year, but the impact of such increase has only been taken from FY09 onwards. The Commission shall true-up the impact on account of 6th Pay Commission recommendations based on the actual impact of the same.
- 4.149 The details of Employee Expenses, as submitted by the Petitioner and approved by the Commission are shown in the table below:

Table 4.41: Employee Expenses for RPH

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Employee Expenses	23.44	25.25	24.72	26.75	12.40	12.90	13.42	13.95
Impact of 6 th Pay Commission recommendations	-	-	-	-	-	1.29	1.34	1.40
Arrears for FY06, FY07 & FY08	-	-	-	-	-	2.86	-	-
Total Employee Expenses	23.44	25.25	24.72	26.75	12.40	17.05	14.76	15.35

Repair and Maintenance Expenses

Petitioner's Submission

- 4.150 The Petitioner has considered expenses on R&M of plant and machinery, building, other civil works, hydraulic works, vehicles, furniture and fixtures, etc. for determining the R&M Expenses for the Control Period. The Petitioner has projected R&M Expenses for the Control Period by escalating the estimated costs for FY08, and not FY07 at an annual rate of 5.18%.
- 4.151 The Petitioner has requested to the Commission to allow the proposed R&M Expenses for smooth operation of the plant and to achieve the target level of generation. The Petitioner has also submitted that the R&M expenditure will be relatively high due to small size of the units, poor condition at the time of unbundling and age of the plant.

Commission's Analysis

- 4.152 For obtaining the R&M Expenses applicable during the Control Period, the apportioned expenses of R&M have been escalated annually at 4%. The details of the proposed and approved R&M Expenses of RPH are:

Table 4.42: R&M Expenses for RPH

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
R&M Expenses	15.36	16.15	16.99	17.87	10.26	10.67	11.10	11.54

Administrative and General Expenses

Petitioner's Submission

- 4.153 The Petitioner has considered the actual Administrative and General (A&G) Expenses for FY07 as the basis for forecasting the A&G Expenses for the Control Period. The Petitioner requests the Commission to approve the property tax and water-cess as pass-through on actual basis besides other expenses.

Commission's Analysis

- 4.154 The Commission has approved the A&G Expenses for each year of the Control Period by escalating the proportionally shared A&G Expenses for FY07 by 4% per annum.
- 4.155 The A&G Expenses as proposed by the Petitioner and as approved by the Commission for the Control Period are as given in table below:

Table 4.43: A&G Expenses for RPH

(Values in Rs Cr)	Proposed				Approved			
	FY 08	FY 09	FY 10	FY 11	FY 08	FY 09	FY 10	FY 11
A&G Expenses	3.31	3.48	3.66	3.85	2.68	2.79	2.90	3.02

- 4.156 The total O&M Expenses of the Rajghat Power House, approved for the Control Period are shown in the table below:

Table 4.44: O&M Expenses for RPH

(Values in Rs Cr)	Proposed				Approve			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
R&M Expenses	15.36	16.15	16.99	17.87	10.26	10.67	11.10	11.54
Employee Expenses	23.44	25.25	24.72	26.75	12.40	12.90	13.42	13.95
A&G Expenses	3.31	3.48	3.66	3.85	2.68	2.79	2.90	3.02
Impact of 6 th Pay Commission recommendations	-	-	-	-		4.15	1.34	1.40
Total O&M Expenses	42.11	44.88	45.36	48.47	27.32	30.51	28.76	29.91

Business Plan Filings**Capital Expenditure****Petitioner's Submission**

- 4.157 The Petitioner in its MYT petition had submitted capital expenditure of Rs.31.35 Cr to be incurred during the Control Period. The Petitioner had submitted that the details of capital expenditure were submitted to the Commission on November 29, 2006.
- 4.158 The year-wise capital expenditure plan submitted by the Petitioner is given below:

Table 4.45: Proposed Capital Expenditure for RPH

(Values in Rs Cr)	FY08	FY09	FY10	FY11	Total
Capital Expenditure	5.20	21.90	4.25	0.00	31.35

Commission's Analysis

- 4.159 The Commission directed the Petitioner to resubmit its capital expenditure plan according to the guidelines prescribed in the MYT Regulations 8.3 (a), which states: *“Capital Investment Plan: This shall include details of the investments planned by the Generating Company, along with the corresponding capitalization schedule and financing plan. This plan shall be commensurate with capacity enhancement and proposed efficiency improvements for various plants of the Company”*
- 4.160 The Petitioner revised and submitted its capital expenditure plan as per the directives of the Commission. The Commission has considered the revised capital expenditure plan submitted by the Petitioner for the Control Period. The proposed capital expenditure will be funded by debt and equity in the ratio of 70:30. The revised capital expenditure plan submitted by the Petitioner and approved by the Commission is detailed below;

Table 4.46: Revised Capital Expenditure for RPH

(Values in Rs Cr)	FY08	FY09	FY10	FY11	Total
Capital Expenditure	3.70	15.00	10.25	0.00	28.95

- 4.161 The initial estimated capital expenditure of Rs.31.35 Cr has been revised downwards to Rs.28.95 Cr. The reduction is on account of revision in the estimated cost of Scheme no. 3 i.e. “Re-use of plant's drain water for ash disposal and disposal of clarifier sludge to ash pond”, which was reduced from Rs.5.50 Cr to Rs.1.50 Cr and deletion of the two schemes ‘Air blasting of RC bunkers’ & ‘Provision of boiler fill tank’. However two schemes have been added i.e. ‘Renovation of DM Plant’ and ‘Renovation of Generator & Transformer Protection’ estimated at Rs.1.50 Cr and Rs.0.25 Cr respectively. The list of schemes included for the capital expenditure is tabulated below.

Table 4.47: Capital Expenditure Schemes for RPH

<u>S. No</u>	<u>Name of Scheme</u>	<u>Cost of Scheme Rs Lacs</u>	<u>Revised Cost of Scheme Rs Lacs</u>	<u>Expenditure (Rs. Lakh)</u>		
				<u>FY08</u>	<u>FY09</u>	<u>FY10</u>
1	Augmentation of transformer.	450	450	-	450	-
2	Installation of electronic governing system.	180	180	100	80	-
3	Reuse of plant's drain water for ash disposal and disposal of clarifier sludge to ash pond.	550	150	-	150	-
4	Augmentation of chlorination system.	35	35	35		
5	Renovation & modernization of fire alarm and protection system.	50	50	-	50	-

				Expenditure (Rs. Lakh)		
6	Replacement of LDO tanks.	40	60	10	50	
7	Installation of 2 nd DG set of 750 MVA.	60	60			60
8	ABT based energy metering system.	30	70	35	35	
9	33 KV and 220 KV PTs/CVTs.	40	40	15	25	
10	R&M of loco engines.	140	200	95	105	
11	Installation of SPM level indicator.	40	25		25	
12	Fire tenders for fire station.	50	50		50	
13	DM water line inter connection of RPH and GT Stn.	20	40		40	
14	R&M of lifts.	10	15	15		
15	Replacement/Renovation of SWAS instrument.	45	45	15	30	
16	Side Stream filtration unit for cooling water.	20	20			20
17	Up-gradation of ESP/flue gas conditioning.	750	750	25	25	700
18	Provision of crane and fork lift	40	40	15	25	
19	Provision of boiler fill tank	25	NIL			
20	DVR Unit # 1	60	60			60
21	R&M of coal mills	140	140		70	70
22	Refurbishment of turbine rotor	300	200		200	
23	Renovation of recorders monitoring of turbine drain's temperatures	30	30		15	15
24	Air blasting of RC bunkers.	20	NIL			
25	Installation of road weigh bridge	10	10	10		
26	Renovation of DM Plant		150		50	100
27	Renovation of Generator and Transformer Protection		25		25	
	TOTAL	3135	2895	370	1500	1025

4.162 The Commission studied the various schemes in revised capital expenditure plan submitted by the Petitioner and noted that the plan includes schemes that could normally be covered under normal O&M Expenses. The Petitioner has also proposed to incur Rs.6.76 Cr as capital expenditure on various civil works planned for RPH during the Control Period. The Commission has considered total capital expenditure of Rs.35.71 Cr comprising of Rs.28.95 on the station and Rs.6.76 on civil works for the Control Period.

4.163 For the Control Period, the Commission has approved 90% of the proposed capital expenditure plan which amounts to Rs.32.14 Cr. The Commission shall true up the capital expenditure incurred by the Petitioner at the end of the Control Period.

- 4.164 The Petitioner has proposed to incur Rs.1.80 Cr as capital expenditure on IT and Rs.0.20 Cr on HR for IPGCL as a whole. The Commission has proportionally divided the capital expenditure on IT and HR between GTPS and RPH in the ratio of their installed generation capacities.
- 4.165 The proposed capital expenditure will be funded by debt and equity in the ratio of 70:30. The capital expenditure plan approved by the Commission is detailed below.

Table 4.48: Approved Capital Expenditure for RPH

(Values in Rs. Cr)	FY08	FY09	FY10	FY11	Total
Revised Capital Expenditure	3.70	15.00	10.25	0.00	28.95
Civil Capital Expenditure	2.07	2.52	2.17	0.00	6.76
Total Capital Expenditure	5.77	17.52	12.42	0.00	35.71
Allowed Capital Expenditure (90%)	5.19	15.77	11.18	0.00	32.14
IT Expenditure (RPH Share)	0.30	0.17	0.08	0.04	0.58
HR Expenditure (RPH Share)	0.06	0.00	0.00	0.00	0.06
Total Capital Expenditure	5.56	15.93	11.25	0.04	32.79

- 4.166 The Commission shall analyse the actual performance of the plant during the Control Period and may determine a suitable profit sharing mechanism at the end of the Control Period, to share the benefits accrued on account of the capital investment made during the Control Period.
- 4.167 Considering the approved levels of capital investment for RPH, the Commission expects the Petitioner to increase reliability of the plant. In addition, the Commission expects improvement in following norms of performance of RPH, which shall be considered during determination of target norms for the next Control Period.
- Increase in availability from the existing levels
 - Reduction in auxiliary power consumption
 - Reduction in Station Heat Rate

Depreciation

Petitioner's Submission

- 4.168 The Petitioner has calculated depreciation for the Control Period based on the written down value method and using the depreciation rates specified in the MYT Regulations. The Petitioner has proposed asset additions in the RPH during the Control Period, as detailed in its capital expenditure plan.

Commission's Analysis

- 4.169 During the policy direction period (FY03 – FY07), the Commission had calculated depreciation, using an average depreciation rate of 4% on the total GFA of RPH, due to lack of asset details.
- 4.170 The Petitioner has now submitted break-up of its GFA as part of the petition, in line with the requirements of the MYT Regulations. However, the total opening balance of GFA of RPH submitted by the Petitioner is different from the value approved by the Commission in its previous Tariff Order. In the absence of non availability of assets break-up in the past, the Commission is unable to determine the exact reasons for the mismatch.
- 4.171 Since the Commission is unable to determine the 'correct' opening balance for each asset category, it has determined the opening balance for each asset for FY08 using the total approved closing balance of GFA in FY07 and proportionately modifying the asset values as submitted by the Petitioner.
- 4.172 The Commission has considered addition in assets according to the revised capital expenditure plan submitted by the Petitioner. The asset addition will be subsequently revised and reviewed by the Commission at the end of the Control Period. Depreciation has been calculated on each asset category, using the depreciation rates, as specified in the MYT Regulations. The depreciation as estimated by the Petitioner and as approved by the Commission for the Control Period are as follows:

Table 4.49: Depreciation for RPH

(Values in Rs Cr)	Proposed				Approved			
	FY 08	FY 09	FY 10	FY 11	FY 08	FY 09	FY 10	FY 11
Opening GFA*	217.42	214.57	228.21	224.03	223.11	228.67	244.60	255.86
New Addition	5.20	21.90	4.25	0.00	5.56	15.93	11.25	0.04
Closing GFA	214.57	228.21	224.03	215.82	228.67	244.60	255.86	255.90
Depreciation	8.06	8.26	8.43	8.21	8.12	8.51	9.00	9.20
Cumulative Depreciation	106.05	114.11	122.36	130.80	106.56	114.69	123.19	132.19

* As submitted by the Petitioner (erroneous)

Advance Against Depreciation

- 4.173 The Petitioner has not projected any requirement for advance against depreciation (AAD) during the Control Period for the Rajghat Power House.

Commission's Analysis

- 4.174 The Commission has calculated the advance against depreciation for each year of the Control Period, using the principles specified in the MYT Regulations and considering the details of actual cumulative debt repayment and accumulated depreciation claimed by the Petitioner.
- 4.175 As submitted by the Petitioner and calculated by the Commission, there is no requirement of AAD for RPH during the Control Period.

Return on Equity**Petitioner's Submission**

- 4.176 The Petitioner has estimated the Return on Equity (ROE) at 14% in line with the MYT Regulations. The ROE of RPH for each year of the Control Period has been calculated based on the average equity for the particular year.

Commission's Analysis

- 4.177 The Commission has calculated ROE at 14% on the average equity for each year. The Commission has approved equity addition as 30% of the revised capital expenditure plan submitted by the Petitioner. The details of proposed return on equity and that approved by the Commission are as follows:

Table 4.50: Return on Equity for RPH

Values in Rs. Cr.	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Equity (Opening Balance)	59.56	61.12	67.69	68.97	59.56	61.23	66.01	69.38
Additions during the year	1.56	6.57	1.28	0.00	1.67	4.78	3.38	0.01
Equity (Closing Balance)	61.12	67.69	68.97	68.97	61.23	66.01	69.38	69.40
Average Equity	60.34	64.41	68.33	68.97	60.39	63.62	67.70	69.39
Return on Equity	8.45	9.02	9.57	9.66	8.46	8.91	9.48	9.71

Interest Expenses**Petitioner's Submission**

- 4.178 The Petitioner had proposed capital expenditure of Rs.31.35 Cr during the Control Period which was later revised to Rs.28.95 Cr, was to be funded by both debt (70%) and equity (30%). The Petitioner also proposed to obtain loan funding from the GoNCTD with interest rate of 11.50% and tenure of 15 years.

- 4.179 The Petitioner has also submitted details of various plan fund loans drawn from the GoNCTD since 2002, at interest rates between 11.5% and 13.0%. The Petitioner has considered 2% rebate to customers for timely payments as part of interest costs for the Control Period.
- 4.180 The Petitioner has estimated the interest liability for each year of the Control Period, considering the opening balance of outstanding loans as on April 1, 2007 and the repayment schedule.

Commission's Analysis

- 4.181 The Commission has determined the interest costs for each year of the Control Period by considering the opening balance of loans, the actual repayment schedule and by applying the rate of interest applicable on various loans. The Commission has also considered fresh loans from the GoNCTD corresponding to 70% of the proposed capital expenditure with loan terms as proposed by the Petitioner.
- 4.182 The Commission had re-iterated its views on the issue of rebate offered to customers in the review order issued on March 30, 2007. The same principle has also been followed by the CERC for determination of tariff for various generating stations, as detailed in Para 3.106 to Para 3.109 above.
- 4.183 The Commission notes that the same condition has been retained in the PPA signed by the Petitioner on March 31, 2007. Therefore, the Commission retains the same opinion on the rebate provided to DTL and has not allowed the same for determination of tariff.
- 4.184 The detailed analysis of determination of interest charges and the values approved by the Commission for true up of FY07 is shown below:

Table 4.51: Interest Expenses for RPH

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Secured Loans								
Opening Loans	84.37	74.44	64.52	54.59	84.37	74.44	64.52	54.59
Addition during year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Repayment during year	9.93	9.93	9.93	9.93	9.93	9.93	9.93	9.93
Closing Loans	74.44	64.52	54.59	44.66	74.44	64.52	54.59	44.67
Rate of Interest	12.00%				12.00%			
Interest Payment	9.53	8.34	7.15	5.95	9.82	8.63	7.42	6.25
Unsecured Loans								
Opening Loans	34.78	35.91	48.48	47.68	34.81	36.15	44.53	48.94
Addition during year	3.64	15.33	2.98	0.00	3.89	11.15	7.88	0.03

Repayment during year	2.52	2.76	3.78	3.98	2.55	2.77	3.47	3.90
Closing Loans	35.91	48.48	47.68	43.70	36.15	44.53	48.94	45.07
Rate of Interest	13.00%-11.50%				13.00%-11.50%			
Interest Payment	4.37	5.82	5.78	5.33	4.33	5.30	5.84	5.40
Total Interest Charges	13.90	14.16	12.93	11.28	14.15	13.93	13.26	11.65
Rebate to Customers	4.98	5.35	5.60	5.90	-	-	-	-
Total	18.88	19.51	18.53	17.18	14.15	13.93	13.26	11.65

Interest on Working Capital

Petitioner's Submission

4.185 The Petitioner has considered the following components as part of its working capital requirements:

- (a) Cost of fuel for 2 month;
- (b) Cost of liquid fuel for 2 month;
- (c) O&M Expenses for 1 month;
- (d) Receivables equivalent to 2 months average billing; and
- (e) Spares at 1% of project cost.

4.186 The working capital proposed by the Petitioner for the Control Period is as follows.

Table 4.52: Proposed Working Capital for RPH

(Values in Rs Cr)	FY08	FY09	FY10	FY11
Cost of Fuel	24.20	25.78	27.47	29.27
Cost of Secondary Fuel	1.94	2.04	2.14	2.25
O & M Expenses	3.51	3.74	3.78	4.04
Maintenance Spares	2.66	3.10	3.80	4.62
Receivables	40.61	43.08	45.00	47.30
Total Working Capital	72.91	77.74	82.19	87.47

4.187 The Petitioner has computed the interest on working capital for the Control Period, considering the SBI Prime Lending Rate as on April 1, 2007 of 12.75% per annum.

Commission's Analysis

4.188 The Commission has estimated the working capital requirement of the Petitioner for the Control Period based on the following norms:

- (a) Cost of Coal for 1.5 months for pithead stations and for 2 months in non-pithead stations corresponding to the Target Availability;
 - (b) Cost of Secondary Fuel Oil for 2 months corresponding to the Target Availability;
 - (c) O&M Expenses for 1 month;
 - (d) Receivables equivalent to 2 months of fixed and variable costs for sale of electricity calculated on the Target Availability;
 - (e) Maintenance spares: 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation;
- 4.189 The Commission shall initiate appropriate action to include the provision for maintenance spares in working capital requirements in the MYT regulations.
- 4.190 The Commission has not considered any escalation in fuel costs in its calculation for working capital requirements for the Control Period. Though the variation in fuel costs would be adjusted automatically through the FPA mechanism, the Commission shall not true-up the working capital requirements due to the same. Hence, the Commission has escalated the working capital requirement for FY09, FY10 and FY11 at an annual rate of 4% to consider for the escalation in fuel costs.
- 4.191 The Commission has calculated the working capital requirement of the Petitioner considering the approved values of the above components for each year of the Control Period (and the above explained escalation), as shown below:

Table 4.53: Approved Working Capital for RPH

(Values in Rs Cr)	FY08	FY09	FY10	FY11
Cost of Fuel	21.71	21.71	21.71	21.71
Cost of Secondary Fuel	1.77	1.77	1.77	1.77
O & M Expenses	2.28	2.54	2.40	2.49
Maintenance Spares	2.49	2.67	2.98	3.26
Receivables	34.48	35.20	35.03	35.09
Total Working Capital	62.73	63.89	63.88	64.33
4% escalation in Working Capital		66.45	69.09	72.36

- 4.192 The Commission has calculated the interest on working capital for the Control Period, considering an interest rate of 12.75% based on the existing SBI Prime Lending Rate for short term loans as of April 9, 2007. This rate is applicable from April 1, 2007 for calculation for interest on working capital for FY08.

- 4.193 The following table details the interest on working capital, as submitted by the Petitioner and as approved by the Commission, for the Control Period:

Table 4.54: Interest on Working Capital for RPH

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Interest on Working Capital	9.30	9.91	10.48	11.15	8.00	8.47	8.81	9.23

Tax Expenses

Petitioner's Submission

- 4.194 The Petitioner has not projected any tax expenses for the Control Period.

Commission's Analysis

- 4.195 The Commission has not considered any expenses on account of Income Tax or Fringe Benefit Tax, payable by the Petitioner during the Control Period, for calculation of fixed cost. Income Tax, if any, shall be treated as expense and shall be recoverable from the Beneficiaries.
- 4.196 Recovery of income tax shall be done directly by the Petitioner from the beneficiaries without making any application before the Commission. Any refund of income tax shall be adjusted with the tax payable in the year of its receipt, and not against the year for which it is applicable.
- 4.197 In case of any objections by the beneficiaries to the amounts claimed on account of income tax, they shall first make payments to the Petitioner and may subsequently make an application before the Commission regarding the same.

Fixed Cost

- 4.198 The fixed cost for RPH for the Control Period, based on the analysis of various components by the Commission, as detailed above, is shown below:

Table 4.55: Total Fixed Cost for RPH

Particulars	FY08	FY09	FY10	FY11	Reference
O&M Expenses (Rs Cr)	27.32	30.51	28.76	29.91	Table 4.44
Depreciation (Rs Cr)	8.12	8.51	9.00	9.20	Table 4.49
Advance Against Depreciation (Rs Cr)	0.00	0.00	0.00	0.00	-
Return on Equity (Rs Cr)	8.46	8.91	9.48	9.71	Table 4.50
Interest Charges (Rs Cr)	14.15	13.93	13.26	11.65	Table 4.51
Interest on Working Capital (Rs Cr)	8.00	8.47	8.81	9.23	Table 4.54

Total Fixed Cost (Rs Cr)	66.04	70.33	69.30	69.70	-
Net Generation (MU)	734	734	734	734	Table 4.31
Fixed Cost Per Unit (p/ kWh)	89.92	95.75	94.35	94.90	-

Determination of Generation Tariff

4.199 The generation tariffs applicable to the Rajghat Power House for each year of the Control Period, based on fixed and variable costs approved by the Commission, are shown below:

Table 4.56: Generation Tariff for RPH for the Control Period

(Values in Rs Cr)	FY08	FY09	FY10	FY11	Reference
Fixed Costs	66.04	70.33	69.30	69.70	Table 4.55
Net Generation (MU)	734	734	734	734	Table 4.31
Fixed Cost per Unit (p/ kWh)	89.92	95.75	94.35	94.90	Table 4.55
Total Fuel Cost (Rs Cr)	140.86	140.86	140.86	140.86	Table 4.34
Variable Cost per Unit (p/ kWh)	191.79	191.79	191.79	191.79	Table 4.38
Total Cost (Rs Cr)	206.90	211.19	210.16	210.56	-
Total Cost per Unit (p/ kWh)	281.71	287.55	286.15	286.69	-

4.200 The total fixed cost (capacity charges) shall be recovered by the Petitioner at target availability specified by the Commission. The recovery of fixed cost below the level of target availability shall be on pro rata basis with no fixed cost payable at zero availability. For this purpose, the availability of the power station shall be certified by the SLDC. Any adjustment of recovery of annual fixed cost shall be based on the cumulative availability as certified by the SLDC at the end of the year. The fixed cost shall be recovered in 12 equal monthly instalments in proportion to allocated/contracted capacity.

4.201 Intra-state availability based tariff (ABT) is in operation in Delhi since April 1, 2007. Consequent to this, the variable cost shall be billed by the Petitioner to the beneficiaries based on the scheduled generation during the month from the station as per the rates approved by the Commission.

4.202 Incentive shall be payable at a flat rate of 25 paise/kWh for the scheduled generation achieved beyond the level corresponding to target PLF. However, the generating station shall comply with the SLDC instructions with respect to the backing down of the generation and such backing down shall not qualify for calculation of PLF for Incentive. Further, in case of non-compliance by generating stations to backing down instructions given by SLDC, generation during backing down period as instructed by SLDC shall not be considered for Incentive purpose. The SLDC shall at the end of the year, certify the generation level of generating stations which qualifies for Incentive purpose as per the above guidelines.

- 4.203 Deviations from the schedule are to be accounted for in accordance with the principles laid down in the order of the Commission regarding intra-state ABT.

MYT Petition for Gas Turbine Power Station

4.204 A summary of the MYT Petition submitted by the Petitioner for its Gas Turbine Power Station (GTPS) is provided in table below.

Table 4.57: Summary of MYT Petition for GTPS

Particulars	Units	FY08	FY09	FY10	FY11
Gross Generation	MU	1600	1600	1600	1600
Net Generation	MU	1552	1552	1552	1552
Total Fixed Cost	Rs Cr	120.23	128.97	133.59	136.90
Total Variable Cost	Rs Cr	307.50	305.82	321.11	337.16
Total Cost	Rs Cr	427.73	434.78	454.70	474.06
Fixed Cost per Unit	p/kWh	77.47	83.10	86.08	88.21
Variable Cost per Unit	p/kWh	198.13	197.05	206.90	217.24
Total Cost per Unit	p/kWh	275.60	280.14	292.98	305.45

Norms of Operation

- 4.205 The Commission has considered the various submissions of the Petitioner as part of the MYT petition and during the public hearing process for approval of various norms of operation during the Control Period.
- 4.206 Since the Petitioner has not sought any relaxation in norms apart from the Station Heat Rate and Plant Load Factor, the Commission has considered all other norms of operation (availability and auxiliary consumption) based on the values specified in the MYT Regulations. Issues related to Plant Load Factor and the Station Heat Rate have been discussed in detail in this chapter.
- 4.207 The Commission observes that one STG has been non functional for over a year and another STG has been out of operation for more that 3 months. Such outages may not facilitate recovery of full fixed charges besides operating on open cycle leading to higher variable cost and associated environmental impact.

Plant Load Factor

Petitioner's Submission

- 4.208 The Petitioner has proposed to achieve Plant Load Factor (PLF) of 64.77% during the Control Period, considering the expected availability of gas for its turbines, during the Control Period.

Commission's Analysis

- 4.209 The Commission has directed the Petitioner to make proper arrangements for supply of gas by entering into suitable contracts for sourcing of gas and optimising the gas already available for GTPS and PPCL.
- 4.210 The Commission, in the Tariff Order for PPCL issued on September 22, 2006 had given the following directions to the Petitioner to optimise use of the gas in the gas based power plants:
- (a) The Commission directed the Petitioner “to make all out efforts to arrange for additional gas at competitive rates to optimally utilise the installed capacity”.
 - (b) The Commission also directed that: “usage of gas between PPCL and IPGCL should be so coordinated so as to avail the full quantum of gas from the gas supplier viz. GAIL. If required, the contracts for supply of gas may be restructured or the restructuring of the generating companies may be considered, so as to include all generating assets based on gas to be combined under one company while coal based generation could be under another company”.
- 4.211 The Commission is of the view that given the projected demand for energy from Delhi in the near future, it is imperative that all available generating capacity of Delhi be utilized optimally and demand met to the extent possible. It has therefore, approved the PLF of 70% for recovery of fixed cost and for calculation of gross generation, fuel quantity and variable cost to be approved for the Control Period.
- 4.212 The details of the proposed and approved PLF of GTPS during the Control Period is as shown below:

Table 4.58: Plant Load Factor for GTPS

(Values in %)	Proposed				Approved			
	FY 08	FY 09	FY 10	FY 11	FY 08	FY 09	FY 10	FY 11
Plant Load Factor	64.77	64.77	64.77	64.77	70.00	70.00	70.00	70.00

Gross and Net Generation**Petitioner's Submission**

- 4.213 The Petitioner has projected gross generation during the Control Period to be 1600 MU at the projected PLF of 64.77%. The net generation, considering auxiliary consumption at 3.00% has been proposed to be 1552 MU. The Petitioner has submitted that the plant is expected generate 19% of the total energy in open cycle mode during FY08 and 5% during the other the remaining part of the Control Period.

Commission's Analysis

- 4.214 The Commission has considered the gross and net generation for GTPS considering the values of 70% PLF and auxiliary consumption of 3% in combined cycle and 1% in open cycle. The Commission has not considered generation in open cycle mode of operation as submitted by the Petitioner.
- 4.215 The net generation for Control Period as submitted by the Petitioner and as calculated by the Commission is given in below in accordance with the norms specified in the MYT Regulations.

Table 4.59: Generation for GTPS

(Values in %)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Plant Load Factor (%)	64.77	64.77	64.77	64.77	70.00	70.00	70.00	70.00
Gross Generation	1600	1600	1600	1600	1729	1729	1729	1729
Auxiliary Consumption (%)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Net Generation	1552	1552	1552	1552	1677	1677	1677	1677

Station Heat Rate**Petitioner's Submission**

- 4.216 The Petitioner has proposed the Station Heat Rate (SHR) of GTPS as 3300 kCal/ kWh for open cycle operations and 2500 kCal/ kWh for combined cycle operations during the Control Period.

Commission's Analysis

- 4.217 The Petitioner has specified no reason for the request in relaxation of SHR during the Control Period, as part of its MYT Petition. The Commission raised the issue during the public hearing process, asking for suitable justifications. Further, the Commission does not expect the plant to be operated in open cycle mode frequently, which should be resorted to only during emergencies. This makes it even more necessary to maintain the WHRU in proper condition.
- 4.218 Since no cogent reason has been provided by the Petitioner, the Commission has retained the SHR values as specified in the MYT Regulations, which was also agreed to by the Petitioner in line with the PPA submitted by TRANSCO.

Table 4.60: Station Heat Rate for GTPS

Station Heat Rate (kCal/ kWh)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11

Combined Cycle Operations	2500	2500	2500	2500	2450	2450	2450	2450
Open Cycle Operations	3300	3300	3300	3300	3125	3125	3125	3125

Determination of Energy Charges

4.219 The energy charges (variable cost) of the plant depends on the operational and fuel parameters such as the Station Heat Rate, Auxiliary Consumption, Fuel Cost and the Gross Calorific Value of fuel used. The Commission has considered all these factors to determine the variable cost of generation from Gas Turbine Power Station.

Fuel Cost

Petitioner's Submission

- 4.220 The Petitioner submitted that it has a long-term agreement with Gas Authority of India Limited (GAIL) for supply of gas. Initially, GTPS had a daily allocation of 1.44 MMSCM of gas (APM+PMT+LNG), which was sufficient to run six gas turbines at their base load. Subsequently the daily gas allocation to GTPS was reduced to 1.34 MMSCM; the contracted quantity of R-LNG is 0.6 MMSCMD and balance 0.74 MMSCMD is from APM and PMT.
- 4.221 The Petitioner further submitted that due to depleting gas reserves, GAIL imposed cuts on its supply on day to day basis to the extent of 10-20%. To meet this short fall in the gas availability, the Petitioner signed an agreement with GAIL for supply of 0.6 MMSCMD LNG with Take-or-Pay condition. The Petitioner has considered that it will first off take the LNG with cuts, if any, and rest will be drawn from CNG/PMT. The fall-back LNG agreement with GAIL expires in 2009, but the Petitioner has taken the projections for the remaining years of the Control Period on similar basis.
- 4.222 The Petitioner in its initial submission had submitted the following rates for the different categories of gas purchased in FY08: APM and PMT gas (Rs.4164/ 1000 SCM), Fallback R-LNG (Rs.210/ MMBTU) and Spot R-LNG (Rs.439/ MMBTU), based on the latest bill received from GAIL. These prices were escalated annually at 5% to project the gas prices for each year of the Control Period.
- 4.223 The Commission directed the Petitioner to resubmit the fuel cost projections for the Control Period, considering FY07 gas prices as the base for escalation. The Petitioner resubmitted the fuel cost for the Control Period by escalating FY07 gas prices by 5% as per the past practice of the Commission. The FY07 gas prices considered by the Petitioner for escalation during the Control Period for different categories of gas are; APM gas (Rs.4201.33/ 1000 SCM), PMT gas (Rs.4201.59/ 1000 SCM), Fallback R-LNG (Rs.202.34/ MMBTU) and Spot R-LNG (Rs.488.45/ MMBTU).
- 4.224 The Petitioner in a subsequent submission revised the price of Fallback R-LNG to Rs.244.45/MMBTU based on one bill for August 2007 raised by GAIL.

- 4.225 The Petitioner had not projected any gas purchase from spot markets in its initial submission, as supply from other sources was expected to fulfill its fuel requirements. However, the revised submission includes spot purchases of R-LNG during the Control Period. The Petitioner submitted the following details for determination of fuel cost for the Control Period:

Table 4.61: Proposed Fuel Costs for GTPS

Particulars	Unit	FY08	FY09	FY10	FY11
APM Gas					
APM Gas Consumed	MMSCM	185.16	178.32	178.32	178.32
Gas Price	Rs/1000 SCM	4411.40	4631.97	4863.56	5106.74
APM Gas Cost	Rs Cr	81.68	82.60	86.73	91.06
PMT Gas					
PMT Gas Consumed	MMSCM	45.55	45.55	45.55	45.55
Gas Price	Rs/1000 SCM	4411.67	4632.25	4863.87	5107.06
PMT Gas Cost	Rs Cr	20.10	21.10	22.15	23.26
Total APM + PMT Gas	MMSCM	230.71	223.87	223.87	223.87
APM + PMT Gas Cost	Rs Cr	101.78	103.70	108.88	114.33
Fall Back R-LNG					
Fall Back R-LNG Consumed	MMSCM	210.00	208.00	208.00	208.00
	MMBTU	7,790,000	7,715,810	7,715,810	7,715,810
R-LNG Price	Rs/MMBTU	244.45	256.67	269.50	282.98
Fall Back R-LNG Cost	Rs Cr	190.43	198.04	207.95	218.34
Spot R-LNG					
Spot R-LNG Consumed	MMSCM	8.00	2.00	2.00	2.00
	MMBTU	296,762	74,190	74,190	74,190
Spot R-LNG Price	Rs/MMBTU	512.87	538.52	565.44	593.71
Spot R-LNG Cost	Rs Cr	15.22	4.00	4.20	4.40
Total Gas Consumed	MMSCM	448.71	433.87	433.87	433.87
Total Gas Cost	Rs Cr	307.42	305.74	321.02	337.07
Other Fuel					
Liquid Fuel HSD Consumed	KL	38.00	38.00	38.00	38.00
Price of Liquid Fuel	Rs/KL	20047.90	21050.30	22102.81	23207.95
Total Cost of Liquid Fuel	Rs Cr	0.076	0.080	0.084	0.088
Total Fuel Cost	Rs Cr	307.50	305.82	321.11	337.16

Commission's Analysis

- 4.226 The Commission has considered the quantity of gas expected to be received from various sources for determination of fuel cost. The Petitioner is expected to schedule the usage of gas from various sources so as to consume the lowest priced fuel first. The Commission directs the Petitioner to inform the SLDC regarding the fuel being used for generation on any particular slot/ day, since the variable cost is different for each fuel and can modify the merit order.
- 4.227 The SLDC may test the declared capacity of GTPS at random and in the event of the power station failing to demonstrate the declared capability, the SLDC shall report the matter to the Commission, which would then determine the penalty, if any, to be levied for false declaration.
- 4.228 The Commission noted the revised price of fallback R-LNG at Rs.244.45/MMBTU based on one bill for August 2007 and directed the Petitioner to submit details of all bills received from GAIL between April and September 2007. The Petitioner submitted these details to the Commission, and the same was analysed to obtain suitable projection of fuel costs during the Control Period.
- 4.229 On detailed analysis of the bills, the Commission calculated the average price of R-LNG between April 2007 and September 2007 as Rs.199.81/ MMBTU. It has therefore rejected the Petitioner's submissions for R-LNG costs, which seem to be based on higher costs.
- 4.230 The Commission has considered the prices paid by the Petitioner in FY07 as base prices for escalation during the Control Period. The gas prices considered by the Commission for different sources of Gas are: APM gas (Rs.4201.33/ 1000 SCM), PMT gas (Rs.4201.59/ 1000 SCM), Fallback R-LNG (Rs.202.34/ MMBTU) and spot R-LNG (Rs.488.45/ MMBTU).
- 4.231 The details variable costs for different types of fuel as approved by the Commission for the Control Period are as shown in the table below.

Table 4.62: Variable Costs for GTPS

Particulars	Unit	FY08	FY09	FY10	FY11
APM Gas					
Gross Generation	MU	706.48	680.38	680.38	680.38
Net Generation	MU	685.29	659.97	659.97	659.97
Gas Consumption	MMSCM	185.16	178.32	178.32	178.32
Gas Price	Rs/1000 SCM	4201.33	4201.33	4201.33	4201.33
Gas Cost	Rs. Cr	77.79	74.92	74.92	74.92
Variable Cost (ESO Basis)	p/kWh	113.52	113.52	113.52	113.52

Particulars	Unit	FY08	FY09	FY10	FY11
PMT Gas					
Gross Generation	MU	173.80	173.80	173.80	173.80
Net Generation	MU	168.58	168.58	168.58	168.58
Gas Consumption	MMSCM	45.55	45.55	45.55	45.55
Gas Price	Rs/1000 SCM	4201.59	4201.59	4201.59	4201.59
Gas Cost	Rs. Cr	19.14	19.14	19.14	19.14
Variable Cost (ESO Basis)	p/kWh	113.52	113.52	113.52	113.52
R-LNG					
Gross Generation	MU	801.26	793.63	793.63	793.63
Net Generation	MU	777.22	769.82	769.82	769.82
Gas Consumption	MMSCM	210.00	208.00	208.00	208.00
Gas Consumption	MMBTU	7,790,000	7,715,810	7,715,810	7,715,810
Gas Price	Rs./MMBTU	202.34	202.34	202.34	202.34
R-LNG Cost	Rs. Cr	157.62	156.12	156.12	156.12
Variable Cost (ESO Basis)	p/kWh	202.80	202.80	202.80	202.80
Spot R-LNG					
Gross Generation	MU	47.69	81.42	81.42	81.42
Net Generation	MU	46.26	78.98	78.98	78.98
Gas Consumption	MMSCM	12.50	21.34	21.34	21.34
Gas Consumption	MMBTU	463,658	791,580	791,580	791,580
Gas Price	Rs./MMBTU	488.45	488.45	488.45	488.45
R-LNG Cost	Rs. Cr	22.65	38.66	38.66	38.66
Variable Cost (ESO Basis)	p/kWh	489.57	489.57	489.57	489.57
Other Fuel					
Liquid Fuel HSD Consumed	KL	38.00	38.00	38.00	38.00
Price of Liquid Fuel	Rs/KL	19093.24	19093.24	19093.24	19093.24
Total Cost of Liquid Fuel	Rs. Cr	0.073	0.073	0.073	0.073
Total Fuel Cost	Rs. Cr	277.27	288.92	288.92	288.92
Total Variable Cost (ESO Basis)	p/kWh	165.30	172.25	172.25	172.25

4.232 The fuel cost incurred by the Petitioner during the Control Period will be adjusted using the mechanism for Fuel Price Adjustment (FPA) as specified in the MYT Regulations. The weighted average price and the weighted average GCV of fuel to be taken for FPA shall be calculated considering the actual consumption of fuel from various sources and the corresponding price and GCV.

4.233 The Fuel Price Adjustment is calculated using the following formula:

$$FPA = \frac{10 * SHR_n * [(P_m / K_m) - (P_s / K_s)]}{(100 - AC_n)}$$

Where:

FPA = Fuel price Adjustment for a month in Paise/kWh sent out;

SHR_n = Normative Gross Station Heat Rate expressed in kCal/kWh;

AC_n = Normative Auxiliary Consumption in percentage;

P_m = Weighted average price of Gas or Liquid fuel as per PSL for the month in Rs. / 1000 SCM of Rs./ KL or Rs./MT;

K_m = Weighted average Gross Calorific Value of Gas or Liquid fuel for the month in Kcal/ SCM or kCal/ Litre or kCal/ Kg;

P_s = Base price of Gas or Liquid fuel as taken for determination of base energy charge in Tariff Order in Rs. / 1000 SCM of Rs./ KL or Rs./MT;

K_s = Base value of Gross Calorific Value of Gas or Liquid fuel as taken determination of base energy charge in Tariff Order in Kcal/ SCM or kCal/Litre or kCal/ Kg.

4.234 The weighted average price (P_s) and GCV of fuel (K_s) to be considered for the purpose of Fuel Price Adjustment (FPA) during the first year of the Control Period (FY08) has been calculated based on the approved values for consumption, prices and GCV of fuels from various sources.

Table 4.63: Weighted Average Price and GCV of Fuel

Particulars	APM Gas	PMT Gas	Fall-back R-LNG	Spot R-LNG
Quantity (MMSCM)	185.56	51.69	141.44	5.95
GCV (kCal/SCM)	9,348.10	9348.10	9341.39	9,348.10
Price (Rs./ 1000 SCM)	4201.33	4201.59	7500.55	18,427.99
Weighted Average Price/(Rs/ 1000 SCM)	5,634.63			
Weighted Average GCV (kCal/ kWh)	9,345.63			

4.235 The Fuel Price Adjustment (FPA) would be automatically done on a monthly basis, as per the FPA formula given below and suitable positive and negative adjustments in variable cost would be made in the bills generated by the Petitioner.

- 4.236 The Commission also directs the Petitioner to consider any source of cheaper fuel available in the future, and accordingly restructure the order of scheduling of fuel to ensure that the cheapest available fuel is utilised first.

Variable Cost

Petitioner's Submission

- 4.237 The Petitioner submitted the projected variable cost of generation in its MYT petition by considering the projected fuel costs and the net generation from the plant. The proposed variable costs submitted are as follows:

Table 4.64: Proposed Variable Cost for GTPS

Particulars	Unit	FY08	FY09	FY10	FY11
Gross Generation	MU	1600	1600	1600	1600
Auxiliary Energy Consumption	%	3.00	3.00	3.00	3.00
Net Generation	MU	1552	1552	1552	1552
Total Fuel Cost	Rs Cr	307.50	305.82	321.11	337.16
Variable Cost (on ESO Basis)*	p/kWh	198.13	197.05	206.90	217.24

* Subjected to revision on account of fuel price adjustments (FPA)

Commission's Analysis

- 4.238 The Commission analyzed the details of fuel supply for determination of fuel costs for the Control Period. The total fuel costs as approved by the Commission after, considering the projected fuel prices, gross calorific value and SHR of 2450 kCal/kWh (close cycle) and 3125 kCal/kWh (open cycle), is as given in table below.

Table 4.65: Approved Variable Cost for GTPS

Particulars	Unit	FY08	FY09	FY10	FY11
Gross Generation	MU	1729	1792	1792	1792
Auxiliary Energy Consumption	%	3.00	3.00	3.00	3.00
Net Generation	MU	1677	1677	1677	1677
Total Fuel Cost	Rs Cr	277.27	288.92	288.92	288.92
Variable Cost	p/kWh	165.30	172.25	172.25	172.25

Determination of Fixed Cost

- 4.239 The Commission analyzed all the components of fixed cost submitted by the Petitioner in detail to determine the applicable fixed cost for each year of the Control Period. The Fixed Cost include the following components:

- (a) Operations and Maintenance Expenses;

- (b) Depreciation;
- (c) Advance Against Depreciation;
- (d) Return on Equity
- (e) Interest Expenses; and
- (f) Interest on Working Capital;

4.240 The Petitioner has considered escalation rate of 5.18% on account of inflation, based on a CERC notification. The Commission notes that these rates have been specified by CERC for the purpose of bid evaluation and cannot be used for tariff determination. In addition these rates are revised by CERC at regular intervals, normally on a six-monthly basis, and hence cannot be used for the duration of four years (Control Period). The Commission has therefore considered the annual escalation on account of inflation to be at a rate of 4%, as considered in the previous tariff orders.

Operations and Maintenance Expenses

- 4.241 The Operation and Maintenance (O&M) Expenses have been determined by the Petitioner for each year of the Control Period and comprise of Employee Expenses, Repairs & Maintenance, Administrative & General Expenses, Water Cess, Property Tax, etc.
- 4.242 The Commission has projected the total O&M Expenses for the Control Period by considering base O&M Expenses, which has been calculated using the average of the base O&M Expenses in the last two years (FY06 and FY07).

Table 4.66: Base O&M Expenses

Particulars	FY06	FY07
O&M Expenses (Rs.Cr)	32.23	34.37
Average O&M (Rs.Cr)	33.30	

- 4.243 The average O&M Expenses thus obtained has been escalated by 4% annually to arrive at the O&M Expenses for the Control Period. These expenses have been proportionally allocated to Employee Expenses, Repairs & Maintenance, and Administrative & General Expenses.

Employee Expenses**Petitioner's Submission**

- 4.244 The Petitioner has considered the following components for calculating Employee Expenses: salaries, dearness and other allowances, ex-gratia payments, contribution towards terminal benefits, leave encashment, staff welfare expenses, etc.
- 4.245 It has considered the estimated Employee Expenses for FY07 as the basis for forecasting Employee Expenses for the Control Period. It has escalated the salary costs by 40% of the provisional value for FY07 on account of the expected increase due to implementation of the recommendations of the 6th Pay Commission. It has submitted that the increase due to the 6th Pay Commission would be effective from January 1, 2006 and therefore, requested the Commission to approve the arrears for FY06 and FY07 to be provided for in FY08 and FY09.
- 4.246 The Petitioner has further escalated the estimated salary and allowances for FY07 (after considering the impact of the 6th Pay Commission) at an annual rate of 4% during the Control Period. It has calculated the Dearness Allowance (DA) for FY08 at 6% of the basic salary projected for the year, with 6% addition in DA in each subsequent year.
- 4.247 The Petitioner has escalated all expenses related to Medical Reimbursement, Travelling Allowance, Leave Travel Assistance and Staff Welfare Expenses in FY07 at an annual rate of 5.18% during the Control Period, considering the rate specified by CERC for escalation of fixed costs.
- 4.248 The Petitioner has requested the Commission to consider employee cost as uncontrollable and consider the increase on account of 6th Pay Commission or any change in law/ policy.

Commission's Analysis

- 4.249 The Commission has analysed the submissions made by the Petitioner regarding its Employee Expenses in detail and approved the Employee Expenses considering the approved Employee Expenses for FY07 and escalated the same for the Control Period.
- 4.250 The Commission has apportioned the average O&M Expenses and has escalated the Employee Expenses at an annual rate of 4% for the Control Period.
- 4.251 The Commission has recognised the uncontrollable nature of the 6th Pay Commission recommendations and has considered a 10% increase in total Employee Expenses, as shown below.

Table 4.67: Impact of 6th Pay Commission recommendations

Particulars (Rs. Cr.)	FY06	FY07	FY08	FY09	FY10	FY11
Employee Expenses	12.31	10.86	10.95	11.38	11.84	12.31
Likely increase due to the 6 th Pay Commission recommendations (15%)	0.31	1.09	1.09	1.14	1.18	1.23

- 4.252 Since the arrears on account of revision of employee costs are expected to be paid only in FY09, the Commission has considered the payment of arrears in tariff of FY09. Similarly, the increase in salaries has been considered for each year, but the impact of such increase has only been taken from FY09 onwards. The Commission shall true-up the impact on account of 6th Pay Commission recommendations based on the actual impact of the same.
- 4.253 The details of Employee Expenses, as submitted by the Petitioner and approved by the Commission are shown in the table below:

Table 4.68: Employee Expenses for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Employee Expenses	17.60	18.68	19.37	20.85	10.95	11.38	11.84	12.31
Impact of 6 th Pay Commission recommendations	-	-	-	-		1.14	1.18	1.23
Arrears for FY06, FY07 & FY08	-	-	-	-		2.49		
Total Employee Expenses	17.60	18.68	19.37	20.85	10.95	15.01	13.02	13.54

Repair and Maintenance Expenses

Petitioner's Submission

- 4.254 The Petitioner has considered expenses on R&M of plant and machinery, building, other civil works, hydraulic works, vehicles, furniture and fixtures, etc. for determining the R&M Expenses for the Control Period. The Petitioner has projected R&M Expenses for the Control Period by escalating the estimated costs for FY08, and not FY07 at an annual rate of 5.18%.
- 4.255 The Petitioner has requested to the Commission to allow the proposed R&M Expenses for smooth operation of the plant and to achieve the target level of generation.

Commission's Analysis

- 4.256 For obtaining the R&M Expenses applicable during the Control Period, the proportionally shared expenses of R&M have been escalated annually at 4%. The details of the proposed and approved R&M Expenses of GTPS are:

Table 4.69: R&M Expenses for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Total R&M Expenses	17.99	18.92	19.90	20.93	15.50	16.12	16.77	17.44

- 4.257 The Commission wishes to state that the R&M expenses for the Gas Turbine Power Station have been approved considering the amount of capital investment approved for the plant. In view of the substantial investment proposed by the Petitioner, the Commission expects the requirement of repair and maintenance to reduce over time.

Administrative and General Expenses

Petitioner's Submission

- 4.258 The Petitioner has considered the actual Administrative and General (A&G) Expenses for FY07 as the basis for forecasting the A&G Expenses for the Control Period. The Petitioner requests the Commission to approve the property tax and water-cess as pass-through on actual basis besides the other O&M Expenses.

Commission's Analysis

- 4.259 The Commission has approved the A&G Expenses for each year of the Control Period by escalating the proportionally shared A&G Expenses for FY07 by 4% per annum.
- 4.260 The A&G Expenses as proposed by the Petitioner and as approved by the Commission for the Control Period are as given in table below:

Table 4.70: A&G Expenses for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
A&G Expenses	7.86	8.25	8.66	9.10	7.33	7.62	7.92	8.24

- 4.261 The total O&M Expenses of the Gas Turbine Power Station, approved for the Control Period are shown in the table below:

Table 4.71: O&M Expenses for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
R&M Expenses	17.99	18.92	19.90	20.93	15.50	16.12	16.77	17.44
Employee Expenses	17.60	18.68	19.37	20.85	10.95	11.38	11.84	12.31
A & G Expenses	7.86	8.25	8.66	9.10	7.33	7.62	7.92	8.24
Impact of 6 th Pay Commission	-	-	-	-	-	3.63	1.18	1.23

recommendations								
Total O&M Expenses	43.45	45.86	47.93	50.88	34.63	38.75	37.72	39.22

Business Plan Filings

Capital Expenditure

Petitioner's Submission

4.262 The Petitioner in its MYT petition had submitted capital expenditure plan of Rs.129.45 Cr to be incurred during the Control Period. The Petitioner had submitted that the details of capital expenditure were submitted to the Commission on November 29, 2006.

4.263 The year-wise capital expenditure plan submitted by the Petitioner is given below:

Table 4.72: Proposed Capital Expenditure for GTPS

(Values in Rs Cr)	FY08	FY09	FY10	FY11	Total
Capital Expenditure	44.46	44.94	26.75	13.30	129.45

Commission's Analysis

4.264 The Commission directed the Petitioner to resubmit its capital expenditure plan according to the guidelines prescribed in the MYT Regulations 8.3 (a), which states the following: *“Capital Investment Plan: This shall include details of the investments planned by the Generating Company, along with the corresponding capitalization schedule and financing plan. This plan shall be commensurate with capacity enhancement and proposed efficiency improvements for various plants of the Company”*

4.265 The Petitioner revised and submitted its capital expenditure plan as per the directives of the Commission. The Commission has considered the revised capital expenditure plan submitted by the Petitioner for the Control Period. The proposed capital expenditure will be funded by debt and equity in the ratio of 70:30. The revised capital expenditure plan submitted by the Petitioner and approved by the Commission is detailed below:

Table 4.73: Revised Capital Expenditure for GTPS

(Values in Rs. Cr)	FY08	FY09	FY10	FY11	Total
Capital Expenditure	43.59	42.43	37.05	29.00	152.07

4.266 Initially the Petitioner had estimated Capital Expenditure of Rs.129.45 Cr for GTPS, which was later revised to Rs.152.07 Cr on account of addition of two more schemes Procurement of Inner Casing, Guide Blade Carrier-1, 2 & 3 and HP/LP Turbine Glands for Steam Turbine (WHRU) estimated at Rs.6.42 Cr and Rs.10.80 Cr respectively. These two schemes amounting to Rs.17.22 Cr is a post-facto development after the Public Hearing and therefore the Commission is not able to approve these schemes. The list of schemes included for the capital expenditure is tabulated below.

Table 4.74: Capital Expenditure Schemes for GTPS

S.No.	Name of Scheme	Estimated Cost of Scheme (Rs. Lakh)	Revised estimated Cost of Scheme (Rs. Lakh)	Annual Capital Expenditure (Rs. In Lakh)			
				FY08	FY09	FY10	FY11
1	Up gradation of Gas Turbines	4300.00	4300.00	1074.00	1613.00	1613.00	-
2	Revamping of Compressor of Gas Turbines	1480.00	1890.00	630.00	630.00	-	630.00
3	Water treatment Plant	1500.00	2100.00				
4	Replacement of existing Mark-IV control System of GTs with Mark-VI	1800.00	2250.00	350.00	700.00	350.00	700.00
5	Replacement of HRSG Tubes	1500.00	700.00	750.00	750.00	750.00	
6	Close Cycle Cooling System for Gas Turbine Generators	700.00	180.00		400.00	200.00	100.00
7	Replacement of GT Generator Protection system	180.00	900.00	90.00			90.00
8	Replacement of AVR / Excitation system in GTs	600.00	780.00	300.00	150.00	150.00	300.00
9	Procurement of Generator Stator bar for GTs	500.00	385.00	780.00			
10	Procurement of Generator Rotor for Steam Turbine	385.00	642.00	385.00			
11	Procurement of Inner Casing, Guide Blade Carrier-1,2 &3 and HP/LP Turbine Glands for steam Turbine (WHRU)		642.00			642.00	
12	Procurement of Steam Turbine Rotor Assembly (WHRU)		1080.00				1080.00
13	TOTAL	12945	15207	4359	4243	3705	2900

- 4.267 The Commission studied the various schemes in revised capital expenditure plan submitted by the Petitioner and noted that the plan has been increased by Rs.22.62 Cr. The Commission has not approved two schemes amounting to expenditure of Rs.17.22 Cr as these schemes were included in the plan after the public hearing and hence have not been deliberated upon in public forum. The capital expenditure considered by the Commission after removing the said two schemes is Rs.134.85 Cr.
- 4.268 The Commission, for the Control Period, has considered and approved 90% of the proposed capital expenditure plan which amounts to Rs.121.36 Cr. The Commission shall true up the capital expenditure incurred by the Petitioner during the end of the Control Period.
- 4.269 The Petitioner has proposed to incur Rs.1.80 Cr as capital expenditure on IT and Rs.0.20 Cr on HR for IPGCL as a whole. The Commission has proportionally divided the capital expenditure on IT and HR between GTPS and RPH in the ratio of their installed generation capacities.
- 4.270 The proposed capital expenditure will be funded by debt and equity in the ratio of 70:30. The capital expenditure plan approved by the Commission is detailed below.

Table 4.75: Approved Capital Expenditure for GTPS

(Values in Rs. Cr)	FY08	FY09	FY10	FY11	Total
Revised Capital Expenditure	43.59	42.43	37.05	29.00	152.07
Less: Disallowed	0	0	6.42	10.8	17.22
Total Capital Expenditure	43.59	42.43	30.63	18.20	134.85
Allowed Capital Expenditure (90%)	39.23	38.19	27.57	16.38	121.37
IT Expenditure (GTPS Share)	0.63	0.34	0.16	0.08	1.22
HR Expenditure (GTPS Share)	0.14	0.00	0.00	0.00	0.14
Total Capital Expenditure	40.00	38.53	27.73	16.46	122.72

- 4.271 The Commission shall analyse the actual performance of the plant during the Control Period and may determine a suitable profit sharing mechanism at the end of the Control Period, to share the benefits accrued on account of the capital investment made during the Control Period.
- 4.272 Considering the approved levels of capital investment for RPH, the Commission expects the Petitioner to increase reliability of the plant. In addition, the Commission expects improvement in following norms of performance of RPH, which shall be considered during determination of target norms for the next Control Period.
- Increase in availability from the existing levels
 - Reduction in auxiliary power consumption
 - Reduction in Station Heat Rate

Depreciation

Petitioner's Submission

- 4.273 The Petitioner has calculated depreciation for the Control Period based on the written down value method and using the depreciation rates specified in the MYT Regulations. The Petitioner has proposed asset additions in GTPS during the Control Period, as detailed in its capital expenditure plan.

Commission's Analysis

- 4.274 During the policy direction period (FY03 – FY07), the Commission had calculated depreciation, using an average depreciation rate of 5% on the total GFA of GTPS, due to lack of asset details.
- 4.275 The Petitioner has now submitted break-up of its GFA as part of the petition, in line with the requirements of the MYT Regulations. However, the total opening balance of GFA of GTPS submitted by the Petitioner is different from the value approved by the Commission in its previous Tariff Order. In the absence of non availability of assets break-up in the past, the Commission is unable to determine the exact reasons for the mismatch.
- 4.276 Since the Commission is unable to determine the 'correct' opening balance for each asset category, it has determined the opening balance for each asset for FY08 using the total approved closing balance of GFA in FY07 and proportionately modifying the asset values as submitted by the Petitioner.
- 4.277 The Commission has considered addition in assets according to the revised capital expenditure plan submitted by the Petitioner. The asset addition will be subsequently revised and reviewed by the Commission at the end of the Control Period. Depreciation has been calculated on each asset category, using the depreciation rates, as specified in the MYT Regulations. The depreciation as estimated by the Petitioner and as approved by the Commission for the Control Period are as follows:

Table 4.76: Depreciation for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Opening GFA*	276.78	303.22	328.51	334.61	296.52	336.51	375.04	402.77
New Addition	44.46	44.94	26.75	13.30	40.00	38.53	27.73	16.46
Closing GFA	303.22	328.51	334.61	327.27	336.51	375.04	402.77	419.23
Depreciation	18.02	19.65	20.65	20.64	18.97	21.33	23.32	24.64
Cumulative Depreciation	162.34	180.35	200.00	220.65	153.23	172.20	193.53	216.84

* As submitted by the Petitioner (erroneous)

Return on Equity**Petitioner's Submission**

- 4.278 The Petitioner has estimated the Return on Equity (ROE) at 14% in line with the MYT Regulations issued by the Commission. The Petitioner as considered addition in equity during the Control Period as 30% of the capital expenditure proposed during the year.

Commission's Analysis

- 4.279 The Commission has calculated ROE at 14% on the average equity for each year. The Commission has approved equity addition as 30% of the revised capital expenditure plan submitted by the Petitioner. The details of proposed return on equity and that approved by the Commission are as follows:

Table 4.77: Return on Equity for GTPS

Values in Rs. Cr.	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Equity (Opening Balance)	79.24	92.58	106.06	114.09	79.24	91.24	102.80	111.12
Additions during the year	13.34	13.48	8.03	3.99	12.00	11.56	8.32	4.94
Equity (Closing Balance)	92.58	106.06	114.09	118.08	91.24	102.80	111.12	116.06
Average Equity	85.91	99.32	110.07	116.08	85.24	97.02	106.96	113.59
Return on Equity	12.03	13.90	15.41	16.25	11.93	13.58	14.97	15.90

Interest Expenses**Petitioner's Submission**

- 4.280 The Petitioner has proposed capital expenditure of Rs.129.45 Cr during the Control Period which was to be funded by both debt (70%) and equity (30%). The Petitioner also proposed to obtain loan funding from the GoNCTD with interest rate of 11.50% and tenure of 15 years.
- 4.281 The Petitioner has also submitted details of various plan fund loans drawn from the GoNCTD, at interest rates between 11.5% and 13.0%. The Petitioner has considered 2% rebate to customers for timely payments as part of interest costs for the Control Period.
- 4.282 The Petitioner has estimated the interest liability for each year of the Control Period, considering the opening balance of outstanding loans as on April 1, 2007 and the repayment schedule.

Commission's Analysis

- 4.283 The Commission has determined the interest costs for each year of the Control Period by considering the opening balance of loans, the actual repayment schedule and by applying the rate of interest applicable on various loans. The Commission has also considered fresh loans from the GoNCTD corresponding to 70% of the proposed capital expenditure with loan terms as proposed by the Petitioner.
- 4.284 The Commission had re-iterated its views on the issue of rebate offered to customers in the review order issued on March 30, 2007. The same principle has also been followed by the CERC for determination of tariff for various generating stations, as detailed in Para 3.161 to Para 3.164 above.
- 4.285 The Commission notes that the same condition has been retained in the PPA signed by the Petitioner on March 31, 2007. Therefore, the Commission retains the same opinion on the rebate provided to DTL and has not allowed the same for determination of tariff.
- 4.286 The detailed analysis of determination of interest charges and the values approved by the Commission for true up of FY07 is shown below:

Table 4.78: Interest Expenses for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Secured Loans								
Opening Loans	112.26	99.05	85.84	72.64	112.26	99.05	85.84	72.64
Addition during year	0.00	0.00	0.00	0.00	0	0	0	0
Repayment during year	13.21	13.21	13.21	13.21	13.21	13.21	13.21	13.21
Closing Loans	99.05	85.84	72.64	59.43	99.05	85.84	72.64	59.43
Rate of Interest	12.00%				12.00%			
Interest Payment	12.68	11.89	9.51	7.92	13.07	11.49	9.87	8.32
Unsecured Loans								
Opening Loans	76.49	101.98	125.74	134.67	71.92	94.29	113.77	123.89
Addition during year	31.12	31.46	18.73	9.31	28.00	26.97	19.41	11.53
Repayment during year	5.63	7.70	9.80	11.05	5.63	7.49	9.29	10.59
Closing Loans	101.98	125.74	134.67	132.93	66.30	86.80	104.48	113.30
Rate of Interest	13.00%-11.50%				13.00%-11.50%			
Interest Payment	12.42	15.25	16.36	16.21	11.62	13.94	15.18	15.33
Total Interest Charges	25.10	27.13	25.87	24.13	24.70	25.43	25.05	23.65
Rebate to Customers	8.30	8.80	9.30	9.70	-	-	-	-
Total	33.40	35.93	35.17	33.83	24.70	25.43	25.05	23.65

Interest on Working Capital**Petitioner's Submission**

4.287 The Petitioner has considered the following components as part of its working capital requirements:

- (a) Cost of fuel for 1 month;
- (b) Cost of liquid fuel for 1/2 month;
- (c) O&M Expenses for 1 month;
- (d) Receivables equivalent to 2 months average billing;
- (e) Spares at 1% of project cost.

4.288 The working capital proposed by the Petitioner for the Control Period is as follows.

Table 4.79: Proposed Working Capital for GTPS

(Values in Rs Cr)	FY08	FY09	FY10	FY11
Cost of Fuel	25.62	25.48	26.76	28.10
Cost of Secondary Fuel	0.00	0.00	0.00	0.00
O & M Expenses	3.62	3.82	3.99	4.24
Maintenance Spares	4.08	5.07	6.62	8.60
Receivables	71.29	72.46	75.78	79.01
Total Working Capital	104.62	106.84	113.16	119.95

4.289 The Petitioner has computed the interest on working capital for the Control Period, considering the SBI Prime Lending Rate as on April 1, 2007 of 12.75% per annum.

Commission's Analysis

4.290 The Commission has estimated the working capital requirement of the Petitioner for the Control Period based on the following norms:

- (a) Cost of Coal for 1.5 months for pithead stations and for 2 months in non-pithead stations corresponding to the Target Availability;
- (b) Cost of Secondary Fuel Oil for 2 months corresponding to the Target Availability;
- (c) O&M Expenses for 1 month;

- (d) Receivables equivalent to 2 months of fixed and variable costs for sale of electricity calculated on the Target Availability;
- (e) Maintenance spares: 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation.
- 4.291 The Commission shall initiate appropriate action to include the provision for maintenance spares in working capital requirements in the MYT regulations.
- 4.292 The Commission has not considered any escalation in fuel costs in its calculation for working capital requirements for the Control Period. Though the variation in fuel costs would be adjusted automatically through the FPA mechanism, the Commission shall not true-up the working capital requirements due to the same. Hence, the Commission has escalated the working capital requirement for FY09, FY10 and FY11 at an annual rate of 4% to consider for the escalation in fuel costs.
- 4.293 The Commission has calculated the working capital requirement of the Petitioner considering the approved values of the above components for each year of the Control Period (and the above explained escalation), as shown below:

Table 4.80: Approved Working Capital for GTPS

(Values in Rs Cr)	FY08	FY09	FY10	FY11
Cost of Fuel	23.11	24.08	24.08	24.08
Cost of Secondary Fuel	0.00	0.00	0.00	0.00
O & M Expenses	2.89	3.23	3.14	3.27
Maintenance Spares	3.89	4.54	5.22	5.83
Receivables	63.23	66.85	67.29	67.80
Total Working Capital	93.11	98.70	99.73	100.98
4% escalation in Working Capital	-	102.65	107.87	113.58

- 4.294 The Commission has calculated the interest on working capital for the Control Period, considering an interest rate of 12.75% based on SBI Prime Lending Rate for short term loans as of April 9, 2007.
- 4.295 The following table details the interest on working capital, as submitted by the Petitioner and as approved by the Commission, for the Control Period:

Table 4.81: Interest on Working Capital for GTPS

(Values in Rs Cr)	Proposed				Approved			
	FY08	FY09	FY10	FY11	FY08	FY09	FY10	FY11
Interest on Working Capital	13.34	13.62	14.43	15.29	11.87	13.09	13.75	14.48

Tax Expenses**Petitioner's Submission**

4.296 The Petitioner has not projected any tax expenses for the Control Period.

Commission's Analysis

4.297 The Commission has not considered any expenses on account of Income Tax or Fringe Benefit Tax, payable by the Petitioner during the Control Period, for calculation of fixed cost. Income Tax, if any, shall be treated as expense and shall be recoverable from the Beneficiaries.

4.298 Recovery of income tax shall be done directly by the Petitioner from the beneficiaries without making any application before the Commission. Any refund of income tax shall be adjusted with the tax payable in the year of its receipt, and not against the year for which it is applicable.

4.299 In case of any objections by the beneficiaries to the amounts claimed on account of income tax, they shall first make payments to the Petitioner and may subsequently make an application before the Commission regarding the same.

Fixed Cost

4.300 The Fixed Cost for the Petitioner for the Control Period, based on the analysis of various components by the Commission, as detailed above, is shown below:

Table 4.82: Total Fixed Cost for GTPS

Particulars	FY08	FY09	FY10	FY11	Reference
O&M Expenses (Rs Cr)	34.63	38.75	37.72	39.22	Table 4.71
Depreciation (Rs Cr)	18.97	21.33	23.32	24.64	Table 4.76
Advance Against Depreciation (Rs Cr)	0.00	0.00	0.00	0.00	-
Return on Equity (Rs Cr)	11.93	13.58	14.97	15.90	Table 4.77
Interest Charges (Rs Cr)	24.70	25.43	25.05	23.65	Table 4.78
Interest on Working Capital (Rs Cr)	11.87	13.09	13.75	14.48	Table 4.81
Total Fixed Cost (Rs Cr)	102.10	112.18	114.81	117.89	-
Net Generation (MU)	1677	1677	1677	1677	Table 4.59
Fixed Cost Per Unit (p/ kWh)	60.87	66.88	68.45	70.29	-

Determination of Generation Tariff

4.301 The generation tariffs applicable to GTPS for each year of the Control Period, based on the fixed and variable costs approved by the Commission, are shown below:

Table 4.83: Generation Tariff for GTPS for the Control Period

(Values in Rs Cr)	FY08	FY09	FY10	FY11	Reference
Fixed Costs	102.10	112.18	114.81	117.89	Table 4.82
Net Generation (MU)	1677	1677	1677	1677	Table 4.59
Fixed Cost per Unit (p/ kWh)	60.87	66.88	68.45	70.29	Table 4.82
Total Fuel Cost (Rs Cr)	277.27	288.92	288.92	288.92	Table 4.62
Variable Cost per Unit (p/ kWh)	165.30	172.25	172.25	172.25	Table 4.64
Total Cost (Rs Cr)	379.38	401.10	403.72	406.81	-
Total Cost per Unit (p/ kWh)	226.18	239.13	240.69	242.53	-

- 4.302 The total fixed cost (capacity charges) shall be recovered by the Petitioner at target availability specified by the Commission. The recovery of fixed cost below the level of target availability shall be on pro rata basis with no fixed cost payable at zero availability. For this purpose, the availability of the power station shall be certified by the SLDC. Any adjustment of recovery of annual fixed cost shall be based on the cumulative availability as certified by the SLDC at the end of the year. The fixed cost shall be recovered in 12 equal monthly instalments in proportion to allocated/contracted capacity.
- 4.303 Intra-state availability based tariff (ABT) is in operation in Delhi since April 1, 2007. Consequent to this, the variable cost shall be billed by the Petitioner to the beneficiaries based on the scheduled generation during the month from the station as per the rates approved by the Commission.
- 4.304 Incentive shall be payable at a flat rate of 25 paise/kWh for the scheduled generation achieved beyond the level corresponding to target PLF. However, the generating station shall comply with the SLDC instructions with respect to the backing down of the generation and such backing down shall not qualify for calculation of PLF for Incentive. Further, in case of non-compliance by generating stations to backing down instructions given by SLDC, generation during backing down period as instructed by SLDC shall not be considered for Incentive purpose. The SLDC shall at the end of the year, certify the generation level of generating stations which qualifies for Incentive purpose as per the above guidelines.
- 4.305 Deviations from the schedule are to be accounted for in accordance with the principles laid down in the order of the Commission regarding intra-state ABT.

A5:SUMMARY**Directives of the Commission**

- 5.1 The Commission directs the Petitioner to inform the SLDC regarding the fuel being used for generation on any particular slot/ day, since the variable cost is different for each fuel and the SLDC can consider the same during merit order dispatch.
- 5.2 The SLDC can test the declared capacity of GTPS at random and in the event of the power station failing to demonstrate the declared capability, the SLDC shall report the matter to the Commission, which would then determine the penalty, if any, to be levied for false declaration.
- 5.3 The Commission also directs the Petitioner to consider any source of cheaper fuel available in the future, and accordingly restructure the order of scheduling of fuel to ensure that the cheapest available fuel is utilised first.

Summary of Generation Tariffs

- 5.4 The generation tariffs for IPGCL Stations as determined by the Commission after true-up of FY07 and approval of the Aggregate Revenue Requirement for the Control Period is as shown below:

Table 5.1: Generation Tariff for IP Station

Particulars	FY07	FY08	FY09	FY10	FY11
Fixed Costs (Rs. Cr.)	51.53	57.76	66.47	63.35	65.18
Fuel Costs (Rs. Cr.)	168.56	134.49	134.49	134.49	134.49
Net Generation (MU)	805	644	644	644	644
Fixed Cost (p/kWh)	64.04	89.64	103.16	98.31	101.15
Variable Cost (p/kWh)	209.47	208.71	208.71	208.71	208.71
Total Generation Tariff (p/kWh)	273.51	298.35	311.87	307.02	309.86

Table 5.2: Generation Tariff for Rajghat Power House

Particulars	FY07	FY08	FY09	FY10	FY11
Fixed Costs (Rs. Cr.)	58.56	66.04	70.33	69.30	69.70
Fuel Costs (Rs. Cr.)	107.03	140.86	140.86	140.86	140.86
Net Generation (MU)	558	734	734	734	734
Fixed Cost (p/kWh)	104.93	89.92	95.75	94.35	94.90
Variable Cost (p/kWh)	191.79	191.79	191.79	191.79	191.79
Total Generation Tariff (p/kWh)	296.73	281.71	287.55	286.15	286.69

Table 5.3: Generation Tariff for GTPS

Particulars	FY07	FY08	FY09	FY10	FY11
Fixed Costs (Rs. Cr.)	82.32	102.10	112.18	114.81	117.89
Fuel Costs (Rs. Cr.)	216.62	277.27	288.92	288.92	288.92
Net Generation (MU)	1372	1677	1677	1677	1677
Fixed Cost (p/kWh)	59.98	60.87	66.88	68.45	70.29
Variable Cost (p/kWh)	157.85	165.30	172.25	172.25	172.25
Total Generation Tariff (p/kWh)	217.83	226.18	239.13	240.69	242.53