Order for Determination of Capital Cost of Larji HEP (126 MW) and Other Related Issues

Himachal Pradesh Electricity Regulatory Commission

July, 2011

BEFOERE THE HIMACHAL PRADESH ELECTRICITY REGUALTORY COMMISSION AT SHIMLA

Case No. 171/2010

CORAM
SUBHASH CHANDER NEGI

IN THE MATTER OF:

Determination of the Capital Cost of Larji Hydro Electric Project (126 MW) Truing-up of annual Fixed Charges from FY 2007-08 to FY 2010-2011 and Suo-Motu Determination of Generation Tariff for the Second MYT control period from FY 2011-12 to FY 2013-14

AND

IN THE MATTER OF:

Himachal Pradesh State Electricity Board Limited

Kumar House, Shimla – 171 004.

APPLICANT

The Applicant has filed application with the Himachal Pradesh Electricity Regulatory Commission (hereinafter referred as "the Commission") for determination of the Capital Cost of Larji Hydro Electric Project (126 MW) and Truing-up of Annual fixed Charges from FY 2007-08 to FY 2010-2011.

Further, as the second MYT Control Period has already commenced, the Commission deem it fit to suo-motu determine generation tariff for the second MYT Control Period from FY 2011-12 to FY 2013-14 in this Order in accordance with Himachal Pradesh Electricity Regulatory Commission (Terms & Conditions for Determination of Hydro Generation Tariffs) Regulations, 2011.

The Commission has considered the petition filed by the Applicant, the facts presented by the Applicant in its various filings, objections received by the Commission from stakeholders and Consumer Representative, the issues raised in the hearings at Shimla, the responses of the Applicant to the objections and documents available on record. In exercise of the powers vested in it under section 62 and section 86 of the Electricity Act, 2003 (Act No.36 of 2003), read with Himachal Pradesh Electricity Regulatory Commission (Terms & Conditions for Determination of Hydro Generation Tariff) Regulations, 2007 as well as

Himachal Pradesh Electricity Regulatory Commission (Terms & Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, the Commission passes the following Order determining the Capital Cost for Larji Hydro Electric Project (126 MW), Truing-up of Annual Fixed Charges for the period from FY 2007-08 to 2010-11-11 and Generation Tariffs for the Second MYT Control Period from FY 2011-12 to FY 2013-14. The Commission further directs the applicant to publish the tariff approved by the Commission, in the leading news paper, one in Hindi and another in English, having circulation in the State within 7 days of this order.

Shimla

Dated 7th July, 2011 **--Sd--**

(Subhash Chander Negi)
Chairman

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List of Abbreviations

The abbreviations and acronyms used in this Tariff Order shall have the following meanings:-

Abbreviation	
A&G	Administration and General
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
COD	Commercial Date of Commissioning
FY	Financial Year
GoHP	Government of Himachal Pradesh
HEP	Hydro Electric Project
HPERC	Himachal Pradesh Electricity Regulatory Commission (or Commission)
HPSEB	Himachal Pradesh State Electricity Board (or Board or HPSEBL)
HRT	Head Race Tunnel
IDC	Interest During Construction
KW / MW / GW /	Kilo Watts / Mega Watts / Giga Watts
KWh / MWh / GWh	Kilo Watts hours / Mega Watts hours / Giga Watts hours
LD	Liquidated Damages
LOI	Letter of Intent
MA	Miscellaneous Application
MERC	Maharashtra Electricity Regulatory Commission
O&M	Operation and Maintenance
PLR	Prime Lending Rate
PoE	Panel of Experts
R&M	Repair and Maintenance
RCC	Reinforced Concrete Cement
RD	Reduced Distance
SBI	State Bank of India
TRT	Tail Race Tunnel

A1: BACKGROUND

1.1 The Himachal Pradesh State Electricity Board Limited (hereinafter referred to as "HPSEB Ltd") is a deemed licensee under the first proviso to section 14 of the Act for distribution and supply of electricity in the State of Himachal Pradesh as well as a "generation company" falling within the definition of section 2 (28) of the Electricity Act, 2003 (hereinafter referred to as "the Act").

1.2 The HPSEB Ltd has filed Petition No. 171 of 2010 on August 23, 2010 before the Himachal Pradesh Electricity Regulatory Commission (hereinafter referred to as "the Commission") for determination of Capital Cost of Larji Hydro Electric Project (the Project) and determination of generation tariff from FY 2007-08 to FY 2010-11 under sections 62 and 64 of the Electricity Act, 2003, read with the Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, framed by the Commission, which now stands repealed by the HPERC(Terms and Conditions for Determination of Hydro Generation Tariff) Regulation, 2011 with the stipulation that the provisions concerning the tariff for the Control Period ending on the 31st March, 2011 and the provision for conduct of proceedings for its revocations, variation or alternation, as stood before such repeal, shall continue to be in-force.

1.3 This Order relates to the above mentioned Petition under the Multi Year Tariff regime. Further, this Order also relates to truing up of ARRs for the period from FY 2007-08 to FY 2010-11 against the ARRs and tariff provisionally approved by the Commission for electricity generated from Larji HEP (126 MW) in its Multi Year Tariff Order for FY 2008-09 to FY 2010-11, dated May 30, 2008.

Functions of the Commission

1.4 The Himachal Pradesh Electricity Regulatory Commission was established and incorporated by the Government of Himachal Pradesh through a notification dated December 30, 2000, under section 17 of the repealed Electricity Regulatory Commissions Act, 1998 (14 of 1998), and now covered under the first proviso to section 82 of the Electricity Act, 2003, with its headquarters located at Shimla.

1.5 The Act guides the Commission's approach to regulation. 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.

1.6 The Commission derives its powers under section 86 of the Act, which came into force with effect from June 10, 2003. The Act repealed the Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998.

1.7 As part of the tariff related provisions of the Act, the State Electricity Regulatory Commission (SERC) has to be guided by the Act, the National Electricity Policy (NEP) and the National Tariff Policy (NTP).

1.8 The functions assigned to the Commission under the Act are as follows:-

(1) 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 of the Act, 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."

Historical Background of the Project

1.9 Larji HEP with an installed capacity of 126 MW (3 Units each of 42 MW), a run-of-river scheme on river Beas with pondage, with underground power station and static excitation, situated in District Kullu, was initially taken up for construction in 1987 after its techno-economic approval was received from Government of India (GOI) on August 04, 1986 and the approval from Planning Commission was received on March 30, 1987 at a total cost of Rs.168.85 crore. The total cost of Rs.168.85 crore included civil works consisting of Rs.99.95 crore Electrical works of Rs.54.40 crore and cost of transmission line of Rs.18.50 crore. In the DPR prepared in 1987, following structures were envisaged for the project:-

i. Diversion Tunnel on left bank
ii. 30.30 m high concrete Gravity Dam
iii. Desanding arrangements with 4 chambers.
iv. 4850 m long, 8.50 m dia circular Power Tunnel.
v. Two open ended Surge Shafts each of 44m height 28m dia.
vi. Surface Power House with 3 Units each of 42 MW
vii. Rectangular, 29 m long Tail Race channel

1.10 However, despite techno-economic clearance by the Central Electricity Authority (CEA) on August 4, 1986 and approved by Planning Commission G.O.I. on

March 30, 1987 for an estimated cost of Rs.168.85 crore, the construction of the Larji HEP did not proceed as planned, primarily due to paucity of funds. From 1987 to March, 1999 only limited infrastructure was developed and detailed investigations were carried out. Initially, the State Government decided to take up the project for execution in 1991. Consequent to findings of Sub-surface geological explorations which were concurrently in progress, some inherent changes in Project components were found necessary by the erstwhile HPSEB (the Board) in consultation with the Panel of Experts (P.O.E), which was constituted by the Board in 1995 for suggesting and firming up the necessary changes in the DPR. As practically no work had been carried out in respect of main structures envisaged in 1987 proposal, the Board decided to incorporate following changes in main project structures:-

i. Concrete Dam was replaced by a gated diversion barrage.

ii. 6 Nos. radial gates in spillway were replaced with 5 Nos. radial gates in the diversion barrage but of bigger size.

iii. Desanding arrangements of 4 chambers was retained with bigger sizes.

iv. HRT length was reduced to 4119.86 m retaining old dia and type of Power Tunnel.

v. Adit locations were changed which changed their length type of Power Tunnel.

vi. Two numbers Surge Shafts were replaced by one open Surge Shaft after making changes in height and size.

vii. Surface Power House was replaced by underground Power House

viii. 29 m long Tail Race channel was replaced by 258mx10m dia Tail Race Tunnel (TRT)

ix. A new provision of TRT chamber was made.

1.11 The State Government decided to take up the Project for active construction in 1998. Accordingly, a revised DPR (March 1999) with the above mentioned changes in scope of the Project was submitted to the Central Electricity Authority (CEA) for according Techno Economic Clearance (TEC) and Planning Commission’s Approval. The Central Electricity Authority (CEA) accorded Techno Economic Clearance on January 14, 2000 at revised cost estimate ofRs.796.98 crore including transmission line and IDC. This included civil works costing Rs.419.03 crore. Electro mechanical works of Rs.221.05 crore, cost of transmission lines as Rs.25.75 crore and estimated IDC at Rs.131.16 crore with an overall per MW cost of Rs.6.32 crore.

1.12 **Civil works:** Except for HRT works (Package II) for which letter of intent had been issued in April, 1999, all other Civil/ Mechanical Works for the project were awarded during April, 2000 to January, 2002.

1.13 **Electro Mechanical works:** the HPSEB Ltd entered into two main contracts for Electro Mechanical works for the Project. The first contract was for Ex-manufacturing works/place for main equipment with Alstom make SF6 GIS and mandatory spares and the second contract was for main Equipment and mandatory spares, unloading and handling at site, storage, installation, testing and commissioning including performance testing and insurance covering all activities, which was awarded to M/S BHEL on February 15, 2001.

1.14 **Transmission line:** The construction of transmission lines was decided to be taken up internally by the Board. There were two 132 kV D/C lines, one from Larji to Gaggal which was completed in May, 1993 and commissioned in December, 1998. However, the line was charged on 33 kV for supplying additional power to Kullu Valley. The second line from Larji to Kangoo was completed in June, 2006.

1.15 **Commissioning of the Project:** The First Unit (Unit-III) of Larji HEP was commissioned in September, 2006, Second Unit (Unit-II) was commissioned in October, 2006 and Third Unit (Unit-I) was commissioned in February, 2007.

Interventions of the Commission

1.16 In its Tariff Order for FY 2004-05, the Commission directed the Board to carry out an investigation of the very high capital cost in respect of the Larji Project and submit the report by September 30, 2004.

1.17 The report submitted by the Board was not found satisfactory. The Board thereafter submitted a tariff petition for FY 2005-06, which mentioned that power would be available from Larji project during FY 2005-06. However, the Commission was of the view that details submitted by the Board for Larji HEP were inconsistent and contradictory.

1.18 The Commission had felt that the escalation of the project cost and time over run was likely to adversely affect the larger consumer interest in the tariff determination under the Act as also the overall health of the power sector in the State. Keeping in view the requirement of assessment of prudent cost of the

Project, in the larger public interest, the Commission constituted a Committee to investigate and enquire into the cost escalation and excessive completion period of Larji Project, as well as the reasonable cost of the project, to enable the Commission to formulate its opinion.

1.19 The Board filed a writ petition in the High Court seeking a stay on the Inquiry committee constituted by the Commission. After the Inquiry had been completed and the report submitted by the Committee, the High Court stayed further action on the report.

1.20 The Commission filed a Special Leave Petition (SLP) in the Supreme Court seeking transfer of the case from High Court to the Appellate Tribunal for Electricity, New Delhi. The Supreme Court accepted the plea of the Commission and ordered the transfer of the case to the Appellate Tribunal. The Appellate Tribunal in its Order dated July 12, 2006 on Appeal No. 3 of 2006, had disposed of the Appeal in wake of the affidavit filed by the Board, which submits that the Board will constitute a Committee to investigate into the facts leading to cost and time over-run of the Project, and will further proceed against the persons responsible for the same.

1.21 The Board constituted a High Level Committee in August 2006 which submitted its findings in May 2007. Subsequently, the Commission constitutedanother Committee on July 22, 2008 to fix the responsibilities for cost and time over run. On the basis of this report, it was found that the incumbent Chief Engineer Larji and Superintending Engineer LCCI (Engineer in charge) have been found guilty on some accounts while discharging their assigned duties and the penalty to withhold their full pension gratuity and leave encashment has been imposed by the HPSEB Ltd. In other cases the matter is in process.

1.22 In the meantime, the Board submitted a Petition for Larji HEP along with the MYT Petition on 15 December 2007. The Petition mentioned the capital cost as Rs.1293.69 crore. The Commission observed that the formats did not support the cost components and asked to provide additional information on the various cost components. The Board failed to submit further details despite repeated queries and interactions. Thus, the Commission was not in a position to determine the capital cost of the project on the basis of that Petition.

1.23 Initially, the Commission had considered allowing the cost, as contained in the Techno Economic Clearance (TEC) accorded by the CEA in January 14, 2000. The total completed cost for the project (including IDC) at 1999 price levels as per the TEC is Rs.796.98 crore.

1.24 The Commission in Tariff Order for FY 2007-08 had provisionally approved

Rs.960 crore as the capital cost as determined by the Committee of Experts, constituted by the Commission and directed the Board to file a detailed Petition with the Commission for finalization of the capital cost for Larji HEP.

1.25 The Commission in its Tariff Order dated May 30, 2008 for Control Period from FY 2008-09 to FY 2010-11 has approved the provisional capital cost for Larji HEP at Rs.960 crore and further worked out Annual Fixed Cost as Rs.132.03 crore, Rs.123.08 crore, Rs.113.37 crore and Rs.103.69 crore for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11 respectively.

Multi Year Tariff Framework

1.26 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.

1.27 The Commission designed the MYT framework in the State and set long term performance targets for the Utilities engaged in Generation, Transmission and Distribution in the Himachal Pradesh. Simultaneously, the Commission segregated costs into two categories; first which are expected to be easily controlled by the entity and a second category over which an entity does not have significant control. The Commission would set targets for each year of the Control Period for the items or parameters that are deemed to be "controllable".

1.28 Any financial losses arising out of the under-performance with respect to the targets specified by the Commission for the "controllable" parameters shall be to the Generating Company's account. The MYT framework is also designed to provide predictability and reduce regulatory risk.

Multi Year Tariff Regulations

1.29 The Commission issued a Concept Paper and Draft MYT Regulations for Generation, Transmission and Distribution businesses to all concerned stakeholders, including the Government, the Board, and consumers. 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.

1.30 These draft regulations and MYT Concept Paper were issued on June 28, 2007 and a notice for inviting comments and suggestions from public and stakeholders was published in leading newspapers on July 2, 2007.

1.31 The Commission issued final regulations vide notification dated October 10, 2007 specifying terms and conditions for determination of tariff for generation, transmission and distribution of electricity under the Multi Year Tariff (MYT) framework. The generation tariff regulations of 2007, have been repealed by the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulation, 2011 with the specific provision, that the provision concerning tariff order for the Control Period ending on the 31st March, 2011 and the provision for conduct of proceedings for its revocations, variation or alternation as, stood before such repeal, shall continue to be in-force.

Filing of Petition

1.32 The HPSEB Ltd has filed the Petition on August 25, 2010 with the Commission for determination of Capital Cost of Larji HEP (126 MW) and determination of generation tariff from FY 2007-08 to FY 2010-11.

Procedural Background

1.33 In its Interim Order dated September 18, 2010, the Commission on pre-admission scrutiny of the Petition mentioned several deficiencies and decided not to admit the Petition for processing under section 64 (3) of the Act. The Commission also directed the HPSEB Ltd to rectify the defects and furnish requisite details on the formats prescribed by the Commission within six weeks time. It was further mentioned in this Order that the Petition would be listed for admission hearing after scrutiny of additional submissions.

1.34 Subsequently, the HPSEB Ltd submitted the required information vide M.A. No. 236/2010 dated December 10, 2010. The Commission, vide its letter No. HPERC/478-A-Vol-II/Secy/TFA Section/2010-11-4108 dated January 15, 2011, conveyed to the HPSEB Ltd that on scrutinising the application, some shortcomings have been observed by the Commission, which need to be rectified to make the application complete. HPSEB Ltd was asked to rectify the defects and furnish the desired information complete in all respect by January 20, 2011. In response to the same, the HPSEB Ltd submitted the requisite information vide M.A. No. 05 of 2011 dated January 21, 2011.

1.35 M/s ABPS Infrastructure Advisory Private Limited were appointed Consultants to assist the Commission in the determination of capital cost and tariff for electricity generated from 126 MW Larji HEP. The Consultants after analysing the Petition along with the additional information already filed by the HPSEB Ltd have suggested further information required to be sought by the Commission in order to make the Petition acceptable for processing. The HPSEB Ltd submitted the requisite information through its application M.A. No. 21 of 2011 dated March 09, 2011 and M.A. No. 23 of 2011 dated March 14, 2011.

Admission Hearing

1.36 The Commission held a hearing on March 9, 2011 and considering the fact that the Petition is now complete as per MYT Regulations, decided to admit the Petition for processing in terms of section 64(3) of the Act vide its Interim Order dated March 9, 2011. The Commission directed the HPSEB Ltd to designate one of its concerned senior officers, dealing with the subject, as Nodal Officer for coordinating with the Commission in processing subject cited Petition to ensure that all relevant material / information is available in the interest of justice.

1.37 The Commission further directed to the HPSEB Ltd, to take action under section 64(2) of the Act, read with Regulation 16(5) of the HPERC (Conduct of Business Regulations) 2005, to publish the salient features of the Petition in the prescribed form, in two newspapers, one in English and one in Hindi, having vide circulation in the State of Himachal Pradesh in two insertions interspersed two days apart, on March 14, 2011 and March 16, 2011 under intimation to the Commission. Besides this, the HPSEB Ltd was also required to make available the complete tariff petition along with formats and additional information on the website of the HPSEB Ltd as well as for sale to stake-holders by March 11, 2011.

1.38 However, on application of the HPSEB Ltd vide MA No. 23 of 2011 dated March 14, 2011, the Commission issued an Interim Order on March 14, 2011 allowing a delay of 2 to 4 days in publication of salient features of the Petition and making available copies of the complete Petition to the stake-holders. The Commission also condoned the delay in compliance of the Commission's Order dated March 09, 2011.

First Technical Validation Session (TVS)

1.39 In the meantime, in order to expedite the processing of the Petition, the Commission decided to hold direct interaction with the concerned officials of the HPSEB Ltd for seeking further information as well as clarifications in respect of the information already submitted by the HPSEB Ltd. In this respect, the First Technical Validation Session (TVS) was held on March 11, 2011 at the Office of the Commission. Various critical issues were deliberated in the first TVS and based on the same the HPSEB Ltd was asked to submit further information/clarification latest by March 28, 2011. The HPSEB Ltd submitted its replies to these issues raised in the first TVS vide M.A. No. 21 of 2011 dated March 09, 2011 and M.A. No. 23 of 2011 dated March 14, 2011.

Number of Objections Received

1.40 Two objections were received from the public in response to the publication of the Petition, which are mentioned as follows:-

Objection No. 1: The Sukhjit Agro Industries, Haroli, Dist. Una

Objection No. 2: Shri P.N. Bhardwaj, Dharampur, Dist. Solan [Consumer Representative appointed by the Commission under section 94(3) of the Act]

The summarised objections, issue-wise response of the HPSEB Ltd and views of the Commission on the same are dealt in chapter A3 of this Order.

Visit to HPSEB Ltd Head Office and Site Offices

1.41 During the course of its continuous interactions with the HPSEB Ltd officials a team of officers of the Commission staff and Consultants also visited head office of the HPSEB Ltd at Shimla for collecting the desired information and clarification. However, it was noticed that a number of critical information and documents are not available at head office. Thus, with a view to have a better understanding of the Project as well as collection of requisite information/documents, the Commission decided to send its team to the Site Offices. Accordingly, the team of the Commission visited the site offices for discussion and collection of desired information/documents on April 22 and 23, 2011. For this purpose, the team visited the office of the Chief Engineer Generation, Sundernagar, and divisional offices at Pandoh, Thlaout and Sarabai (District Kullu).

Publication Process

1.42 The Commission issued an interim Order to the Petitioner, after admission hearing on March 09, 2011, for publishing a disclosure of the salient features of the Petition for the information of all the stakeholders in the State of Himachal Pradesh. Accordingly the Petitioner published the salient features of the Petition in the following newspapers:

(a) The Tribune (Chandigarh edition) on March 16, 2011

(b) The Amar Ujala (Chandigarh edition) on March 16, 2011

(c) The Divya Himachal (Chandigarh edition) on March 18, 2011

(d) The Hindustan Times(Chandigarh edition) on March 18, 2011

1.43 The Commission invited suggestions and objections from the public on the Tariff Petition filed by the Petitioner in accordance with section 64(3) of the Act subsequent of the publication of the initial disclosure by the Petitioner. The public notice inviting objections/ suggestions was published on March 17, 2011 in the following newspapers:

(a) The Tribune (Chandigarh edition)

(b) The Amar Ujala (Chandigarh edition)

1.44 The interested parties/ stakeholders were asked to file their objections and suggestions on the Petition by April 7, 2011. The Commission received one objection by the stipulated date i.e. April 7, 2011 and one objection after a delay of one day i.e. April 8, 2011, which the Commission accepted.

1.45 The HPSEB Ltd submitted its replies to the above mentioned objections vide M.A. No. 38 of 2011 dated April 23, 2011.

1.46 The public hearing was held on May 5, 2011 at the Commission's Court Room in Shimla, which was attended by one of the Objector Mr. P.N. Bhardwaj. The public hearing commenced with a presentation by the HPSEB Ltd on its Petition. Subsequently, Mr. P.N. Bhardwaj, the consumer representative gave his detailed views and objections on the Petition, which were responded by the officials of the HPSEB Ltd.

1.47 During the public hearing, the Commission also directed the HPSEB Ltd to submit the information with respect to the actual works cost based on bills raised by the Contractors, reconciliation of actual works cost with the works cost submitted in the Petition, break up of increase in costs due to cost over-run and time over-run in the prescribed format with justification and the details of source of equity funded by the HPSEB Ltd in Larji HEP with supporting documents.

Interaction with the Petitioner

1.48 Since the submission of the Petition by the Petitioner, there have been a series of interaction between the Petitioner and the Commission, both written and oral, wherein the Commission sought additional information/ clarification and justification on various issues, critical for the analysis of the Petition.

1.49 The submissions made by the Petitioner, to the clarifications/ information sought by the Commission from time to time, have been taken on record and are as follows:-

(a) M.A. No. 236 of 2010 - dated December 10, 2010

(b) M.A. No. 05 of 2011 - dated January 21, 2011

(c) M.A. No. 21 of 2011 – dated March 09, 2011

(d) M.A. 23 of 2011 – dated March 14, 2011

(e) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-22369 dated March 28, 2011

(f) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-22390 dated March 29, 2011

(g) M.A. No. 38 of 2011 – Dated April 24, 2011 (Reply to Objections)

(h) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-2266 – dated May 02, 2011

(i) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-3051 – dated May 12, 2011

(j) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-3444 – dated May 20, 2011

(k) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-3537 – dated May 25, 2011

(l) Letter No. HPSEB/CE/(Comm)/SERC-Larji/2011-4083 – dated June 03, 2011

(m) Letter No. HPSEB/CE/(Comm)/SERC-MYT/2011-4185 – dated June 06, 2011

A2: SUMMARY OF THE PETITION

2.1 This chapter summarizes the Petition filed by the HPSEB Ltd on August 23, 2010 for determination of capital cost and determination of tariff for electricity generated from 126 MW Larji HEP for Period FY 2007-08 to FY 2010-11. All the subsequent filings and/or submission of additional information to the Petition have been dealt with in chapters A4 and A5 of the Order.

Background of the Filing

2.2 The Board during the processing of MYT Petition in December, 2007 had submitted the capital cost of the Larji HEP at Rs.1293.69 crore to the Commission and subsequently there had been certain increase in the capital cost. As the COD of Larji HEP was in September, 2006, there were certain expenses which were not booked to the project in the FY 2006 -07. The Board in its earlier Petition had taken the completion cost of Larji HEP based on the cost as on March 31, 2007. In the current Petition, the HPSEB Ltd has submitted the completion cost of Larji HEP based on the cost as on March 31, 2008 at Rs.1461.33 crore. Accordingly, the HPSEB Ltd has determined the generation tariff based on the capital cost of Rs.1461.33 crore.

2.3 The HPSEB Ltd has submitted that the Commission in its MYT Order dated May 30, 2008 had provisionally approved the capital cost at Rs.960 crore as assessed by the Committee of Experts constituted by the Commission.

2.4 The HPSEB Ltd has further submitted that the Commission in the MYT Order had not taken into consideration even the cost of the project as assessed by the Independent Committee constituted by the Board as per the commitment given to the APTEL in Appeal no 3/2006. The same had been accepted by the APTEL in its Order dated July 12, 2006, for investigating in details the cost and time overrun of the project and to fix the responsibility both for the delay in execution as well as excessive escalation in cost.

2.5 The HPSEB Ltd has further submitted that the project approval accorded by the Planning Commission during 1987 underwent revision during 1999, 2001 and 2004. The period from 1987 to 1999 involved major changes/revision of design of some of the components of the project. The project report framed at March, 1999 price level incorporating changes in design features of various components of the project that were made since approval of the last report (i.e. 1987 report) was approved by the CEA in March, 2000. The 1999 project report was further revised in August, 2001 and was again revised in March, 2004. The Board had accorded administrative approval to the project estimate as per the August, 2001 project report. Project provision as per these reports for civil, electrical and transmission works and IDC component are given in following Table 1. The actual completed cost figures till March, 2008 are also brought out in the in the following Table 1:-

Table 1: Revision in project cost at different Price level submitted by HPSEB Ltd

Description	Cost as per 3/1999 price level (Rs crore)	Cost as per 8/2001 price level (Rs crore)	Cost as per 3/2004 price level (Rs crore)	Completed cost (Rs crore)
Civil Work	419.03	573.14	838.33	
Elect. Works of Power House	221.05	173.31	173.50	
Sub total	**640.08**	**746.45**	**1011.83**	
Transmission works	25.75	28.05	40.17	
IDC	131.16	101.20	169.42	
Total	**796.98**	**875.70**	**1221.42**	**1461.33**

2.6 An increase in capital expenditure of Rs.664.35 (1461.33-796.98) crore upto completion of the project in comparison with March, 1999 approved DPR, has taken place due to escalation in prices, extra, substituted and analogous items like extension of the traffic tunnel, construction of the coffer dam for additional season, board office pro-rata, CAT plan, cost overrun due to excessive liability of IDC/excessive over-brakes/payment of extra lead, changes in design etc.

2.7 Further, the HPSEB Ltd mentioned that if the base project cost is considered at Rs.796.98 crore at March, 1999, price level, this would work out to about Rs.1339.85 crore upto December, 2006, the COD of the project at an average rate of inflation of 8% per annum. With additional expenses of about Rs.176.90 crore on civil/hydraulic structures on account of revisions necessitated on safety considerations, the total estimate of March, 1999 price level is reflected as Rs.1516.75 crore against which an expenditure of Rs.1461.33 crore stand incurred upto March 31, 2008. Therefore, in view of the foregoing conclusion the expenditure of Rs.1461.33 crore is genuinely justified for the type and magnitude of work on this Project.

Details of 126 MW Larji HEP

2.8 The Larji Hydro Electric Project (126 MW) with three generating Units of 42 MW each has been executed by the "HPSEB Ltd" on river Beas in district Kullu which is about 190 km from Shimla. The details of project submitted by the HPSEB Ltd are as follows in Table 2:-

Table 2: Larji HEP (126 MW) Project Details

Project Details	**Unit**	**Value**
Capacity	MW	126.00
Completed Project Cost	Rs. crore	1,461.33
Cost per MW	Rs. crore /MW	11.60
Term of the Project	Years	35
CoD	Year	2007
First Year of Full Operation of Plant (Unit 1 to Unit 3)	FY	FY 2007-08
Project Financing		
Debt : Cost Ratio	%	73
Debt	Rs. crore	1,060.00
Equity	Rs. crore	401.33
Total Term of Debt	Years	10
Start Date of Debt Repayment		April 1, 2007
Return on Equity	%	14
Discounting Factor for Levelised Tariff (CERC notification)	%	11.10

2.9 The HPSEB Ltd has considered FY 2007-08 as base year for computation of tariff. The components of tariff and assumptions used for each of the components of tariff have been detailed as follows:

Tariff Determination of the Project

2.10 Operation & Maintenance (O&M) Expenses

The HPSEB Ltd has considered O&M expenses as 1% of the capital cost of the project for the base year as against 1.5% allowed in the Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007 and has subsequently escalated the O&M expenses at a rate of 4% per annum. The base year (FY 2007-08) O&M expenses have been computed as Rs.14.61 crore.

The HPSEB Ltd has assumed lower percentage considering the actual cost incurred by the HPSEB Ltd

2.11 Debt Servicing the Interest

The HPSEB Ltd has submitted that it has incurred an expenditure of around Rs.1461.33 crore on the commissioning of the project. The Debt-Equity ratio has been incorporated as 73:27 in the computations corresponding to a debt amount of Rs.1060 crore.

Table 3: Break-up of Debt

Agency	Rs. Crore
PFC	790
HP Coop. Bank /KCC Bank	170
Punjab National Bank	100

PFC Loan: The interest amount on the debt has been worked out at 9.5% per annum. The tenure of the debt is 10 years and the annual debt repayment amount will be Rs.79 crore. The repayment of debt has started from the FY 2007-08 and the last repayment would be in the FY 2016-17.

HP Co-operative Bank /KCC Bank: The interest amount on the debt has been computed at 9% per annum. The initial interest rate was 12.5%, which had been restructured to 9% in the year 2004. The tenure of the debt is 5 years with 10 equal half-yearly instalments. The half-yearly debt repayment amount will be Rs.17 crore. The repayment of debt had started from the second half of FY 2007-08 and the last repayment would be in first half of FY 2012-13.

PNB Loan: The interest amount on the debt has been worked out at 9% per annum. The tenure of the debt is 7 years with moratorium period of 3 years. The annual debt repayment amount will be Rs.14 crore. The repayment of debt had started from the FY 2009-10 and the last repayment would be in the FY 2016-17.

Based on the true-up Order for FY 2007-08, the Commission has approved the capital cost of Rs.960 crore (As per MYT order dated 30 May, 2008) as against Rs.1293 crore projected by the erstwhile HPSEB. The Commission has considered equity of Rs.48.11 crore from GoHP and has disallowed remaining the HPSEB Ltd equity in the project. Further, the State Commission has approved Rs.911.89 crore as a total debt taken for Larji.

The HPSEB Ltd has taken a total debt of Rs.1060 crore on account of Larji from various sources viz. PFC, PNB and H.P. Co-operative Bank. Based on the true-up Order for FY 2007-08, the Commission disallowed debt of Rs 148.11 crore (Rs.100 crore of PNB loan and Rs 48.11 crore of PFC loan) taken for Larji and hence, also disallowed their respective interest cost.

2.12 Interest on Working Capital

As per the HPERC Tariff Regulations, working capital requirement has been assessed, considering:

Table 4: Components of Working Capital

Maintenance Spares	40% of R&M
O& M Expenses	1 Month
Receivables	2 Months

The total working capital requirement as per the Regulations works out to Rs.60.69 crore for FY 2007-08. Interest on the normative working capital requirement of Rs.60.69 crore by applying 11.75% comes to Rs.6.82 crore.

2.13 Depreciation

The HPSEB Ltd has submitted that it has considered the useful life of the Project as 35 years as stipulated by the HPERC Tariff Regulations and the depreciable value of the Project as 90% (accounting for a salvage value of 10%). Thus the rate of the book depreciation has been computed as 2.57% per annum on a Straight Line Method.

Advance against depreciation has also been factored till FY 2016-17 in the tariff calculation for the purpose of repayment of debt amount. Advance against depreciation is the difference between actual debt repayment and depreciation recovered during the year.

2.14 Return on Equity

The HPSEB Ltd has submitted that it has invested Rs.353.22 crore of equity in this project. The State Government has also provided an equity support of Rs.48.11 crore. Therefore, for the tariff calculation, return of 14% has been considered on the total equity amount of Rs.401.33 crore.

The HPSEB Ltd requested the Commission to consider equity as part of the capital cost as the same was arranged through internal accruals as well as from the HPSEB Ltd own revenue. The HPSEB Ltd has used its own funds with the clear objective of funding equity towards the capital cost of Larji HEP. Any disallowance of the capital cost would render the HPSEB Ltd unsustainable as it does not have surplus funds to service this part of debt.

The HPSEB Ltd has also submitted the decision of the management committee of the HPSEB Ltd to the Commission in its filing for MYT Petition for FY 2009-10 vide letter no; e HPSEB/C.E. (Comm)/Tariff Petition/2010-2358-62 dated May 4, 2010 and also submitted the accounting of equity component of Larji HEP in the accounts of 2010-11 vide letter no. HPSEB/F&A: TR-1 (vol33)/10-21-22 dated May 26, 2010. The HPSEB Ltd further submitted that this amount on account of equity component for Larji HEP will be reflected in the balance sheet of the HPSEB Ltd for the FY 2009-10.

2.15 Taxes

The HPSEB Ltd has considered income as Zero while computing the tariff for Larji HEP. The HPSEB Ltd has requested the Commission that the income tax should be allowed as a pass through expense in the future years, when there is profit.

2.16 Revenue Projections

The HPSEB Ltd has considered the actual generation from Larji HEP during FY 2007-08, FY 2008-09 for computation of tariff. Further, revised estimates of generation during FY 2009-10 have been considered of computation of tariff for the FY 2009-10. The Revenue Projections from FY 2010-11 onwards has been done using the revised design energy of 566 MU. The energy available for sale at the project bus-bar after accounting for auxiliary consumption (0.7%), transformation losses (0.5%) and 12% free power to the State Government shall be 492 MU.

Based on the above parameters, the various cost components of tariff are calculated for FY 2007-08 to FY 2010-11 as follows in Table 5:-

Table 5: Annual Fixed Charges for the Control Period

Sr. No.	Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
1	O & M Expenses	14.61	15.20	15.81	16.44
2	Depreciation	37.58	37.58	37.58	37.58
3	Advance against Depreciation	58.42	75.42	89.71	89.71
4	Interest and Finance Charges	95.22	85.03	73.82	61.97
5	Interest on Working Capital	7.13	7.39	7.58	7.48
6	Return on Equity	56.19	56.19	56.19	56.19
7	Income Tax	0	0	0	0
	Total Annual Fixed Charges	**269.15**	**276.81**	**280.68**	**269.37**
	Net Units Generated (MU) after GoHP 12% Share	510	566	520	492
	Generation Tariff (Rs./kWh)	**5.28**	**4.89**	**5.40**	**5.47**
	Levelised Tariff for 35 Years	**Rs.3.91/kWh**			

The HPSEB Ltd has computed the levelised tariff as per the discounting factor rate (11.10%) specified under the CERC notification. Further, the HPSEB Ltd has submitted that the tariff for Larji HEP will gradually reduced in subsequent years once the debt will be repaid.

The tariff for the period FY 2008-09 to FY 2017-18 is summarized in the following Table 6 :

Table 6: Tariff for the period FY 2008-09 to FY 2017-18

Particulars	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
Annual Fixed Charges (Rs. crore)	277	281	269	258	230	204	196	188	166	93
Tariff (Rs/ Kwh)	4.89	5.40	5.47	5.24	4.67	4.15	3.98	3.82	3.38	1.89

The HPSEB Ltd requested the Commission that the energy generation in excess of primary energy (after allowing for free energy to the GoHP) should be considered as secondary energy and secondary energy rate shall be applied while computation of tariff for Larji HEP. Further, incentive on account of capacity index should also be allowed as per the HPERC Tariff Regulations.

Larji HEP – Features

2.17 The HPSEB Ltd has also submitted distinctive and unique features of the Larji HEP as an Annexure to the Petition. Larji HEP has been claimed as an engineering marvel in wake of various features highlighted in the Annexure 'A' to the Petition by the HPSEB Ltd, which are summarised as follows:-

- Design discharge per MW is approx. 7 times that for Nathpa Jhakri HEP.
- River diversion arrangement has been designed to cater for 1 in 20 years flood of magnitude 544 cubic meters as against 350 cubic meters for Nathpa Jhakri HEP.
- The Spillway Design Flood is very high at 8100 cubic meters as compared to 5660 cubic meters for Nathpa Jhakri HEP.
- The Diversion Structure is unique and built perhaps for the first time in any sub-mountainous Himalayan reach of a major river. It is amongst the largest structures of its own kind anywhere in the world.

- The foundation treatment in the form of compacted Soil Matrix, adopted for Diversion Barrage and Power Intake Structure, based on the analogy of concrete faced rock fill dams, has been adopted for the first time in case of floating structures.

- The Surge Shaft is perhaps amongst the largest dia shafts excavated in poor to fair rock mass conditions intercepted with complex features of the Himalayan Geology.

- Due to geological and topographical constraints, the Power House Complex had to been built unconventionally, with Surge Shaft located on the valley side and the Power House Caverns located into the hill mass.

- The Traffic Tunnel constructed to facilitate construction of the Project and regulate the traffic on NH-21 is amongst the longest traffic tunnel built anywhere in India

A3: OBJECTION FILED BY STAKEHOLDERS AND ISSUES RAISED DURING THE PUBLIC HEARING

Introduction

3.1 This chapter su mmarizes the various issues/objections raised by the various stakeholders to the Petition. Two objections were received by the Commission - one from M/s Sukhjit Agro Industries and another from Mr. P.N. Bhardwaj, Consumer Representative appointed by the Commission under section 94(3) of the Act. The objections filed by the stakeholders, replies of the Petitioner on the issues raised have also been summarized here along with the Commission's views on the matter.

3.2 **Objection no. 1: The Sukhjit Agro Industries, Haroli, Dist. Una**

Applicant's Submission

The applicant has submitted that the fixation of the standard voltage of supplies should be on basis of Contract Demand rather than on basis of Connected Load. The load on the system is contract demand and not the connected load.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that the issue does not pertain to the Petition for determination of the Capital cost of Larji HEP (126 MW) and generation tariff from FY 2007-08 to FY 2010-11 under sections 62 and 86 of the Electricity Act 2003

Commission's view:

The Commission agrees with the reply of the HPSEB Ltd that this matter does not pertain to the Determination of Capital Cost and Generation Tariff of Larji HEP.

3.3 **Objection no. 2: Shri P N Bhardwaj, Dharampur, Dist. Solan**

Applicant's Submission:

The applicant submitted that the completed cost of Larji HEP at Rs.1461.33 crore unacceptable by any standards and good engineering practices. The Petitioner has tried to justify an expenditure of Rs.11.6 crore/MW of installed capacity. The applicant further submitted that the Project Cost as per approved DPR Rs.168 crore in 1987, which has now increased to Rs.1461.33 crore. Such an increase in cost is not justified, despite the best efforts of the petitioners to carry this cost away by citing all.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that for Larji HEP, the Central Electricity Authority approved the Project Cost of Rs.796.98 crore at March, 1999 price level. The project was completed in December, 2006 and taking a practical escalation rate of 8% per annum (on the analogy of SJVNL), the escalated cost with Rs.796.98 crore as base comes to Rs.1339.65 crore. By adding costs of about Rs.176.90 crore on account of Civil Hydraulic Structures due to revisions necessitated based on safety consideration as per the advice of Panel of Expert, the original estimated project cost of Rs.796.98 crore at March, 1999 price level will reflect as Rs.1516.75 crore against which an expenditure of Rs.1461.33 crore has been incurred up to March 31, 2008. The HPSEB Ltd further submitted that an increase of cost on account of increase of length of Traffic Tunnel etc is not included in above cost. The Project being low head and high discharge scheme, the civil structure of very large sizes were necessitated. In view of the foregoing conclusion the expenditure of Rs.1461.33 crore is genuinely justified for the type and magnitude of work on this project.

Further, the HPSEB Ltd has submitted that the Project has been commissioned within a period of 5 years from date of award of contracts, as compared to 12 to 13 years for Nathpa Jhakri Hydro Electric Project. This is an engineering feat keeping in view the imposed conditions on account of weather, early snow melt floods, poor geology and also in view of large size of the Project components (many of these are unique), which are comparable to the components of a large capacity Projects having similar discharge but higher head on a major river in the Himalayas.

Commission's View:

The approved cost of Rs.168 crore in 1987 has no relevance, as the Central Electricity Authority (CEA) had approved a capital cost of Rs.796.98 crore on January 14, 2000, only after which the major work on the project had commenced. However, the HPSEB Ltd has claimed the total capital cost of Rs.1461.33 crore which much higher than the initially approved cost by the CEA. With a view to scrutinise the reasons for cost and time over run of the Project, the Commission had constituted an Inquiry Committee on March 24, 2005, which submitted its detailed findings to the Commission. Subsequently, the erstwhile the HPSEB had also constituted a High Level Committee on August 21, 2006, to investigate in detail the cost and time over run of the Project, which submitted its Report on May, 2007. The Commission while determining the Capital Cost of the Project has also taken note of the findings in both the Reports and has also carried out its prudence check. The Commission in chapter A4 of the Order has deliberated on cost over-run and time over-run factors towards increase in the Project Cost.

Applicant's Submission:

The Applicant submitted that the approved Project Cost of Larji HEP will have direct bearing on the projects which are under execution by other agencies in the State. The Applicant pointed out that currently two other projects under execution have already crossed their revised project costs and have been abnormally delayed and hence per MW cost of these projects when completed would exceed the Larji Project cost. Accepting the revised cost of Larji as claimed by the HPSEB Ltd, would set a wrong precedence for projects under execution.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that every project has its own features and the per MW cost accordingly vary from project to project. The Larji HEP is a low head; high discharge scheme, as such the size of Main Project components i.e. Diversion Barrage, Power Intake, Desanding Basin, Head Race Tunnel, Surge Tank, Underground Power House and Tail Race Tunnel is significantly large. The Project features and components are unique in their respective categories which has made this Project as one of the key engineering feats achieved in State Sector in the last decade. The Project has successfully generated the design energy (587 GWh per year) since its commissioning.

As such it is submitted that the cost of Larji HEP need not to be compared with other projects and will have no bearing on the cost of other projects being executed by the HPSEB Ltd and other agencies.

Commission's View:

The Commission agrees with the view of the HPSEB Ltd that every project has its own features and the per MW cost accordingly vary from project to project. The Commission will approve the Capital cost of the projects under execution, if required, after detail scrutiny and prudence check. The Commission has and will continue to undertake an objective approach towards approval of capital cost of any of the projects in the best interest of all the stakeholders.

Applicant's Submission:

The Applicant submitted that the Commission had appointed a Committee to identify the reasons for substantial increase in cost and time over run and to also reflect the reasonable cost which is acceptable as per good engineering and economics practices. The Committee has recommended the completed cost of the project which should be acceptable and approved by the Commission.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that there were actually two Committees to identify the reasons for the quantum jump in cost and time over run, which were constituted one by the Commission and other by the HPSEB Ltd on the directions of the Hon'ble Appellate Tribunal for Electricity (APTEL).

First Committee constituted by the Commission on March 24, 2005 (Aggarwal Committee)

The report submitted by the first Committee constituted on March 24, 2005 by the Commission is based on the situation when the project works were in full swing i.e. about 19 months before the commissioning of the Project, whereas after completion of the project, the situation is entirely different and the procedural and financial irregularities i.e. overpayments pointed out in the report and various audit paras have been taken care while raising counter claim in the arbitrational proceedings. Further, this Committee has fixed the total cost of the Project amounting to Rs.960 crore at August/2001 level with the addition of escalation and incentive only.

Second Committee constituted by the erstwhile HPSEB on the direction of the APTEL on August 21, 2006

The report submitted by the Second Committee on March 9, 2007 most apparently has taken the post commissioning scenario into consideration and recommended the reasonable cost based on August, 2001 level i.e. Rs.875 crore (after award of work) plus escalation, IDC, interest on borrowed money, reasonable cost of the essential substituted/extra items and reasonable excess in establishment, geological surprises etc amounting to Rs.275 crore i.e. project cost of around Rs.1150 crore, in view of the magnitude and size of the structures envisaged in Larji HEP.

In view of the justification given by the HPSEB Ltd for the cost of Rs.1461.33 crore, after taking into consideration the escalation factor, cost of the additional item of works included based on the advice of Panel of Experts, the HPSEB Ltd request the Hon'ble Commission to consider the cost of Rs.1461.33 crore only.

Commission's View:

The Commission would like to clarify that the Committee formed by the Commission was prior to the completion of the Project. However, the Commission has elaborated on the reasons for time over-run and cost over-run. The Commission while determining the capital cost of the Project has also taken note of the findings in both the Reports and has also carried out its prudence check. The Commission in chapter A4 of the Order has deliberated on cost over-run and time over-run factors towards increase in the Project cost.

Applicant's Submission:

The Applicant has submitted that the Commission in its MYT Order dated May 30, 2008, had provisionally approved the project cost at Rs.960 crore. If the initial project cost of Rs.168.85 crore as approved by the CEA is appreciated at a rate of 8% escalation every year till 2006, the project cost works out to Rs.787 crore. Thus the provisional cost of Rs.960 crore should be frozen and the amount spent over and above cannot be a pass through, it is for the HPSEB Ltd to absorb this cost.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that the Commission has fixed provisionally the capital cost of the project as Rs.960 crore based on the first report of the Committee constituted by the Commission subject to filing of separate Petition for determination of the capital cost of Larji HEP, which will be determined by the Commission. The HPSEB Ltd in compliance to above direction has filed the Petition. Since the objector has also mentioned the escalation rate of 8% per annum, the cost of the project with Rs.796.98 crore as base approved DPR comes to Rs.1339.65 crore. Adding costs of about Rs.176.90 crore on account of Civil Hydraulic Structures on account of revisions necessitated on safety consideration on the advice of POE, the original estimated project cost of Rs.796.98 crore at March/99 price level will reflect as Rs.1516.75 crore against which an expenditure of Rs.1461.33 crore stand incurred upto March 31, 2008. Therefore in view of the foregoing conclusion the expenditure of Rs.1461.33 crore is genuinely justified for the type and magnitude of work on this project.

Commission's View:

The Commission in its MYT Order dated May 30, 2008 had provisionally approved the capital cost at Rs.960 crore. Subsequently, the HPSEB Ltd filed a separate Petition for determination of capital cost of Larji HEP. The Commission has undertaken a detailed scrutiny of the submissions of Petitioner, additional information submitted by the Petitioner in response to the queries raised by the Commission and also considered the findings of the Reports of the two Committees to scrutinise the reasons for cost and time over run of the Project, while determining the Capital Cost of the Project as detailed in chapter A4 of this Order.

Applicant's Submission:

The Applicant has submitted that the phenomenal increase in capital cost is a clear case of neglect of people responsible for managing its affair during construction and thereby allowing the project to have a huge cost and time over run. Inefficiencies and administrative failures cannot be passed on to the consumers.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that a third committee was also constituted by the Commission on July 22, 2008 comprising of Er. R.K.Sharma and Er. Satish Sagar both retired engineers from HPPWD to fix the responsibilities for cost and time over run. On the basis of this report, it was found that the incumbent Chief Engineer Larji and Superintending Engineer LCCI (Engineer in charge) have been found guilty on some accounts while discharging their assigned duties and the penalty to withhold their full pension gratuity and leave encashment has been imposed by the HPSEB Ltd In other cases the matter is in process.

Commission's View:

The Commission has noticed that action has been taken by the HPSEB Ltd in some of the cases and in other cases the matter is in process. The Commission expects that the HPSEB Ltd would bring all these cases to logical conclusion at the earliest.

Applicant's Submission:

The Applicant has suggested the Commission to fix a benchmark for large projects as has been the practice in case of small hydro. Any increase beyond the set value should be absorbed by the Project implementing agency, to prevent inefficiencies being passed through to the consumers.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that this issue to be considered by the Commission.

Commission's View:

The Commission is of the view that every hydel project has its own features and the capital cost of the project depends on many factors including terrain, geological features and environmental considerations to name a few. Thus, it is quite challenging to fix a benchmark for large hydro projects. However, the Commission will consider the suggestion and take a view at appropriate time. The Commission also observed that the CEA has issued "Guidelines for Formulation of Detailed Project Reports for Hydro Electric Schemes, their Acceptance and Examination for Concurrence" in January, 2007. Chapter XVI of these guidelines has specified certain benchmarks for preparation of estimates of Detailed Project

Reports. However, the Commission is of the view that it would not be appropriate to refer these in case of Larji HEP, as these Guidelines were not in place at the time of TEC given by the CEA in January, 2000.

Applicant's Submission:

The Applicant has suggested the Commission to start monitoring the time and cost over-run being encountered by the ongoing projects of the various State agencies, even if this means micro managing these.

HPSEB Ltd Response:

The HPSEB Ltd has submitted that this issue to be considered by the Commission.

Commission's View:

The Commission is of the view that it is neither warranted nor appropriate to micro manage day to day affairs of ongoing projects of the various State agencies by the Commission. The Commission has already notified its Regulations for determination of Generation Tariff and the Commission will approve the tariff based on Tariff Regulations. Further, in respect of issues related to the prudence check of time over-run, the Commission has also took note of the recent Judgment issued by the Hon'ble Appellate Tribunal for Electricity (APTEL) in Appeal Number 72 of 2010 in the matter of Tariff Order passed by Maharashtra Electricity Regulatory Commission (MERC) for Approval of capital cost Determination of Tariff for Parli Thermal Power Station Unit 6. In the absence of any specific Regulations of the Commission regarding prudence check of Capital Cost, the Commission has dealt with the issue of time over-run related costs in accordance with the principles laid down in Hon'ble ATE Judgment. The above said Judgment has been discussed in detail in the chapter A4 of this Order.

3.4 Objection raised during Public Hearing

Shri P.N. Bhardwaj, consumer representative raised the following issues during the Public Hearing:-

(a) The Petitioner is seeking a capital cost of Rs.1461.33 crore for the Larji HEP (126 MW), which works out to Rs.11.6 crore per MW. The Commission has provisionally accepted the capital cost of Rs.960 Crore, which works out to Rs.7.62 crore per MW.

(b) Comparing the above, with a private sector hydro project with installed capacity of 300 MW commissioned in 2003, the capital cost of which has been approved by the Commission as Rs.1533.96, i.e. Rs.5.11 crore in per MW terms. In another project of 16 MW in private sector, the levelised tariff approved by the Commission is Rs.2.25/unit for 40 years, the capital cost of which by back calculation works out to Rs.5.5 crore/MW. In that case, the Commission didn't agree to the developer's request for enhancement of tariff.

(c) There are few other projects being constructed by the State agencies including UHL-III and Sawra-Kudu HEP. The Commission should seek the time and cost over-run which has already occurred and it is likely that per MW cost of these HEPs will also be at par with Larji HEP, if not higher.

(d) Small hydro projects (less than 5 MW) have a benchmark cost of Rs.6.50 crore/MW, on which their tariff is fixed. It is well known fact that in hydro sector the project cost on per MW basis is the highest for lower capacity projects and keeps reducing as the installed capacity increases. Therefore, it is evident from above examples that in case of Larji HEP, the Commission has already accepted a per MW cost which is higher than that for small HEPs (which is Rs.6.50 crore).

(e) Section 61 of The Electricity Act, 2003 stipulates that the Commission shall be guided by commercial principles and factors that would encourage competition, efficiency, economical use of resources, good performance and optimum investment. Whereas, in case of Larji, these principles have been deviated by the HPSEB Ltd

(f) The capital cost of hydro projects, whether State owned or private should not be exorbitantly higher than the benchmarked rates. The HPSEB Ltd in its Petition has highlighted many reasons for exceeding the project completed cost. However, the consumer is only concerned about the end product and how efficiently it is delivered. Therefore, all these reasons are invalid and of non consequences as far as fixing the capital cost of this project.

Shri P.N. Bhardwaj, therefore suggested that the Petition for upward revision of capital cost be rejected and the cost of Rs.960 crore as provisionally accepted in the MYT Order of 2008 be confirmed, since accepting a higher capital cost shall be unfair to other private players.

HPSEB Ltd Response:

During the public hearing, the HPSEB Ltd submitted that every project has its own features and the per MW cost accordingly vary from project to project. The Larji HEP is a low head; high discharge scheme. The Project features and components are unique in their respective categories which has made this Project as one of the key engineering feats achieved in the State Sector in last decade and hence the cost of Larji HEP need not to be compared with other projects and will have no bearing on the cost of other projects being executed by the HPSEB Ltd and other agencies. The HPSEB Ltd further submitted that the cost of Projects being executed by the Government owned Entities cannot be compared with the Private Sector Projects due to wide variation in working environment.

Commission's View:

The Commission agrees with the view of the HPSEB Ltd that every project has its own features and the per MW cost accordingly vary from project to project. The Commission in this Order after detailed prudence check of all the actual cost elements has approved the capital cost as elaborated in chapter A4 of this Order.

A4: CAPITAL COST OF LARJI HYDRO ELECTRIC PROJECT (126 MW)

Capital Cost (Hard Cost excluding Interest during Construction and Financing Charges)

Introduction

4.1 Determination of Capital Cost of a Generation Project is a pre-requisite to meet the eventual requirement of Tariff determination by the appropriate Commission. section 61 of the Electricity Act, 2003 stipulates that the terms and conditions for determination of tariff shall be specified by the Appropriate Commission. Section 61 of the Act states as follows:-

"Section 61:
The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-

(a) the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees;
(b) ***the generation, transmission, distribution and supply of electricity are conducted on commercial principles;***
(c) the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;
(d) ***safeguarding of consumers' interest and at the same time, recovery of the cost of electricity in a reasonable manner;***
(e) the principles rewarding efficiency in performance;
(f) multi year tariff principles;
(g) that the tariff progressively reflects the cost of supply of electricity and also, reduces cross-subsidies in the manner specified by the Appropriate Commission;
(h) the promotion of co-generation and generation of electricity from renewable sources of energy;
(i) ***the National Electricity Policy and tariff policy"***

4.2 The Tariff Policy as mentioned in sub section (i) of section 61 of the Act shall also act as a guiding factor for framing terms and conditions for determination of tariff by the Appropriate Commission. Clause 4.0 of the Tariff Policy states the Objective as follows:-

"4.0 OBJECTIVES OF the POLICY
The objectives of this tariff policy are to:
(a) Ensure availability of electricity to consumers at reasonable and competitive rates;
(b) Ensure financial viability of the sector and attract investments;
(c) Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimise perceptions of regulatory risks;
(d) Promote competition, efficiency in operations and improvement in quality of supply.

4.3 Guided by the relevant provisions of the Act as well as Tariff Policy, the Commission framed the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, which provides a sets of principles to be followed by the Commission, while undertaking determination of tariff of a Hydro Generation Plant. Clause 12(1) of these Regulations stipulates as follows:-

"Subject to prudence check by the Commission, the actual expenditure incurred on completion of the project shall form the basis for determination of tariff. The tariff shall be determined based on the admitted capital expenditure actually incurred up to the date of commercial operation of the generating station and shall include capitalised initial spares subject to a ceiling norm of 1.5 % of the original project cost as on the cut off date:…"

4.4 While undertaking determination of Capital Cost of the Larji Project, the Commission also took note of the Judgment issued by the Hon'ble Appellate Tribunal for Electricity (APTEL) on April 27, 2011 in Appeal Number 72 of 2010 in the matter of Tariff Order passed by the Maharashtra Electricity Regulatory Commission (MERC) for Approval of Capital Cost and Determination of Tariff for Parli Thermal Power Station Unit 6, particularly with respect to the prudence check of time over-run related costs. In the absence of any specific Regulations of the Commission regarding prudence check of Capital Cost, the Commission has dealt with the issue of time over-run related costs in accordance with the principles laid down in Hon'ble APTEL Judgment. The above said Judgment has been discussed in detail in the subsequent part of this Chapter.

4.5 Further, the Commission also took note of "Guidelines for formulation of Detailed Project Reports for Hydro Electric Schemes, their Acceptance and Examination for Concurrence" issued by the CEA in January, 2007. However, these guidelines have come in force in January 2007 and were not in place at the time of issuance of Techno-Economic Clearance by the CEA in January, 2000. Though, these CEA guidelines issued in the year 2007 cannot be applied while determination of Capital Cost of Larji HEP, however, the spirit as contained in them is still relevant.

Capital Cost submitted by HPSEB in MYT Petition

4.6 The Board/HPSEB Ltd. has been submitting substantially varied figures in respect of Capital Cost of the Larji HEP from time to time. In the MYT Petition for the Control Period from FY 2008-09 to FY 2010-11, the Board had submitted total capital cost of Larji HEP commissioned in 2006 as Rs.1293.69 crore being funded by Rs.1060 crore debt and Rs.233.69 crore of equity. However, in the formats submitted along with the Petition, the information provided to the Commission was incomplete. Further, the Board in its letter dated April 17, 2008 submitted the details of reconciliation of generation assets shown in the balance sheet and revised capitalization schedule, wherein it had shown Rs.943.04 crore as the capitalized cost of the project as per accounts and Rs.1291 crore as provided by the Chief Engineer (Generation).

4.7 The Commission faced with such inconsistencies, found it very difficult to determine the capital cost and tariff of the project. The Commission had initially considered allowing the cost at Rs.796.98 crore, as contained in the TEC accorded by the CEA in January 14, 2000. However, after taking into consideration the adverse impact on debt servicing and cash flows which an uncovered gap of approximately Rs.500 crore in capital cost could create, the Commission with an intention of mitigating the impact of such a high cost project decided to provisionally approve the capital cost at Rs.960 crore, as assessed by the Committee of Experts, constituted by the Commission, which had inquired into the reasons for high cost escalation of Larji HEP.

Capital Cost submitted by HPSEB Ltd in this Petition

4.8 In this Petition, the HPSEB Ltd has submitted that a total capital cost of Rs.1461.33 crore has been incurred on Larji HEP as on March, 2008. This includes hard Cost at Rs.1028.77 crore, financing charges at Rs.58.41 crore and IDC at Rs.374.15 crore. The summary of Capital Cost submitted by the HPSEB Ltd in the Petition is given in the following Table 7:-

Table 7: Summary of Capital Cost submitted in the Petition (Rs. crore)

S. No	Head of works	Amount
1	**Infrastructure Works**	
1.1	Preliminary including Development, Investigation and planning	3.96
1.2	Land	2.31
1.3	Buildings, Roads	10.78
1.4	Township (Transmission)	-
1.5	Maintenance	3.52
1.6	Tools & Plants	2.70

S. No	Head of works	Amount
1.7	Communication	22.70
1.8	Environment & Ecology	4.90
1.9	Losses on stock	1.17
1.1	Receipt & Recoveries	(8.00)
1.11	Total (Infrastructure works)	**44.04**
2	**Major Civil Works**	
2.1	Diversion Barrage, Intake & Desanding Arrangement	345.25
2.2	HRT, TRT, Surge Shaft & Pressure shafts	180.13
2.3	Power Plant civil works	117.93
2.4	Other civil works (to be specified)	-
2.5	**Total (Major Civil Works)**	**643.31**
3	**Hydro Mechanical equipments**	
4	**Plant & Equipment**	155.76
4.1	Initial spares of Plant & Equipment	1.10
4.2	**Total (Plant & Equipment)**	**156.86**
5	**Taxes and Duties**	
5.1	Custom Duty	-
5.2	Other taxes & Duties	1.60
5.3	**Total Taxes & Duties**	**1.60**
6	**Construction & Pre-commissioning expenses**	
6.1	Erection, testing & commissioning	34.05
6.2	Construction Insurance	-
6.3	Site supervision	1.00
6.4	**Total (Const. & Pre-commissioning)**	**35.05**
7	**Overheads**	
7.1	Establishment	136.29
7.2	Design & Engineering	4.26
7.3	Audit & Accounts	0.20
7.4	Contingency	0.70
7.5	Rehabilitation & Resettlement	-
7.6	**Total (Overheads)**	**141.45**
8	**Capital Cost without IDC & FC**	**1022.31**
9	**Financing charges (FC)**	**58.41**
10	**Interest during construction (IDC)**	**374.15**
11	**Miscellaneous**	**6.46**
12	**Capital Cost with IDC & FC**	**1461.33**

4.9 As depicted in the Table above, the Total Capital Cost of Rs.1461.33 crore constitutes Infrastructure work amounting to Rs.44.04 crore, Civil works of Rs.643.31 crore, Plant and Equipments of Rs.156.86 crore, Taxes and duties of

Rs.1.60 crore, Construction and Pre-commissioning expenses of Rs.35.05 crore, Overheads of Rs.141.45 crore, Financing charges of Rs.58.41 crore, Interest during Construction of Rs.374.15 crore and Miscellaneous expenditure of Rs.6.46 crore.

Revised Capital Cost based on HPSEB Ltd subsequent submissions and Clarifications

4.10 The Commission has undertaken detailed analysis of each of the sub-head of Works Cost submitted by the HPSEB Ltd While analysing the Works cost, the Commission observed various discrepancies in the figures submitted by the HPSEB Ltd in the Petition. The Commission in the first Technical Validation Session (TVS) on March 11, 2011 asked the HPSEB Ltd to clarify these discrepancies and resubmit the head wise capital cost. The HPSEB Ltd in its letter dated March 28, 2011 submitted the revised break-up of the capital cost after removing the discrepancies observed by the Commission. The Revised Break-up of the Capital Cost submitted by the HPSEB Ltd in its letter dated March 28, 2011 is shown as follows:-

Table 8: Summary of Capital Cost submitted in the Petition (Rs. crore)

S. No.	Head of works	Amount
1.0	**Infrastructure Works**	
1.1	Preliminary including Development, Investigation and planning	3.96
1.2	Land	2.31
1.3	Buildings, Roads	10.78
1.4	Township (Transmission)	50.31
1.5	Maintenance	3.52
1.6	Tools & Plants	2.70
1.7	Communication	22.70
1.8	Environment & Ecology	4.90
1.9	Losses on stock	1.17
1.10	Receipt & Recoveries	(8.00)
1.11	**Total (Infrastructure works)**	**94.35**
2.0	**Major Civil Works**	
2.1	Diversion Barrage, Intake & Desanding Arrangement	294.94
2.2	HRT, TRT, Surge Shaft & Pressure shafts	180.13
2.3	Power Plant civil works	117.93
2.4	Other civil works (to be specified)	-
2.5	**Total (Major Civil Works)**	**593.00**
3.0	**Hydro Mechanical equipments**	

S. No.	Head of works	Amount
4.0	**Plant & Equipment**	155.76
4.1	Initial spares of Plant & Equipment	1.10
4.2	**Total (Plant & Equipment)**	**156.86**
5.0	**Taxes and Duties**	
5.1	Custom Duty	-
5.2	Other taxes & Duties	1.60
5.3	**Total Taxes & Duties**	**1.60**
6.0	**Construction & Pre-commissioning expenses**	
6.1	Erection, testing & commissioning	34.05
6.2	Construction Insurance	-
6.3	Site supervision	1.00
6.4	**Total (Const. & Pre-commissioning)**	**35.05**
7.0	**Overheads**	
7.1	Establishment	136.29
7.2	Design & Engineering	4.26
7.3	Audit & Accounts	0.20
7.4	Contingency	0.70
7.5	Rehabilitation & Resettlement	-
7.6	**Total (Overheads)**	**141.45**
8.0	**Capital Cost without IDC & FC**	**1,022.31**
9.0	**Financing charges (FC)**	58.41
10.0	**Interest during construction (IDC)**	374.15
11.0	**Miscellaneous**	6.46
12.0	**Capital Cost with IDC & FC**	**1,461.33**

4.11 Based on the revised submission by the HPSEB Ltd as above, the Commission while undertaking a detailed analysis of the Work-wise Capital Cost, noticed few factual discrepancies in the capital cost submitted by the HPSEB Ltd, which are noted as follows:-

- The HPSEB Ltd has claimed an amount of Rs.50.31 crore under the head of Township and Transmission in S. No. 1.4. While verifying the copies of bills collected from the Project/Site Offices, it was noticed that this amount includes Rs.19.70 crore towards Interest during Construction (IDC). As the IDC for the Project is already considered under Serial No. 10 in the above Table separately, taking the overall IDC of the HPSEB Ltd. on pro-rata basis under Township and Transmission (S. No. 1.4) would amount to double accounting of IDC. Thus, the Commission has deducted IDC of Rs.19.70 crore from the capital cost submitted by the HPSEB Ltd for Township and Transmission.

- The HPSEB Ltd in replies to the queries of the Commission vide its letter dated May 02, 2011 has submitted that the certain assets (primarily land and buildings) having a value of Rs 19.70 crore, which were pertaining to Larji HEP have been transferred to Himachal Pradesh Power Corporation Ltd (HPPCL) and other Government Departments. Since these assets have been transferred to HPPCL and other Govt. Departments and are not a part of Assets for Larji HEP, the Commission has reduced this amount from the Capital Cost of the Project. However, in its subsequent communication dated June 06, 2011 the HPSEB Ltd has stated that these assets are not yet transferred. This submission of the HPSEB Ltd is in complete contradiction of its earlier replies and the submission made by representative of the HPSEB Ltd during the public hearing and is not supported by any documentary evidence and thus, the Commission has decided not to consider this submission with respect to transfer of assets.

- The HPSEB Ltd, in its reply dated May 20, 2011 has submitted that most of the expenditure on account of erection, testing and commissioning of Larji HEP as claimed to the extent of Rs.34.05 crore is included in the main packages of the Project such as Supply, Fabrication, Erection, Testing and commissioning of Gates & Hoists and other hydraulic works of this project. However, a separate estimate has been prepared for erection, testing and commissioning of Hydro Generating equipments to cover the cost on this account to the extent of Rs.8.80 crore against which actual expenditure to the extent of Rs.10.53 crore has been incurred and the remaining expenditure is incurred on civil works which is included in the main packages. The Commission is of the view that as the substantial portion of this expenditure is already included in main plant packages, the entire expenditure on account of Erection, Testing and commissioning as claimed by the HPSEB Ltd cannot be considered as part of Project Cost as this would lead to double accounting of expenditure. The Commission, therefore, considers Rs.10.53 crore on account of Erection, Testing and Commissioning Expenses as actually incurred by the HPSEB Ltd. However, in its subsequent communication dated June 06, 2011 the HPSEB Ltd has submitted that it has incurred Rs.35.05 crore on Construction and Pre-Commissioning. The Commission notes that this submission of the HPSEB Ltd is in complete contradiction to earlier submission of the HPSEB Ltd and further, has also not substantiated with any documentary evidence and thus, the Commission has decided not to consider this submission with respect to Construction and Pre-Commissioning expenses.

- Further, in the same reply vide letter dated May 20, 2011 the HPSEB Ltd has also submitted that an amount of Rs.58.41 crore was inadvertently shown as Finance charges in Tariff Petition. It is in fact pro-rata share or departmental charges pertaining to head office expenses, which have been capitalized and form the part of Capital Cost of main component of Larji HEP. These expenses are part of Overheads, which have been capitalized and form the part of capital cost of main component of Larji H.E.P. The total Overheads under Serial No. 7 amounting to Rs.141.45 crore are net overheads, this amount of Rs.58.41 crore are therefore not required to be added to net overheads of Rs.141.45 crore and taking Overheads again under Serial No. 9 would amount to double accounting. Thus, the Commission has deducted an amount of Rs.58.41 crore from the Capital Cost. However, in its subsequent communication dated June 06, 2011 the HPSEB Ltd has submitted that the amount of Rs.58.41 crore, inadvertently shown as Finance Charges earlier, are actually prorate share / Departmental Charges (D.C) which stand capitalised and awaiting final allocation to the main components pending their verification, and therefore form part of Capital Cost. The Commission notes that this submission of the HPSEB Ltd is in complete contradiction to earlier submission of the HPSEB Ltd and thus, the Commission has decided not to consider this submission with respect to financing charges.

4.12 Based on the factual discrepancies noted as above, evident from the submissions made by the HPSEB Ltd through its various communications, the Commission has worked out corrected claim of Capital Cost which is summarised as follows:-

Table 9: Summary of Corrected Capital Cost (Rs. crore)

Head of works	Total Capital Cost submitted by HPSEB Ltd post Technical Validation Session-I	Corrected Capital Cost based on revised submissions	Remarks
Infrastructure Works			
Preliminary including Development, Investigation and planning	3.96	3.96	
Land	2.31	2.31	
Buildings, Roads	10.78	10.78	
Township (Transmission)	**50.31**	**30.61**	As per documents collected from Larji site offices, Rs.19.70 crore was booked as IDC. The same is now deducted to avoid double accounting of IDC
Maintenance	3.52	3.52	
Tools & Plants	2.70	2.70	
Communication	22.70	22.70	
Environment & Ecology	4.90	4.90	

Head of works	Total Capital Cost submitted by HPSEB Ltd post Technical Validation Session-I	Corrected Capital Cost based on revised submissions	Remarks
Losses on stock	1.17	1.17	
Receipt & Recoveries	(8.00)	(8.00)	
Total (Infrastructure works)	94.35	74.65	
Major Civil Works			
Dam, Intake & Desanding Arrangement	**294.94**	**275.24**	As per HPSEB Ltd reply dated May 02, 2011, assets amounting to Rs.19.70 crore were transferred HPPCL and other State Departments, thus deducted from the Capital Cost
HRT, TRT, Surge Shaft & Pressure shafts	180.13	180.13	
Power Plant civil works	117.93	117.93	
Other civil works (to be specified)	-	-	
Total (Major Civil Works)	**593.00**	**573.30**	
Hydro Mechanical equipments			
Plant & Equipment	155.76	155.76	
Initial spares of Plant & Equipment	1.10	1.10	
Total (Plant & Equipment)	**156.86**	**156.86**	
Taxes and Duties			
Custom Duty	-	-	
Other taxes & Duties	1.60	1.60	
Total Taxes & Duties	**1.60**	**1.60**	
Construction & Pre-commissioning expenses			
Erection, Testing & Commissioning	**34.05**	**10.53**	As expenses other than Rs.10.53 crore are included in main packages, thus, excluded to avoid double accounting
Construction Insurance	-	-	
Site supervision	1.00	1.00	
Total (Const. & Pre-commissioning)	**35.05**	**11.53**	
Overheads			
Establishment	136.29	136.29	
Design & Engineering	4.26	4.26	
Audit & Accounts	0.20	0.20	

Head of works	Total Capital Cost submitted by HPSEB Ltd post Technical Validation Session-I	Corrected Capital Cost based on revised submissions	Remarks
Contingency	0.70	0.70	
Rehabilitation & Resettlement	0.00	0.00	
Total (Overheads)	**141.45**	**141.45**	
Capital Cost without IDC & FC	1022.31	959.39	
Financing charges (FC)	**58.41**	**-**	Amount of Rs.58.41 crore pertaining to Overheads was booked inadvertently under Finance Charges, thus, deducted to avoid double accounting
Interest during construction (IDC)	**374.15**	**374.15**	
Miscellaneous	**6.46**	**6.46**	
Capital Cost with IDC & FC	**1461.33**	**1340.00**	

Capital Cost Approved by CEA in TEC

4.13 The Commission observed that the CEA, in its Techno Economic Clearance (TEC) issued on January 14, 2000 for Larji HEP (126 MW) approved the Capital Cost of Rs.796.98 crore as given in the following Table 10:-

Table 10: Summary of CEA approved Capital Cost (Rs. crore)

Work	Completed Cost
Generation	
Civil Work	419.03
E&M Works	184.04
Initial Spare	7.98
Taxes and Duty	29.03
Total Generation works (without IDC)	**640.08**
IDC	131.16
Finance Charges	-
Total Generation with IDC	**771.24**
Transmission Work	**25.74**
Total Cost including associated Transmission	**796.98**

4.14 The CEA in its TEC as regards to the completed Project Cost had further stipulated as follows:-

"The complete cost of the Scheme shall not exceed the above cost except on account of:-

(a) Interest During Construction and Financing Charges as per actual but not exceeding the amount as indicated in Annex-I.

(b) Change in rate in Indian taxes and duties such as custom duty, sales tax, excise duty, CST, work tax and service tax and additional taxes and duties levied subsequent to issue of techno -economic clearance.

(c) Change in Indian Law resulting in change in cost"

The Commission noted that the CEA in Annex-I of TEC has approved Rs.131.16 crore towards Interest During Construction and nil towards Financing Charges. Further, the Commission also observed that the TEC was subjected to fulfilment of certain conditions some of which are as follows:-

a) Expenditure on Environment and ecology has been capped at Rs.1.2 crore. In case of escalation HPSEB would absorb the same.

b) The HPSEB shall systematically maintain a record of geological surprises if encountered the HPSEB shall request Govt. of HP to constitute an expert committee consisting of representation from the HPSEB, Govt. of HP, CWC, GSI and the CEA. Once the committee is constituted, the HPSEB shall submit their proposal for the enhanced cost to the expert committee which is in turn shall examine and recommend the cost thereof

c) The HPSEB shall approach PFC to consider the project under the AG&SP scheme to avail the interest subsidy of 4% and IDC shall stand reduced in the project cost to the extent the above subsidy is available to the HPSEB.

As regards condition (b) and (c), the Commission raised query to the HPSEB Ltd to clarify about the constitution of Expert Committee for identifying geological surprises and whether the HPSEB has approached PFC for Interest subsidy. The HPSEB Ltd via its letter dated May 02, 2011 clarified that neither any such Committee was constituted nor the erstwhile the HPSEB approached the PFC for interest subsidy.

4.15 To summarise the preceding paras, as against the Project Cost of Rs 796.98 crore approved by in the TEC, the HPSEB firstly claimed Capital Cost of Rs.1293.69

crore. Now, in this Petition, the Capital cost claimed by the HPSEB Ltd rose to Rs.1461.33 crore, which on correction of factual discrepancies, based on the HPSEB Ltd's own submissions and clarifications works out to Rs.1340.00 crore.

4.16 As compared to Rs 6.33 crore per MW cost approved by the CEA, the HPSEB Ltd claimed capital cost of Rs.10.27 crore/MW in the MYT Petition, which subsequently increased to Rs.11.60 crore/MW in this Petition. After, considering the corrected Capital Cost based on subsequent submissions and information by the HPSEB Ltd, the revised capital cost per MW comes out to Rs.10.63 crore. Quite evidently, Larji HEP has experienced huge cost over runs due to various factors.

4.17 Furthermore, the Project also suffered substantial time over run. The CEA in its TEC has envisaged the commissioning date of the project as March 2003, whereas the project is actually commissioned in February 28, 2007. Thus there is a delay of around 48 months in commissioning of the project.

4.18 The Commission had earlier constituted an Inquiry Committee vide its Order No. HPERC/Secy/D(TE)/452-C/2005, dated March 24, 2005. The Committee conducted a detailed investigation with all aspects of Project management including planning, design, construction to identify the reasons for time and cost over-run and to fix the responsibility both for delay in execution and increase in cost and submitted its report to the Commission. The salient features and recommendation of the Inquiry Committee report are as follows:-

I. **Major Reasons for Cost Over run**

a) Increase in quantity of items such as Steel, Concrete, etc. due to adverse Geology

b) Excessive over breaking during excavation neglecting the advice of Resident Geologist

c) Un-controlled dewatering charges due to provisions of improperly designed dewatering arrangements

d) Lack of quality control/proper control towards consumption of material resulting in excessive contact grouting charges

e) Change in designs requiring substitution of items provided in the contract

f) Deficiencies in Designs/Contract: The contracts provide certain number of items of works with quantities and rates thereof. During execution, quantities of items of works increased beyond 30%; certain items of works got substituted with some other analogous items of work in the contract, but in that case also the quantity of work actually executed exceeded beyond 30% of the contract quantity of analogous items. Payments of all such items were made on rates arrived at by analysis of rate (AOR), which were submitted by the contractors and approved by Engineer in Charge.

g) Additional payment to Contractors beyond Contract provisions

h) Extra expenditure incurred on account of extra lead as compared to the lead specified in the contract permitted to the contractors

i) Extra expenditure incurred on account of change in design

j) Extension in completion of period beyond contract thus permitting escalation charges in the extended period

k) Excessive establishment charges and also pro rata charges of Board's office

l) Error laden method of measurement of excavated areas of cross sections, purely un-dependable but having large bearing on expenditure

II. **Major Reasons for Time over run**

a) Ineffective/lack of proper project monitoring

b) Neglect and/or disregard to advice of Panel of Expert (POE) appointed by the Board

c) Lack of coordination between inter wing and intra wing

d) Payment of passed contractor's bills directly by PFC instead of PFC advancing loan to Project Management who in turn make payment to contractors as this would have avoided chasing the PFC at Delhi

e) Allocation of funds in time to avoid discretion in liquidation of bills of major or petty contractors

f) Absence of unified control on the project

g) Circle and Divisional offices scattered at different sites

h) Posting of staff on specific posts instead of placing them at disposal of CE (Larji)

III. Recommendation of the Committee appointed by Commission in 2005

a) The Inquiry Committee recommended that reasonable cost of the project could be fixed at the figure of revised cost of August, 2001 with escalation upto scheduled period of completion and incorporation of disincentive for delays and incentive for completion of works allotted to them within completion period of the contract. The t**otal cost of the project at August 2001 level with addition of escalation and incentive can be fixed as Rs.960 crore.**

b) The Committee is of the view that all machines should get commissioned by end of June, 2006. Achievement of this goal would require full empowerment CE/Larji and effective monitoring by the HPSEB.

4.19 Subsequently, as already discussed in detail in paras 1.19 to 1.21 of chapter A1, the erstwhile HPSEB, vide its Order No. HPSEB (Sectt) 401-HPERC/40B 52340-52 dated August 21, 2006, constituted a High Level Inquiry Committee for investigating in detail the cost and time over run, which submitted its Report in February_2007. The salient features and recommendations of the High level committee report are given as follows:-

I. Observation of the Committee

a) Guided by detailed geological and geo technical exploration, changes in main project structure from 1987 DPR seems to be an essential requirement since proposals made during 1987 were not found suitable, particularly in respect of concrete gravity Dam, surge shaft and surface power house.

b) The CEA counted start date for project from April 1999 and permitted only 3½ year for commercial operation for Unit-I and 4 years for Unit-II & III, which is somewhat unrealistic. 4½ years period would have been safe and reasonable estimate keeping in view of size of the structure envisaged in revised DPR.

c) Proposal to build a project at very high initial cost of Rs.6.33 crore/MW with expected cost escalation during construction was not an attractive proposition.

d) Revised T.E.C. of the Project was received by the State Govt. in January 2000. Although LoI for Head Race Tunnel works (Pkg II) had been issued in April, 1999, all other Civil/Mechanical works for the project were awarded from April, 2000 to January, 2002. Thus practically, most of the works started from April, 2000.

e) Civil work was planned to be completed in 3½ years. This time period particularly for package III (HRT from RD 3500 m to 4115.16 m, surge shaft, power house and TRT) was not adequate.

f) For Electro-mechanical works first contract for ex-manufacturing works/place of dispatch price (both in India and CIF port of entry price) for main equipment with Alstom make SF6 and Mandatory spares for US Dollars 52 Lac plus Rs.5247 Lac and another contract for inland transportation, inland insurance charges supply of the equipment and mandatory spares, unloading and handling at site, storage, installation and testing & insurance covering all activities were awarded to BHEL on February 15, 2001. Supply was to started as per contract on May 01, 2002 and to be completed on December 31, 2003 whereas the supply against the contract started on November 14, 2002 and was completed on May 17, 2006.

g) Award of Electro-mechanical work was made two years after TEC and ten (10) months after the award of civil works for Power House although completion time was matched with the then envisaged completion date of civil works.

h) First Unit (Unit-III) of the project was commissioned in September, 2006 i.e. 46 month behind the schedule (from April, 1999 to November, 2002)

II. **Reasons for Time over run**

a) Contractors selected for major civil work were not experienced or had poor record of construction in implementation of Hydel Projects.

b) Civil contractor were unauthorizedly allowed to sublet works to inexperienced petty contractors having no resources and knowhow of the works allotted to them.

c) Lack of effective monitoring of the progress by the concerned authority. Also there seems to be no effective control on progress from the Board Secretariat. Regular progress review meetings by Board HQ besides monthly meeting at project site should have served the purpose better.

d) Absence of unified control, Chief engineer, Larji had no control on other wings like Electrical, Finance etc.

e) Project offices were scattered in two districts which resulted in lack of co-ordination and loosening of control by the Cchief Engineer Larji.

f) Posting of staff in the project which was not suitable as per job requirement and frequent changes at top affected progress of the Project badly.

g) Delay in supply of construction drawings sufficiently in advance

h) The Chief Engineer Larji had no authority in changing specific charge of an officer/official in the project which rendered him ineffective. Chief Engineer should have been given full powers and made answerable to shortfalls in progress of the project.

i) Penal of Expert's (POEs) advice needs to be taken care of seriously at all levels, which was not done. POE's advice given in their January, 2002 meeting was ignored.

j) POE had advised that systematic monitoring of individual components of the works is required to ensure that planned construction progress is achieved on each items of the works. POE Advice was not taken seriously.

k) Time over run of hydro project is not an abnormal happening, but this normally happen due to uncontrollable circumstances like unexpected flood/rain, labour problem, squeezing rocks and delay in carrying material to site. However , Larji HEP has no such reason for delay

III. Reasons for Cost over run

a) The CEA approved completion cost of project for Rs.796.98 crore in January, 2000. By the time works could start in full swing there was an increase of about Rs.100 crore in cost which necessitated needs for revised estimate. Cost estimate was revised in August, 2001 for 908.64 crore and was approved by the erstwhile HPSEB. Again in March, 2004 estimate was revised for increased cost of Rs.1221.42 crore and approved by the erstwhile HPSEB.

b) The total cost over-run till August 2006 of Rs.424 crore, due to additional expenditure attributable to price escalation, poor geology, inadequate/avoidable provisions, change in designs, CAT plan, establishment, additional claims and IDC. The head-wise cost over-run is summarised as follows :-

Table 11: Cost over- run as estimated by High level Committee (Rs. crore)

Sr. No	Particulars (Reasons for Cost Over-Run)	Cost over-run
1	Price Escalation	65
2	Poor Geology	113
3	Inadequate/Avoidable provisions	100
4	Change in design	37
5	CAT plan	11
6	Establishment	81
7	Claims	12
8.	IDC, transmission and electromechanical works	05
9.	**Total**	**424**

c) **Price Escalation:** Price escalation accounts for Rs.65 crore in about 7 years of construction of the project from March 1999 to August, 2006.

As per contract agreement price escalation is payable, however, for the extended time period taken for the completion of the project price escalation could be saved if strict control on time over run would have been exercised.

d) **Poor Geology:** Increase in cost attributed to Poor Geology to the extent of Rs.113 crore in Diversion Barrage, Desanding Chamber, Head Race Tunnel, Surge Shaft and Power House.

e) **Inadequate/Avoidable Provisions:** During execution of the work large numbers of extra, substituted and analogous items of works were executed, including extension of traffic tunnel, Coffer Dam construction and HPSEB's Office pro-rata expenses, which amounted to approx. Rs.100 crore.

f) **Change in Design:** Due to review of design criteria during construction stage based on POE advice, an additional amount of Rs.37 crore was incurred.

g) **CAT Plan:** An additional amount of Rs.11 crore incurred as per recommendations of the H.P. Forest Dept. and MoEF, which was justified.

h) **Establishment and Pro-rata Charges** amounting to Rs.81 crore, Claims amounting to Rs.12 crore and IDC, Transmission and electro-mechanical works amounting to Rs.5 crore also form part of total Cost Over-Run of Rs.424 crore being computed by the High Level Committee.

i) In three work packages (Package-I, Package-II and Package-III), price for 236 items have been paid on the basis of Analysis of Rate (AOR) i.e. the rate which cannot be termed as competitive.

j) In a gross contract payment of Rs.662.85 crore, payment of the order of Rs.149.55 crore has been made at non-competitive market rate based on AOR, defeating the purpose of floating of NITs.

IV. Recommendation of the High Level Committee

a) Keeping in the view the problems faced by the project during execution, construction time of the project could be taken as 5 years, from T.E.C. i.e. January 2000 and the project should have been commissioned in December, 2004.

b) Reasonable cost of the Project could be based on August, 2001 i.e. Rs.875 crore plus escalation, IDC, interest on borrowed money, reasonable excess in establishment, geological surprises, reasonable cost of essential substitute/extra items etc amounting to Rs.275 crore. Therefore the project cost on completion should be around Rs.1150 crore.

c) Although for 126 MW project, completion cost of Rs.1150 crore is on higher side but, this could not be avoided in view of the magnitude and size of the structures envisaged in Larji HE project since initial cost of the project itself is very high.

d) Increase in about 44% in cost on completion cost (Rs.796.98 crore) stipulated by CEA could be termed as reasonable cost.

Analysis by the Commission

4.20 The Committees constituted by the Commission and the HPSEB, estimated the completion cost of Larji HEP at Rs.960 crore and Rs.1150 crore respectively. Before, initiating the determination of Capital Cost of Larji HEP, the Commission would like to emphasise the fact that these Committees had indicated the approx. completion cost of the Larji HEP without indicating the break-up of indicated cost in various heads, which by no means can be construed as the Capital Cost of Larji

HEP for the purpose of determination of generation tariff. For this purpose, the Commission has referred to the following aspects.

Applicable Regulations

4.21 For the purpose of determination of Capital Cost of Larji HEP, the Commission has referred its Generation Tariff Regulations, 2007, Regulation 12(1) of which provides for determination of capital cost based on actual expenditure incurred on completion of the project, subject to prudence check by the Commission. The tariff shall be determined based on this admitted capital cost.

Hon'ble APTEL's Judgment on Issues related to Time Over-run related Cost

4.22 The Commission noted that the Hon'ble Appellate Tribunal for Electricity (APTEL) has given its Judgment on Appeal no. 72/2010, on dated April 27, 2011, in the matter of Tariff Order dated October 21, 2009 passed by the Maharashtra Electricity Regulatory Commission for Determination of Tariff for Parli Thermal Power Station Unit 6, wherein the MERC has determined the Capital Cost for Parli TPS Unit 6. The main abstract of the Judgment is provided as follows:-

"The Central Commission has also not laid down any benchmark norms for prudence check, but its Regulations only indicate the area of prudence check including cost overrun and time overrun. The State Commission has not examined the reasons for delay in commissioning of the project and attributed the entire time overrun related cost with respect to the contractual schedule agreed with BHEL to the Appellant. In our view, this is not prudence check. In the absence of specific regulations, we will now find answer to the question raised by us relating prudence check of time overrun related costs.

7.4. The delay in execution of a generating project could occur due to following reasons:

i) due to factors entirely attributable to the generating company, e.g., imprudence in selecting the contractors/suppliers and in executing contractual agreements including terms and conditions of the contracts, delay in award of contracts, delay in providing inputs like making land available to the contractors, delay in payments to contractors/suppliers as per the terms of contract, mismanagement of finances, slackness in project management like improper co-ordination between the various contractors, etc.

ii) due to factors beyond the control of the generating company e.g. delay caused due to force majeure like natural calamity or any other reasons which clearly establish, beyond any doubt, that there has been no imprudence on the part of the generating company in executing the project.

iii) situation not covered by (i) & (ii) above.

In our opinion in the first case the entire cost due to time over run has to be borne by the generating company. However, the Liquidated Damages (LDs) and insurance proceeds on account of delay, if any, received by the generating company could be retained by the generating company. In the second case the generating company could be given benefit of the additional cost incurred due to time over-run. However, the consumers should get full benefit of the LDs recovered from the contractors/suppliers of the generating company and the insurance proceeds, if any, to reduce the capital cost. In the third case the additional cost due to time overrun including the LDs and insurance proceeds could be shared between the generating company and the consumer. It would also be prudent to consider the delay with respect to some benchmarks rather than depending on the provisions of the contract between the generating company and its contractors/suppliers. If the time schedule is taken as per the terms of the contract, this may result in imprudent time schedule not in accordance with good industry practices.

7.5. in our opinion, the above principles will be in consonance with the provisions of Section 61(d) of the Act, safeguarding the consumers ' interest and at the same time, ensuring recovery of cost of electricity in a reasonable manner."

4.23 The Commission has taken note on above referred Hon'ble ATE Judgment particularly with respect to the prudence check of time over-run related costs. In the absence of any specific Regulations of the Commission regarding prudence check of Capital Cost, the Commission has dealt with the issue of time over-run related costs in accordance with the principles laid down in Hon'ble ATE Judgment.

4.24 It is evident from the above that for approving the Completed Capital Cost of the Project, the main issues before the Commission are as follows:-

a) Project schedule and time over-run

b) Cost Over-run on account of change in scope, time over-run and others

c) Impact of time over run on Interest during Construction (IDC)

d) Means of finance for the Project

4.25 The Commission has considered TEC given by CEA in January 2000, as the base for the purpose of analysis. The Commission has further analysed the Work-wise project cost on the basis of the information submitted by the HPSEB Ltd as well as scrutiny of records available at project/site offices of the HPSEB Ltd While analysing the project cost, the Commission has also given appropriate consideration to the findings and recommendations of the Committee Reports and APTEL Judgment as mentioned above. The Commission has also given due consideration to the objections raised by the various objectors and the response of the HPSEB Ltd for all the objections. The analysis of the capital cost worked out by the Commission is provided in the subsequent paragraphs.

Project Schedule

4.26 The Commission notes that the CEA, in its Techno Economic Clearance (TEC) issued on January 14, 2000 for Larji HEP (126 MW) stipulated the date of commercial operation for Unit- I as November, 2002, Unit –II as January, 2003 and Unit-III as March 2003. While deciding the commercial operation date for the Units of Larji Hydro, the CEA considered the start date as April 1999. The CEA envisaged the completion time of 3½ years for Unit-I and 4 years for Unit-II and III.

4.27 The High Level Committee constituted by the erstwhile HPSEB for investigating the details of time and cost over-run, suggested 4½ years would be appropriate time for completion of the project. The relevant extract of the report is provide as follows:-

"CEA counted start date for the project from April 1999 and permitted only 3½ years time for commercial operation of the 1st Unit and 4 year for 2nd and 3rd. The period of 3½ years given by CEA. on the presumption that all the civil works will be completed in a period less than 3½ years is somewhat unrealistic. 4½ years period would have been safe and reasonable estimate keeping in view the size of the structure envisaged in the revised DPR (March. 1999)"

4.28 In the same Report, in a subsequent para, the High Level Committee also observed as follows:-

"Keeping in view the problems faced by the Project during execution construction time of the Project could be taken as 5 years from TEC i.e. January 2000 and the Project should have been commissioned in Dec., 2004.

……

4.29 The HPSEB Ltd., in Annexure-A to the Petition, also argued in favour of allowing project completion period of 5 years considering the severe winter period in the narrow valley at barrage site. The Board also pointed out a number of hurdles which arose during actual execution, such as flooding of the project site, weather conditions, tackling of the uncertain geology and increase in quantum of work as per site conditions and as per required changes in the specifications.

4.30 However, the Commission is of the view that the 4½ years mentioned earlier in the Committee's Report appears to be reasonable in view of the fact the time frame of 3½ years given by the CEA for commissioning of the first unit. Further, the Commission also feels that the time frame of 5 years from TEC is of little relevance, as award of major contracts is the more suitable date to be considered as start date of the project.

4.31 The Commission further observed that the first major Civil Contract (Package-I: Diversion Barrage, Intake and Desanding Chambers) was awarded in April, 2000. The Commission has therefore considered April 2000 as the starting date of the project. Considering 4½ years as the completion time for the project and April 2000 as the starting, the Project could have achieved the COD in October, 2004. The Commission has therefore considered the COD of the project as October, 2004 for determining the Capital Cost of the Project.

Base Hard Cost

4.32 As mentioned above, the CEA has approved Capital cost of the project at Rs.796.98 crore, including hard cost at Rs.665.82 crore and IDC at Rs.131.16 crore. The Commission considers the CEA approved hard cost as Base Hard Cost and analysed the variation in the hard cost over and above the hard cost approved by the CEA as discussed in the subsequent paras.

Increase in Hard Cost

4.33 For analysing the reasons for increase in hard cost, the Commission has carried out detailed analysis of cost under each head and for works cost, the Commission has analysed the work wise hard cost approved by the CEA, actual contract awarded price, actual amount paid to the contractor as per bills and actual cost incurred as on the COD for various packages. The Commission vide its query letter dated May 05, 2011 raised to the HPSEB Ltd, asked to submit package wise hard cost approved by the CEA, Actual contract awarded price, actual payment made to the contractor as per bills, the amount claimed in the Petition, cost variation and reason for variation between cost variation and reason for variation between the amount claimed in Petition and amount paid to the contractor. The HPSEB Ltd in its reply letter dated May 12, 2011 has submitted majority of the desired information. As for the reasons for such variation, the HPSEB Ltd submitted that the variation between the actual payment made to the contractor and amount claimed in the Petition is because the actual amount claimed in Petition is subjected to final adjustment being sub-judice and includes overhead expenses whereas cost as per bill represents only hard cash payment made to the contractor. The HPSEB Ltd has also submitted that the variation between actual cost claimed in the Petition and the CEA approved cost is due to many factors such as price escalation, geological surprises (due to which additional cost is incurred) and increase in overheads. The reasons for increase in the CEA approved cost as submitted by the HPSEB Ltd are listed in the following Table 12:-

Table 12: Total variation between capital cost approved by CEA and Actual Cost claimed in Petition by the HPSEB Ltd

Sr. No.	Reasons	Amount (Rs. in crore)
1	Price escalation	45.31
2	Poor Geology	108.11
3	Inadequate provisions(Traffic Tunnel & other)	93.14
3	Change in design	37.00
4	Statutory reasons(implementation of CAT Plan)	10.00
5	Establishment	89.16
6	Other claims	14.10
7	IDC	242.97
8	Transmission Works	24.56
	Total	**664.35**

4.34 The Commission has analysed the submissions made by the HPSEB Ltd and has worked out the allowable hard cost. The Commission's analysis for working out the allowable hard cost is discussed in the subsequent chapters.

Infrastructure works

4.35 The HPSEB Ltd in its Petition has submitted total expenditure on account of infrastructure works at Rs.94.35 crore as against the CEA approved of Rs.87.94 crore. While validating the data collected from the project/site offices, the Commission observed that the HPSEB Ltd has included an expenditure of Rs.19.70 crore on account of Interest during Construction (IDC) in the infrastructure works. Allowing IDC in this head would amount to double counting and hence the Commission deducted the same and allowed the net expenditure excluding IDC amounting to Rs.74.65 crore on account of infrastructure works.

Civil Works cost

4.36 The Commission has analysed package-wise Civil Works cost and other civil cost. There were five main packages which comes under civil works as shown in the following Table 13:-

Table 13: Main Packages for Civil Works

Sr. No.	Package No	Package Name
1	Package –I	Diversion Barrage, Intake and desanding chamber
2	Package –II	Head Race Tunnel RD 0 m to 3500 m
3	Package –III	Surge Shaft, Power House, Tail race tunnel. HRT RD 3500 m to 4116.15 m
4	Package –IV	Pressure Shaft
5	Package –V	Gates and Hoists

The Commission has analysed the cost approved by the CEA, original cost as per Contract, actual cost based on bills, cost claimed by the HPSEB Ltd in the Petition. The Commission worked out the total variation between actual cost as on the COD claimed in the Petition and cost approved by the CEA at Rs.270.38 crore as shown in the following Table 14:-

Table 14: Cost variation in Civil Works (Rs. crore)

<table>
<tr><th>Package</th><th>Cost Approved by CEA</th><th>Original Cost as per Contract</th><th>Actuals based on bills with escalation</th><th>Claimed in Petition as on COD</th><th>Variation between Actual cost as per bills and CEA Approved</th><th>Variation between Claimed and CEA Approved</th></tr>
<tr><td>Diversion Barrage, Intake & Desanding Arrangement</td><td>146.23</td><td>116.54</td><td>202.44</td><td>226.23</td><td>56.21</td><td>80.00</td></tr>
<tr><td>HRT RD 0m to 3500 m</td><td rowspan="3">155.95</td><td>51.36</td><td>92.53</td><td>115.13</td><td rowspan="3">93.00</td><td rowspan="3">115.55</td></tr>
<tr><td>HRT RD 3500 m to 4115.16 m, surge shaft, u/g power house, TRT</td><td>94.81</td><td>154.43</td><td>154.37</td></tr>
<tr><td>Pressure/ Penstock Shaft</td><td>1.92</td><td>1.99</td><td>2.00</td></tr>
<tr><td>Gates and Hoist</td><td>20.44</td><td>24.93</td><td>33.97</td><td>32.39</td><td>13.53</td><td>11.95</td></tr>
<tr><td>2075 meter long 10.5 m dia modified horse shaped Highway Traffic Tunnel</td><td>-</td><td>19.36</td><td>30.85</td><td>30.85</td><td>30.85</td><td>30.85</td></tr>
</table>

Package	Cost Approved by CEA	Original Cost as per Contract	Actuals based on bills with escalation	Claimed in Petition as on COD	Variation between Actual cost as per bills and CEA Approved	Variation between Claimed and CEA Approved
Total Other Civil Works including Pressure Shaft (with individual Contract Values less than Rs.20 Crore)	-	30.38	26.67	32.03	26.67	32.03
Total Civil Work (1+2+3+4+5+6)	**322.62**	**339.30**	**542.88**	**593.00**	**220.26**	**270.38**

4.37 The Commission while analysing package-wise Civil Works Cost, noticed a difference of Rs.270.38 crore between Civil Works Cost of Rs.322.62 crore approved by the CEA and Actual Civil Works Cost as on COD of Rs.593.00 crore claimed by the Petitioner. The Commission find out the details of reasons of this cost variation, which is as summarised in the following Table 15:-

Table 15: Variation between Civil Works cost approved by CEA and Claimed by the HPSEB Ltd in Petition

S.No.	Description	Amount (Rs. crore)
A.	**Change in Scope**	
1	Poor Geology	113.00
2	Inadequate Provisions / Avoidable Expenditure in respect of Coffer Dam	15.00
3	Change in Design	37.00
4	Catchment Area Treatment Plan	11.00
	Sub-Total	**176.00**
B.	Actual Price Variation as per Contracts	42.65
C.	Construction of 2075 m Traffic Tunnel	30.85
D.	Miscellaneous	20.88
	Total	**270.38**

4.38 The Commission has segregated the above difference of Rs.270.38 crore into following three major heads:-

(a) Change in scope of work at Rs.176.00 crore. The Commission has arrived at the variation in change in scope on the basis of the findings of the High Level

Committee report constituted by the HPSEB Ltd and the additional information submitted by the HPSEB Ltd

(b) Price escalation at Rs.Rs.42.65 crore. The Commission arrives at this value on the basis of the actual escalation bills submitted by the HPSEB Ltd

(c) In response to specific query raised by the Commission, in respect of the remaining variation of Rs.51.73 crore, the HPSEB Ltd via its letter dated May 12, 2011 submitted that one of the reason for this cost variation is the additional scope of work such as construction of 2075 meter traffic tunnel. The Commission notes that the HPSEB Ltd has incurred an expenditure of Rs.30.85 crore for construction of 2075 meter long traffic tunnel leaving remaining amount of Rs.20.88 crore for which the details have been provided by the HPSEB Ltd and based on analysis of details, these works appears to be miscellaneous works.

4.39 The Commission observed that as per findings of the High level Committee report, which was finalised in February, 2007, there was a variation of Rs.113 crore on account of change in scope of works of civil structures due to poor geology. The break-up of the cost and comments of the Committee are given as follows:-

a) **Diversion Barrage:** An additional expenditure of Rs.3 crore incurred in diversion barrage for foundation treatment. This treatment was advised by Panel of Experts (PoE) which was constituted by the erstwhile HPSEB to monitor the progress of Project Commissioning, which the Committee termed as justified. As the expenditure incurred on Diversion Barrage was beyond the control of the HPSEB Ltd, the Commission approves the same.

b) **Desanding Arrangement:** The Committee identified that an additional expenditure of Rs.35 crore has been incurred due to replacement of Steel Fibre Reinforced Shotcrete (SFRS) lining with Reinforced Cement Concrete (RCC) lining which was agreed by PoE and deployment of 4 nos gantries. The Committee was of the view that only 2 nos of gantries should have been sufficient. Therefore, the Commission finds it appropriate to deduct the additional expenditure on account of additional 2 nos gantries deployed by the erstwhile HPSEB Ltd The Committee in para 17.3 on page 53 also observed that as against actual cost of RCC lining amounting to Rs.15.23 crore, the cost of SFRS lining would have worked out to Rs.12.32 crore (including normal escalation). Therefore, difference of Rs.2.91 (15.23-12.32) crore is being identified as excess expenditure incurred by the HPSEB Ltd due to change in scope. As this excess expenditure of Rs 2.91 crore is attributable to the HPSEB Ltd, the

Commission has not allowed the same. Thus, as per findings of the Committee report, an expenditure of only Rs.32.09 crore, i.e. Rs.35 crore less Rs.2.91 crore can be justified that is incurred due to replacement of SFRS lining with RCC Lining. Therefore, the Commission allowed only Rs.32.09 crore expenditure on account of Desanding Arrangement.

c) **Head Race Tunnel (HRT):** The Committee identified that Rs.48 crore has incurred due to change in geology of rock strata in HRT. The Committee was of the opinion that substantial expenditure out of thisRs.48 crore could have been avoided with the strict supervision by site engineers. The Committee Report was subjective on this issue and had not quantified any figure amount attributable purely on the part of HPSEB Ltd. Therefore, in such a scenario, as already discussed in para 4.22 in detail the Commission here refer to the principles settled in the recent APTEL Judgment, in such a case the cost should be shared between consumers and generating company. Therefore, in lines with the APTEL Judgment, the Commission is of the view that this additional expenditure should be shared on 50:50 basis between the HPSEB Ltd and the consumers and accordingly only 50% of total expenditure i.e. Rs.24 crore is allowable by the Commission to form part of capital cost. The remaining amount of Rs.24 crore shall be borne by the HPSEB Ltd and not passed on to the consumers.

d) **Surge Shaft and Power House:** The Committee had identified that an additional expenditure of Rs.11 crore and Rs.16 crore has incurred on account of Surge Shaft and Power House respectively. The Committee was of the opinion that these expenses were due to immediate requirement in the design change due to rock fall. The Commission finds it appropriate to allow the additional expenditure incurred on account of Surge Shaft and Power House as these were beyond the control of the HPSEB Ltd.

Summarising the above findings of the High Level Committee, the Commission works out Rs.86.09 crore as total allowable expenditure on account of poor geology.

4.40 The Committee further identified an additional expenditure of Rs.15 crore incurred due to revised design and extra construction of coffer dam could have been saved if while approving the design erstwhile the HPSEB Ltd would have been careful. It is evident that, the Committee Report could neither entirely attributed the additional expenditure on the part of HPSEB Ltd nor beyond its control. In such a scenario, as already discussed in para 4.22 in detail the Commission here refer to the principles settled in the recent APTEL Judgment, in such a case the cost should be shared between consumers and generating company. Therefore, in lines with the APTEL Judgment, the Commission is of the view that this additional expenditure should be shared on 50:50 basis between the HPSEB Ltd and the consumers. Accordingly the Commission decides to allow only 50% of expenditure, i.e. Rs.7.50 crore on this account to be part of the Capital Cost of the Project.

4.41 The Committee identified expenditure of Rs.37 crore due to change in design and change in grade of concrete in Diversion barrage, Intake, Desanding arrangement, Surge Shaft and Power House. The Commission is of the view that any expenditure due to necessary change in design due to technical requirement should be allowed as pass through as the same was not in control of the HPSEB Ltd.

4.42 The Committee pointed out that Rs.11 crore has been spent on Catchment Area Treatment (CAT) Plan in addition to the provision in TEC for the CAT plan. This was the requirement of Himachal Pradesh forest department and Ministry of Environment and Forest and hence this expenditure is justified. The Commission therefore allows the expenditure of Rs.11 crore spent on the CAT Plan.

4.43 Further as regards expenditure incurred on additional traffic tunnel of 2075 meter, the Commission observed that the Committee had identified an expenditure of Rs.35 crore on account of extension of traffic tunnel. The Committee of with the opinion that the construction of 775 meter long tunnel which was approved by the Ministry of Shipping and Transport (MOST) was initially built to bypass traffic from Barrage and Intake work sites would have served the purpose of diverging traffic with capital cost of Rs.8.80 crore. This expenditure of Rs.8.80 crore has been approved by the CEA in its TEC under sub-head of Communication, which the Commission has approved under the head of Infrastructure Works. However, the Board agreed to extend this tunnel by 2075 meter more incurring further expenditure of Rs.35 crore, though, raising and cutting the portion of the road that have been submerged was estimated at Rs.11 crore only. Thus, expenditure of about Rs.24 crore could have been saved. The Commission notes that instead of Rs.35 crore of expenditure indentified by the Committee, the HPSEB Ltd has actually incurred Rs.30.85 crore on additional traffic tunnel. The Commission based on the recommendation of the Committee allows only Rs.11 crore on this account. The Commission is further of the view that as this additional tunnel built by the Board is used by general public, the HPSEB Ltd should explore the possibilities of either getting this additional expenditure or capital servicing costs of additional expenditure for extending the traffic tunnel from relevant Government authorities.

4.44 As regards price escalation, the Commission has analysed the actual escalation payment bill made to the contractors. Further, the Commission has also analysed the clauses of price escalation provided in the Contract Agreements. The Commission observes that as per formula provided in the Contract Agreement, price escalation is payable to the contractor from the commencement of the contract. The Commission observe that total amount paid to the contractor on account of escalation in civil works is Rs.42.65 crore. Considering the revised allowable Time Schedule of COD by October 2004, the amount of Price Escalation pertaining to period till October 2004 works out to Rs.36.63 crore. As already discussed in para 4.22 in detail the Commission here refer to the principles settled in the recent the APTEL Judgment that in such a case the cost should be shared between consumers and generating company. Therefore, in lines with the APTEL Judgment, the Commission is of the view that this additional expenditure of Rs.6.02 crore on account of escalation should be shared on 50:50 basis between the HPSEB Ltd and the consumers. The Commission has therefore allowed escalation of Rs 39.63 [36.63 + 50% x 6.02] crore while approving the Capital Cost.

4.45 Regarding remaining cost of Rs.20.88 crore, the HPSEB Ltd has in its reply letter dated June 06, 2011 has submitted the details of this expenditure. Considering the fact that these costs comprises of various miscellaneous works, justified these expenditure. The Commission has allowed Rs.20.88 crore as miscellaneous expenditure.

4.46 As regards any Liquidated Damage (LD) claimed by the erstwhile HPSEB Ltd for delay in supply or non performance of the contractor as per the terms and conditions of the contract, the Commission raised query to the HPSEB Ltd, to submit amount of liquidated damages claimed from the contractor. The HPSEB Ltd in its letter dated May 12, 2011 submitted that although provision for levy of L.D charges exists in the contract agreements yet the HPSEB Ltd has not imposed such charges as these charges have been negotiated against other counter claims of the contractors as per the provisions of relevant clause of the contract agreement. As the HPSEB Ltd has actually not recovered any Liquidated Damages from the Contractors, the Commission has not considered any Liquidated Damages while approving the Capital Cost.

4.47 As already discussed in para 4.11, the Commission also took note of the fact that assets amounting to Rs.19.70 crore (primarily land and buildings) which were pertaining to Larji HEP have been transferred to Himachal Pradesh Power Corporation Ltd and other Government Departments. However, in its subsequent communication dated June 06, 2011 the HPSEB Ltd has stated that assets are not yet transferred. This submission of the HPSEB Ltd is in complete contradiction of its earlier submissions and the submission made by representative of the HPSEB

Ltd during the public hearing and also not supported by any documentary evidence. Therefore, the Commission has deducted Rs.19.70 crore from the allowable additional Civil works cost towards cost of transferred assets.

Accordingly, the Commission worked out total allowable additional expenditure of Rs.193.41 crore on accounts of Civil Works. The summary of the allowable additional expenditure is as follows :-

Table 16: Additional expenditure allowed in Civil Works

S.No.	Description	Total variation on account of Civil Works (Rs. crore)	Additional Expenditure Allowed (Rs. crore)
A.	**Change in Scope**		
1	Poor Geology	113.00	86.09
2	Inadequate Provisions / Avoidable Expenditure in respect of Coffer Dam	15.00	7.50
3	Change in Design	37.00	37.00
4	CAT Plan	11.00	11.00
	Sub-Total	**176.00**	**141.59**
B.	Acutal Price Variation as per Contracts	42.65	39.64
C.	Addional scope of work (2075 m traffic tunnel)	30.85	11.00
D.	Other Reasons	20.88	20.88
E.	(Less) Revenue from Transferred Assets		(19.70)
	Total	**270.38**	**193.41**

Electro-Mechanical Works:

4.48 The HPSEB Ltd has claimed total expenditure of Rs.156.86 crore on account of Electro-Mechanical works as against Rs.178.68 crore approved by the CEA in its TEC. The Commission, in its query asked the HPSEB Ltd to submit the documentary evidence of actual payments made to the Contractor. The HPSEB Ltd in its reply letter dated May 12, 2011 submitted that actual payment made to the Contractor on account of Electro-mechanical works package is Rs.119.74 crore.

4.49 However, the amount claimed in the Petition on account of Electro-Mechanical work is on higher side than the actual payment made to the contractors. Further, the Commission asked the HPSEB Ltd to reconcile the variation, in its reply the

HPSEB Ltd has submitted that the actual cost claimed in the Petition includes overhead expenses whereas cost as per bill represents only hard cash payment made to the contractor. The Commission is of the view that the overheads for entire Project are considered separately and hence it would not be appropriate to consider again the overheads apportioned to Electro-Mechanical Works separately as the same would amount to double accounting of overheads and hence increase in Project Cost. The Commission has therefore, approved Rs.119.74 crore on account of Electro-Mechanical works as actual payment made to the contractors.

Construction and Pre-Commissioning expenses

4.50 The HPSEB Ltd has claimed Construction and Pre-Commissioning expenses at Rs.35.05 crore as against Rs.18.47 crore approved by the CEA in TEC. The HPSEB Ltd in its reply letter dated May 20, 2011 has submitted that the substantial part of expenditure on account of Erection, Testing and Commissioning of Larji HEP as claimed to the extent of Rs.34.05 crore is part of main packages of this project such as Supply, Fabrication, Erection, Testing and commissioning of Gates and Hoists and other hydraulic works of this project, while Rs.1.00 crore is pertaining to Site Supervision. However, a separate estimate has been prepared for erection, testing and commissioning of Hydro Generating equipments to cover the cost on this account to the extent of Rs.8.80 crore against which actual expenditure to the extent of Rs.10.53 crore has been incurred and the remaining expenditure incurred on civil works which is included in the main packages. Regarding expenses of Rs.1.00 crore on Site Supervision, the Commission observed that no separate expenditure in this head was allowed by the CEA in its TEC, thus it has not been considered by the Commission. Subsequently, the HPSEB Ltd in its letter dated June 06, 2011 has submitted that it has incurred Rs.35.05 crore on Construction and Pre-Commissioning. The Commission notes that this submission of the HPSEB Ltd is in complete contradiction to earlier submission of the HPSEB Ltd and further, has also not substantiated with any documentary evidence. The Commission therefore, as already discussed in para 4.11, allows Rs.10.53 crore on this account to be part of Capital Cost.

Taxes and duties

4.51 The HPSEB Ltd has claimed total expenditure of Rs.1.60 crore on account of taxes and duties paid as against CEA approval of Rs.5.82 crore. The Commission allows the Taxes and duties as claimed by the HPSEB Ltd.

Overheads

4.52 Overhead expenses include the expenses on account of establishment, design & engineering, audit & accounts and contingency. The HPSEB Ltd has claimed total expenses of Rs.141.45 crore as overhead expenses as against the CEA approval of Rs.52.29 crore. The Commission observed that the HPSEB Ltd has also claimed Rs.58.41 crore as financing charges. The Commission, in a discussion with the HPSEB Ltd officials, on May 05, 2011, raised query the HPSEB Ltd to provide clarity on the financing charges. The HPSEB Ltd clarified that these expenses are Head Office expenses and are booked on a pro-rata share which are in fact overhead expenses and the HPSEB Ltd has wrongly booked these expenses as financing charges in the Petition. As already discussed in detail under para 4.11 above that this was a factual discrepancy on part of the HPSEB Ltd and as clarified by the HPSEB Ltd, the Commission has not considered these expenses of Rs 58.41 crore as part of overhead expenses. Thus, the total overheads of the HPSEB Ltd to be considered amount works out to Rs.141.45 crore, which is exorbitant by any set of standards.

4.53 The Commission further noted that the HPSEB Ltd, in its letter dated June 6, 2011, referring to Hon'ble APTEL Judgment dated May 27, 2011 in Review Petition No. 13 of 2010 in Appeal No. 56 of 2008 and 192 of 2009, has submitted regarding allowance of employee cost of Larji HEP and Khauli amounting to Rs.11.45 crore for the period of FY 2005-06. The Commission referred to the above Judgment, wherein the Hon'ble APTEL has directed to implement the directions given in APTEL's Judgment dated 06.07.2006 related to Larji and Khauli Projects. The Hon'ble APTEL in its Judgment held the disallowance of the employee cost related to the two projects unjustified and allowed the claims. The Commission here would like to clarify that the employee expenses pertaining to Larji and Khauli Projects were not disallowed, but transferred to Capital Works in Progress, as these projects were not commissioned in FY 2005-06. Further, while truing-up the employee cost for FY 2005-06, in its Order dated April 16, 2007, the Commission had not disallowed any employee cost on this account. Moreover, the Commission is of the view that the employee cost pertaining to Larji HEP for the FY 2005-06 has already been a part of the overheads claimed by the HPSEB Ltd in its Petition, on which the Commission has decided as above. Further, as the Project was not commissioned in FY 2005-06, and therefore, it has to be considered as a part of capital cost of the Project and there is no reason to allow the same separately as claimed by the HPSEB Ltd.

4.54 In accordance with the provisions of section 8(1) of the Electricity Act, any generating company intending to set-up a hydro-generating station shall prepare and submit to the Authority (Central Electricity Authority) for its concurrence, a scheme estimated to involve a capital expenditure exceeding a sum, as may be fixed by the Central Government, from time to time. The Commission notes that total overhead expenses approved by the CEA i.e. Rs.52.29 crore are 10.43% of hard cost (Civil Cost and E&M Works) approved by the CEA in TEC. The Commission applied the same percentage over the total hard cost other than overheads approved by the Commission. Accordingly the Commission works out the allowable overhead expenses at Rs.66.32 crore.

4.55 The Commission has observed that Govt of Himachal Pradesh had allotted this Project to the erstwhile HPSEB around 20 years prior to actual commissioning of the project. As the project took around 2 decades from concept to commissioning, the establishment cost is bound to be high. Further, when the project was allotted to the HPSEB, at that time there was no regulatory regime in place and no formal norms were established for setting-up of hydel project. Moreover, being a Public Sector Undertaking, having legacy Organisational Structure with no scientifically determined staffing pattern, Overheads which primarily constitutes Establishment expenses were difficult to control. Even before approval by the CEA in January 2000, in which Overheads costs was approved, majority of the time period had already elapsed without any formal benchmarking, thereby making difficult to contain the Overheads within specified limits approved by the CEA. Considering all these facts, the Commission is of the opinion that high Overhead Costs cannot be considered as completely attributable to inefficiencies of the Board as the same was not controllable by the Board.

4.56 As discussed earlier also, the Commission has decided to follow the principles laid down by the APTEL in its Judgment on Parli TPS Unit no. 6, the relevant extract of the Judgment is provided as follows:-

"In view of above, we feel that this case falls under category (iii) described in para 7.4. Accordingly, following the principles of prudence check laid down by us, the cost of time over run has to be shared equally between the generating company and the consumers. Admittedly, there is no enhancement in cost of the contract price of the equipment as no price variation escalation was permissible to BHEL beyond the schedule date of completion of the Project according to the terms of the agreement. The impact of time over run beyond the contractual schedule is only on IDC and overhead costs. Accordingly, the same have to be shared between the generating company and the consumers. Excess IDC and overhead costs for time overrun from scheduled date of commissioning to actual date of commissioning has to be worked out on prorate basis with respect to total actual time taken in commissioning of the unit. 50% of the excess IDC and overhead costs will have to be disallowed. Deduction on account of 50% of the Liquidity Damages received by the Appellant from its suppliers/contractors has also to be allowed from the capital cost, to give due credit for LDs to the consumers. This issue is answered accordingly."

4.57 Accordingly, the Commission in accordance the principles laid down by the APTEL in its judgment on Parli Unit no. 6, decided to allow 50% of excess overhead cost i.e. Rs.37.57 [50% x(141.45-66.32)] crore. Accordingly, the total allowable overhead works out at Rs.103.88 crore. This amount is approx. 200% of the Overheads as approved by CEA in its TEC. Moreover, the Commission here notes that the CEA in its TEC had approved overheads as 10.43% of the Hard cost (Civil cost + E&M cost only) and the new norms specified by the CEA in its "Guidelines for Formulation of Detailed Project Reports for Hydro Electric Schemes, their Acceptance and Examination for Concurrence" provides overhead expenses as 8% of civil works and 6 % of E&M works, which approx. works out to 7.5% of the Hard Cost. However, keeping in view the principles laid down in the Hon'ble APTEL Judgment as mentioned above, the Commission has allowed overheads expenses at Rs.103.88 crore which is about 16.34% of Hard cost of Rs.635.77 crore (Rs.516.03 crore for civil works + Rs.119.74 crore for E&M works) which in terms of percentage of hard cost is approx. 214% higher than as approved by the CEA in its TEC.

As discussed in above paragraphs, the Commission has allowed total hard cost of Rs.826.43 crore as shown in the following Table 17:-

Table 17: Total Hard Cost Approved by the Commission

Summary of Project Cost	Approved Hard Cost
Infrastructure Works	74.65
Civil Work	516.03
Electro mechanical equipments	119.74
Taxes and duties	1.60
Construction and pre-Commissioning expense	10.53
Overheads	103.88
Total Hard cost	**826.43**

Means of Finance

4.58 Regulation 15 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007 provides for structure of financing, i.e. Debt-Equity Ratio of existing and new stations as follows:-

"15. Debt-Equity Ratio

(1) Existing Stations:

(a) For existing generating stations, the amount of loan capital shall be equal to the sum of the outstanding balance of all long term loans taken to finance the generating station, at the commencement of the financial year for which tariff is to be determined, as reflected in the tariff orders of the Commission.

(b) The equity capital shall be taken as specified by the generating company, subject to prudence check by the Commission.

(c) Any fresh infusion of capital in the existing generating stations shall be considered only after prior approval by the Commission, and would have a debt-equity ratio of 70:30.

(2) New Stations:

(a) The normative debt-equity ratio shall be considered to be 70:30 for determination of tariff.

(b) In case of a generating station where equity employed is more than 30%, the amount of equity for determination of tariff shall be limited to 30% and the balance amount shall be considered as the normative loan.

(c) In case of a generating station where actual equity employed is less than 30%, the actual debt and equity shall be considered for determination of tariff."

4.59 Further, regarding considering an amount as Equity, Regulation 20 (2) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, stipulates that:

"The premium raised by the generating company while issuing share capital and investment of internal resources created out of free reserve, if any, shall also be reckoned as equity for the purpose of computing return on equity, provided such premium amount and internal resources are actually utilized for meeting capital expenditure and forms part of the approved financial package. For the purposes of calculation of computation of return, the portion of free reserves utilized for meeting the capital expenditure shall be considered from the date the asset created is productively deployed in the generation business."

4.60 Tariff Policy, in its Clause 5.3 (b) also, provides for the Debt: Equity Norm for financing of Capital Cost of Projects, which acts as a guiding principle to Tariff Regulations. The relevant extract of the above said is reproduced as follows:-

"Equity Norms

For financing of future capital cost of projects, a Debt : Equity ratio of 70:30 should be adopted. Promoters would be free to have higher quantum of equity investments. The equity in excess of this norm should be treated as loans advanced at the weighted average rate of interest and for a weighted average tenor of the long term debt component of the project after ascertaining the reasonableness of the interest rates and taking into account the effect of debt restructuring done, if any. In case of equity below the normative level, the actual equity would be used for determination of Return on Equity in tariff computations."

4.61 The Board in its first MYT Petition dated November 30, 2007 had claimed an Equity amount of Rs.233.69 crore including Rs.185.58 crore on its own and Rs.48.11 crore by the State Government. However, the Commission in its MYT Order dated May 30, 2008 in the absence of any supporting evidence showing equity investment by the Board, had disallowed equity claim of Rs.185.58 crore and considered equity of Rs.48.11 crore only for providing RoE. In the present Petition, the HPSEB Ltd has claimed total amount of Rs.401.33 crore towards equity, including Rs.48.11 crore contributed by the State Government and balance Rs.353.22 crore claimed to be contributed by the HPSEB Ltd through its internal accruals, short-term borrowings, overdraft from banks, etc. which has also been accounted by a mere book entry in the Annual Accounts of the HPSEB Ltd for FY 2009-10 without any details of its source. On repeated queries by the Commission, the HPSEB Ltd in its reply dated May 12, 2011 has submitted the year-wise break-up of equity infusion in the Larji HEP from FY 1986-87 to FY 2007-08, however, without substantiating the same with any documentary support towards source of equity.

4.62 As already discussed in preceding paras 4.58 to 4.60 there are certain norms as in respect of source of funds to be considered as equity for the project. In the absence of any substantial documentary evidence provided by the HPSEB Ltd, regarding its source of equity claimed to be infused in the Larji HEP, the Commission, carried out detailed analysis of the audited Annual Accounts of the Board from FY 1986-87 to FY 2007-08. The Commission worked out the positive cash flows/internal accrual available with the HPSEB Ltd by considering Net Profit after Tax as base figure. The Commission added depreciation and subtracted long term loan repayments (excluding refinancing and amount pertaining to SLR Bonds) to Net Profit after tax to arrive at the cash accruals available in the respective financial years, as depicted in the following Table 18:-

Table 18: Computation of Positive Cash flows (Internal Accruals) (Rs. crore)

Financial Year	Year wise capital cost as submitted by HPSEB Ltd	Equity claimed by HPSEB	Cash Flow available from Audited Accounts	Positive Cash Flows from Audited Accounts
1986-87	0.23	0.23	(34.32)	-
1987-88	1.71	1.75	(32.49)	-
1988-89	4.20	4.20	(14.29)	-
1989-90	4.61	4.60	(45.32)	-
1990-91	1.98	1.98	7.62	7.62
1991-92	4.99	4.99	(0.94)	-
1992-93	7.22	7.22	16.72	16.72
1993-94	6.17	6.16	(3.11)	-

Financial Year	Year wise capital cost as submitted by HPSEB Ltd	Equity claimed by HPSEB	Cash Flow available from Audited Accounts	Positive Cash Flows from Audited Accounts
1994-95	6.49	6.49	30.03	30.03
1995-96	7.50	7.50	(8.22)	-
1996-97	3.52	3.52	13.11	13.11
1997-98	15.14	15.14	17.82	17.82
1998-99	31.20	31.20	23.74	23.74
1999-00	49.08	49.08	(77.03)	-
2000-01	111.90	26.14	(37.72)	-
2001-02	176.97	26.14	(102.73)	-
2002-03	224.26	26.14	(62.13)	-
2003-04	278.77	26.14	(40.90)	-
2004-05	184.61	26.14	(72.04)	-
2005-06	90.65	26.14	51.63	51.63
2006-07	79.71	26.14	(55.63)	-
2007-08	170.42	26.14		
Total	**1,461.33**	**353.18**		**160.67**

4.63 It may be noted from the above Table that as against Rs.353.18 crore equity infusion claimed by the HPSEB Ltd through internal accruals, the Audited Accounts support a maximum amount of Rs.160.67 crore (approx.) available as positive cash flow, which may be considered as internal accrual available for investment in capital projects.

4.64 As regards, source of equity, the HPSEB Ltd in its reply letter dated June 06, 2011 has submitted that it has invested equity from internal accrual/sources, short term borrowing and over draft availed from various bank. The Commission notes that explanation to Para 5.3 of Tariff Policy stipulates as follows:

"Tariff policy lays down following framework for performance based cost of service regulation in respect of aspects common to generation, transmission as well as distribution. These shall not apply to competitively bid projects as referred to in para 6.1 and para 7.1 (6). Sector specific aspects are dealt with in subsequent sections.

a) Return on Investment

Balance needs to be maintained between the interests of consumers and the need for investments while laying down rate of return. Return should attract investments at par with, if not in preference to, other sectors so that the electricity *sector is able to create adequate capacity. The rate of return should be such that it allows generation of reasonable surplus for growth of the sector.*

…….

While allowing the total capital cost of the project, the Appropriate Commission would ensure that these are reasonable and to achieve this objective, requisite benchmarks on capital costs should be evolved by the Regulatory Commissions.

"Explanation: For the purposes of return on equity, any cash resources available to the company from its share premium account or from its internal resources that are used to fund the equity commitments of the project under consideration should be treated as equity subject to limitations contained in (b) below."

…….

b) Equity Norms

For financing of future capital cost of projects, a Debt : Equity ratio of 70:30 should be adopted. Promoters would be free to have higher quantum of equity investments. The equity in excess of this norm should be treated as loans advanced at the weighted average rate of interest and for a weighted average tenor of the long term debt component of the project after ascertaining the reasonableness of the interest rates and taking into account the effect of debt restructuring done, if any. In case of equity below the normative level, the actual equity would be used for determination of Return on Equity in tariff computations.

4.65 Thus, Tariff Policy clearly specifies that no return can be provided on any fund from short term borrowing and bank overdraft. Considering the definition of equity as per Tariff Policy, Commission has worked out funds available from internal sources of the HPSEB Ltd at Rs.160.67 crore only.

4.66 The HPSEB Ltd, as a vertically integrated utility till June 2010 was undertaking generation, transmission and distribution activities. Even post restructuring, only the transmission activity was separated and distribution and generation activities are still being looked after by the HPSEB Ltd. Therefore, there was an opportunity to invest equity in all the three activities. In case of generation activity also, the Commission noted that apart from Larji HEP, the HPSEB Ltd has other generating projects also, like Ghanvi, Bhabha augmentation, Uhl, etc, and therefore, these projects are also eligible for equity funding from internal accruals of the HPSEB Ltd. From the Annual Accounts of the HPSEB Ltd, the Commission further observed from the records that the HPSEB Ltd has also infused funds in its Uhl project of 100 MW capacity vide a Special Purpose Vehicle (SPV) namely the Beas Valley Power Corporation Ltd. Apart from the equity infusion made by the State Government of Himachal Pradesh, the HPSEB

Ltd has also infused funds in the Beas Valley Power Corporation Ltd. in excess of Rs.200 crore. It is important to note here that apart from an amount of Rs.1.58 crore, majority of equity infused in Uhl Project of Beas Valley Power Corporation Ltd has been made post 2000. At the same time, Larji HEP has got its debt funding started after getting TEC from the CEA in the year 2000 only. Therefore, the Commission is of the view that out of the total internal accruals amounting Rs.160.67 crore, qualifying as equity for the HPSEB Ltd, funds available till FY 1999-2000, excluding Rs.1.58 crore invested in Uhl Project in FY 1998-99, i.e. Rs.107.46 (109.04 – 1.58) crore may reasonably be presumed to be invested in the Larji Project. Whereas, funds available from the HPSEB Ltd's internal accrual post FY 1999-2000 may reasonably presumed to be utilised towards funding the HPSEB Ltd's investment in the Beas Valley Corporation Ltd for Uhl Project. Accordingly, the Commission considers that equity amount of Rs.107.46 crore available from internal accruals of the HPSEB Ltd. till FY 1999-00 is being invested in Larji HEP, as after this period funds were also available to Larji HEP from Debt Funding. Adding this to an amount of Rs.48.11 crore equity infused by the State Government specifically for Larji Project, the total equity component that may be considered for Larji Project amounts to Rs.155.57 crore only. In view of the above, the Commission limits the equity to the extent of Rs.155.57 crore i.e. Rs.107.46 crore as equity from the HPSEB Ltd through internal accruals supported from the Annual Accounts and equity of Rs.48.11 crore invested by the State. Govt. The summary of the Debt-Equity as submitted by the HPSEB Ltd and approved by the Commission is shown in the following Table 19:-

Table 19: Means of Finance (Rs. crore)

Project Funding	**HPSEB Ltd**	**Approved**
Equity	401.33	155.57
Debt	1,060.00	943.13
Total	1,461.33	1,098.70

4.67 On the total approved Capital Cost of Rs.1098.70 crore as determined in the subsequent para 4.80, the Commission considered Rs.155.57 crore being funded through equity infusion and the balance amount of Rs.943.13 crore funded by way of Debt. Thus, out of a total loan amount of Rs.1060 crore availed by the HPSEB Ltd, the Commission has not considered an amount of Rs.116.87 crore on account of disallowance in Capital Cost of the Project.

Interest during Construction (IDC) and Financing Charges

4.68 The Commission observed that the CEA, in its TEC approval issued on January 14, 2011, for Larji HEP, stipulated as under regarding the IDC for the project:

"The complete cost of the Scheme shall not exceed the above cost except on account of:-

(a) Interest During Construction and Financing Charges as per actual but not exceeding the amount as indicated in Annex-I.

Accordingly, the CEA has approved IDC of Rs.131.16 crore for Larji HEP.

4.69 In this Petition, the HPSEB Ltd has claimed total IDC amounting to Rs.374.15 crore.. For IDC computations, the Commission provided format to the HPSEB Ltd and asked to submit IDC in a prescribed format. The HPSEB Ltd in its reply submitted the quarterly IDC paid along-with the documentary evidence for the same.

4.70 As the hard cost approved by the Commission is lower than the actual hard cost, the Commission has worked out the IDC on the basis of Hard cost approved by the Commission and considering the equity investment as approved by the Commission.

4.71 As regards impact of time over-run on account of delay in the project commissioning, the HPSEB Ltd has considered the entire IDC incurred till the actual COD of the project. The Commission is of the view that the full burden of increase in IDC due to delay in the Project Commissioning should not be passed through to the consumers. The Commission has therefore, re-computed the IDC considering the notional date of commercial operation of Larji HEP as October, 2004. The Commission has pre-poned the expenditure incurred between October, 2004 to February, 2007, and thus undertaken normative re-phasing of the expenditure in accordance with the industry practices and has worked out the notional interest during construction for that period. The Commission while computing the IDC has considered actual equity at Rs.155.57 crore as computed in para 4.66 and considered the remaining portion as debt. Based on these principles, the IDC computed by the Commission works out to Rs.166.45 crore on hard cost of Rs.826.43 crore. The detailed computation of IDC is annexed as **Annexure A** to this Order.

4.72 As discussed above, the Commission follows the principles laid down by the APTEL in its Judgment on Parli Unit no. 6, the relevant extract of the Judgment is provided as follows:-

"In view of above, we feel that this case falls under category (iii) described in para 7.4. Accordingly, following the principles of prudence check laid down by us, the cost of time over run has to be shared equally between the generating company and the consumers. Admittedly, there is no enhancement in cost of the

contract price of the equipment as no price variation escalation was permissible to BHEL beyond the schedule date of completion of the Project according to the terms of the agreement. The impact of time over run beyond the contractual schedule is only on IDC and overhead costs. Accordingly, the same have to be shared between the generating company and the consumers. Excess IDC and overhead costs for time overrun from scheduled date of commissioning to actual date of commissioning has to be worked out on prorate basis with respect to total actual time taken in commissioning of the unit. 50% of the excess IDC and overhead costs will have to be disallowed. Deduction on account of 50% of the Liquidity Damages received by the Appellant from its suppliers/contractors has also to be allowed from the capital cost, to give due credit for LDs to the consumers. This issue is answered accordingly."

4.73 The Commission following the principles laid down by the APTEL in its judgment on Parli Unit no. 6, the Commission decided to allow an additional amount of 50% of the excess IDC i.e. 103.85 [50%*(374.15-166.45] crore. Thus, the total allowable IDC works out by the Commission is Rs.270.30 crore.

4.74 As regards Financing Charges, the Commission works out the Financing charges as per loan agreements. The Commission works out the financing charges at Rs.4.64 crore.

Revenue Capitalised

4.75 The Commission noticed that, the HPSEB Ltd has not considered any revenue earned from the sale of infirm power (energy generated during trial run) i.e. energy generated before COD of the Units of Larji HEP. The Commission asked to the HPSEB Ltd to submit the Unit wise energy generated during the trial run. In its reply the HPSEB Ltd has submitted the energy generated during trial run as shown in the following Table 20:-

Table 20: Infirm Power (Energy Generated during Trial Run)

Sr. No.	Unit	Trial Operation		Gross Generation (MU)
		Start Date	End Date	
1	Unit – I	3-Feb-07	28-Feb-07	7.06
2	Unit – II	28-Sep-06	12-Oct-06	12.03
3	Unit – III	11-Sep-06	24-Sep-06	12.76
4	**Total**			**31.86**

4.76 The gross infirm power generation is 31.86 MU, after deducting the auxiliary consumption at rate of 0.70% and transformation losses at 0.50%, the Commission has worked out the total ex-bus infirm power of 31.47 MU.

4.77 Regulation 14 of the HPERC (Terms and Conditions of Tariff Regulations for determination of Hydro Generation Tariff) Regulations, 2007 stipulates that

"Any revenue earned by the generating company from sale of infirm power, shall be taken as reduction in capital cost and shall not be treated as revenue. The rate of infirm power shall be the same as the primary energy rate of the generating station."

Further Regulations 26 (2) stipulates that

"Rate of primary energy for all generating stations, except for pumped storage generating stations, shall be equal to the lowest variable charges of the central sector thermal power generating station of the northern region. The primary energy charge shall be computed based on the primary energy rate and saleable energy of the station:"

4.78 The Commission noted that in FY 2006-07, lowest variable charge of the central sector station in the northern region was Rs.0.85 per unit. Accordingly, the Commission worked out total revenue generated from infirm power at Rs.2.68 crore. The Commission deducted the same from the approved total capital cost of the project.

Total Capital Cost Approved

4.79 The Commission based upon the analysis as prescribed in the above paras, determines the total capital cost for Larji HEP at Rs.1098.70 crore. The details of the approved capital cost are given as follows in Table 21:-

Table 21: Total Capital cost approved by the Commission (Rs.crore)

Summary of Project Cost	**Approved Capital Cost**
Infrastructure Works	74.65
Civil Works	516.03
Electro- mechanical equipments/Works	119.74
Taxes and duties	1.60
Construction and pre-Commissioning expense	10.53
Overheads	103.88
Total Hard cost	**826.43**
IDC	270.30

Summary of Project Cost	Approved Capital Cost
Finance Charges	4.64
Gross Project Cost	**1,101.38**
Less: Revenue from infirm Power Capitalized	(2.68)
Total Project Cost considered	**1,098.70**

4.80 **Thus, the total Capital Cost now considered by the Commission works out to Rs.1098.70 crore. At total installed capacity of 126 MW, the per MW Capital Cost of the Larji Project at the above mentioned Capital Cost works out to Rs.8.72 crore.**

4.81 The Commission observed that the Capital cost per MW of Larji HEP is significantly high as compared to the CEA approved capital cost. The Commission therefore, with the objective of getting an idea of capital cost of similar projects, has analysed the capital cost of similar capacity Hydel projects commissioned recently or to be commissioned in near future, as depicted in the following Table 22:-

Table 22: Summary of Other Hydel Projects

S. No.	Project	Capacity	Original Approved Cost	Actual/ Rev Est. Cost	Sch. COD	Actual/ Expected COD
		MW	Rs crore /MW	Rs crore /MW		
A.	**Projects Commissioned**					
1	Sewa	120	5.55	8.87	Sep-07	Jan-10
3	Allain Duhangan	192	4.85	10.42	Nov-09	Aug-10
B.	**Projects under Execution**					
1	Chamera III	231	6.08	8.41	Aug-10	Dec-11
2	Uri-II	240	7.19	7.19	Nov-09	Feb-11
3	Teesta Low Dam III	132	5.83	10.60	Mar-07	Feb-11
5	Myntdu	100	2.88	7.67	Oct-06	Nov-11
6	Malana II	100	5.98	8.26	Jul-09	May-11

It may be observed that the Capital Cost of Rs 8.72 Crore/MW approved by the Commission for Larji HEP is largely comparable with the actual or revised estimated capital cost of similar size projects...

A5: ANNUAL FIXED CHARGES FROM FY 2007-08 TO FY 2010-11 AND TRUING UP

Background

5.1 Section 61 of the Electricity Act, 2003 states that the terms and conditions for determination of tariff shall be specified by the Appropriate Commission and further set the guiding principles for the same. section 61 states as follows:-

"Section 61. (Tariff regulations):
The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-

(a) the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees;
(b) the generation, transmission, distribution and supply of electricity are conducted on commercial principles;
(c) the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;
(d) safeguarding of consumers' interest and at the same time, recovery of the cost of electricity in a reasonable manner;
(e) the principles rewarding efficiency in performance;
(f) multi year tariff principles;
(g) that the tariff progressively reflects the cost of supply of electricity and also, reduces cross-subsidies in the manner specified by the Appropriate Commission;
(h) the promotion of co-generation and generation of electricity from renewable sources of energy;
(i) the National Electricity Policy and tariff policy"

Components of Annual Fixed Charges

5.2 Regulation 25(3) of Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, stipulates that

"*The annual fixed charge of generating station shall include the following elements:*
(a) operation and maintenance expenses;
(b) depreciation;

(c) interest on loans;
(d) interest on working capital; and
(e) return on equity.
(f) Income, other than that through charges permitted by the Commission, and involving utilization of the applicant's assets may be suitably accounted for by the Commission while determining the tariff."

5.3 Accordingly, the Commission has worked out the Annual Fixed charges for Larji HEP for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11. The details of the approved AFC components are discussed in the following paras:

Depreciation and Advance against Depreciation:

5.4 In accordance with Regulation 19(3) of the Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, for calculating the depreciation annually the Commission has considered the depreciation rate of 2.57% as provided n appendix to the Regulations. Further the Regulations also provide that no depreciation will be allowed on land under ownership. Accordingly the Commission deduct the cost of land from the total capital cost of the projects and works out the total depreciable value of Larji HEP at Rs.1096.39 (1098.70-2.31) crore.

5.5 Regulation 19(6) of the Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, stipulates that where the actual repayment is more than the Depreciation allowable under Regulation 19(3), subject to a ceiling of $1/10^{th}$ of loan amount, the Generating Company shall be allowed an advance against depreciation for the difference between the actual amount of such repayment and the allowable depreciation for such financial year. Provided that advance against depreciation shall be permitted only if the cumulative repayment upto a particular year exceeds the cumulative depreciation for that year. Provided further that advance against depreciation in a year shall be restricted to the extent of difference between cumulative repayment and cumulative depreciation upto that year.

5.6 However, the Commission in its MYT Order dated May 30, 2008 for the erstwhile HPSEB, stipulated that for generation business of the HPSEB as a whole, the total allowable depreciation is on higher side as compared to the amount of loan repayment. Therefore, there is no need to provide Advance against deprecation to the HPSEB Ltd Following the same principles of MYT Order, the Commission has not allowed advance against depreciation separately for Larji HEP. Accordingly, for the purpose of determination of tariff the Commission has not considered any AAD as can be seen in the following Table 23:-

Table 23: Depreciation

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Total Depreciable Value	1096.39	1096.39	1096.39	1096.39
Depreciation Rate	2.57%	2.57%	2.57%	2.57%
Depreciation	28.18	28.18	28.18	28.18

Interest Rate and Loan Repayment

5.7 As stipulated earlier, the project has been financed through debt taken from the Power Finance Corporation (PFC) of Rs.790 crore, the Kangra Central Co-operative (KCC) Bank of Rs.170 crore (in the Petition it is wrongly mentioned that this loan is from HP Co-operative Bank) and the Punjab National Bank (PNB) of Rs.100 crore. PFC had sanctioned three loan of Rs.398 crore, Rs.214 crore and Rs.178 crore respectively. The Term loan taken from the PNB is now been refinanced by the HP Co-operative Bank and KCC Bank.

5.8 Based on the loan agreements, the tenure of the loan has been considered as 10 years for the PFC loans and 5 years for other loans. The Commission has considered actual loan repayment as made by the HPSEB Ltd for respective loan. As regards, the interest rate, the Commission has considered the interest rate as submitted by the HPSEB Ltd The summary of opening balance of loan, total annual repayment and loan balance and interest expenses as approved by the Commission is shown in the following Table 24:-

Table 24: Loan-wise Detail (Rs. crore)

PFC Loan	**FY 2007-08**	**FY 2008-09**	**FY 2009-10**	**FY 2010-11**
Opening loan Balance	790.00	730.74	651.74	572.74
Repayment during the year	59.26	79.00	79.00	79.00
Closing Balance	730.74	651.74	572.74	493.74
Interest Expense	72.24	65.67	58.16	50.66
KCC Loan	**FY 2007-08**	**FY 2008-09**	**FY 2009-10**	**FY 2010-11**
Opening loan Balance	170.00	160.00	128.00	95.00
Repayment during the year	10.00	32.00	33.00	34.00
Closing Balance	160.00	128.00	95.00	61.00
Interest Expense	14.85	12.96	10.04	7.02
PNB Loan	**FY 2007-08**	**FY 2008-09**	**FY 2009-10**	**FY 2010-11**
Opening loan Balance	100.00	100.00	100.00	80.00
Repayment during the year	-	-	20.00	20.00
Closing Balance	100.00	100.00	80.00	60.00
Interest Expense	9.00	9.00	8.10	6.30

5.9 As discussed in para 4.67, the total debt requirement based on the Capital Cost approved by the Commission works out to be Rs.116.87 crore less than the actual debt. The Commission has accordingly disallowed the interest on account of this excess debt. The Commission has computed the interest to be disallowed at weighted average interest rate of actual loans. The net interest expense allowed by the Commission is summarized as follows in Table 25:-

Table 25: Summary of Total Loan and Interest on Loan (Rs. crore)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Opening loan	943.13	885.56	786.24	665.93
Repayment	57.57	99.31	120.31	121.31
Closing Balance	885.56	786.24	665.93	544.62
Weighted Average Interest rate	9.37%	9.37%	9.38%	9.39%
Interest	85.68	78.32	68.08	56.84

Return on Equity

5.10 In accordance with Regulation 20.(1) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, the Commission has considered the applicable return on equity of 14% per annum. As discussed in para 4.66 the Commission has allowed the total equity of Rs.155.57 crore. This is inclusive of Govt. equity of Rs.48.11 crore and the HPSEB Ltd internal accrual of Rs.107.46 crore. Thus, by applying a rate of return of 14% on the approved equity, the Commission has worked out return on equity. The summary of Return on Equity as approved by the Commission is given in the following Table 26:-

Table 26: Return on Equity

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Equity Approved	155.57	155.57	155.57	155.57
Rate of Return	14%	14%	14%	14%
Return on Equity	21.78	21.78	21.78	21.78

Operation and Maintenance (O&M) expense

5.11 Regulation 23 (4) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007 stipulates that

"In case of the hydro electric generating stations, which have not been in existence for a period of five years, the O&M expenses shall be fixed at 1.5% of the capital cost as admitted by the Commission and shall be escalated at the rate of 4% per annum from the subsequent year to arrive at O&M expenses for the

base year. The base O&M expenses shall be further escalated at the rate of 4% per annum to arrive at permissible O&M expenses for the relevant year."

The Commission has gathered actual O&M expenses for Larji HEP from the HPSEB Ltd from FY 2007-08 to FY 2010-11 along with O&M expenses of other generating stations. The Commission noticed that the actual O&M expenses incurred by the HPSEB Ltd have been significantly lower than the normative O&M expenses worked out based on the above mentioned Regulation.

From the Petition of the HPSEB Ltd, the Commission observes that as the Project Cost is on the higher side, the HPSEB Ltd has claimed base O&M expense at only 1% of the Capital Cost. The Commission is of the view that normative O&M Expenses as a percentage of Capital Cost as per Regulations is also inclusive of expenses like terminal benefit, salary arrears, etc. However, these expenses are being allowed by the Commission separately for the HPSEB Ltd as a single entity. In that case, allowing 1% of Capital Cost, as claimed by the HPSEB Ltd would lead to the double accounting of expenses. Therefore, the Commission considered it appropriate to allow actual O&M expenses for the Larji HEP as other expenses pertaining to employee expenses like terminal benefits, pension, salary arrears, etc. which is over and above the actual O&M expenses reflected in the following Table 27, are being allowed to the HPSEB Ltd in its total ARR as single integrated entity. Accordingly, the Commission allows actual O&M expense as incurred by the HPSEB Ltd on Larji Project as summarised in the following Table 27:-

Table 27: O&M Expenses (Rs. crore)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
O&M Expenses	6.40	10.54	11.09	13.85
R&M Expense	2.41	1.38	1.09	2.14
A&G Expense	0.13	0.42	1.03	1.23
Employee Expense	3.86	8.73	8.96	10.49

Interest on Working Capital

5.12 In accordance with Regulations 17 and 18 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, the Commission has considered the following components for determining the working capital requirement:

a) Operation and Maintenance Expenses for one month

b) Maintenance spares equivalent to 40% of R&M expenses for one month

c) Receivables equivalent to two months of fixed and variable charges for sale of electricity calculated on the normative capacity index

5.13 Further, while computing interest on working capital the Commission has considered the interest rates of 12.25% for FY 2007-08 to FY 2009-10 and 11.75% for FY 2010-11, considering the prevailing SBI PLR on 1st April of relevant year. The summary of interest on working capital as approved by the Commission is given in the following Table 28:-

Table 28: Interest on Working Capital (Rs. crore)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
O&M Expense for one month	0.53	0.88	0.92	1.15
Maintenance Spare @ 40% of R&M expense for one month	0.08	0.05	0.04	0.07
Receivable for 2 months	24.18	23.64	21.99	20.53
Working Capital Requirement	24.79	24.56	22.95	21.76
Interest Rate @ SBI PLR as on 1st April of Relevant Year	12.25%	12.25%	12.25%	11.75%
Interest on working Capital	**3.04**	**3.01**	**2.81**	**2.56**

Annual Fixed Charges

5.14 The Summary of Annual Fixed Charges approved by the Commission for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11 are summarised in the following Table 29:-

Table 29: Annual Fixed Charges (Rs. crore)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Depreciation	28.18	28.18	28.18	28.18
Interest on Loan	85.68	78.32	68.08	56.84
Return on Equity	21.78	21.78	21.78	21.78
O&M Expenses	6.40	10.54	11.09	13.85
Interest on working Capital	3.04	3.01	2.81	2.56
Total AFC	**145.08**	**141.83**	**131.94**	**123.21**

The Commission has thus worked out Annual Fixed Charges as Rs.145.08 crore, Rs.141.83 crore, Rs.131.94 crore and Rs.123.21 crore for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11 respectively.

Energy Generation from the Station

5.15 the HPSEB Ltd has submitted gross energy generation as 586.25 MU, 638.97 MU, 602.05 MU and 666.39 MU for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11 respectively. The Commission, after deducting the Auxiliary consumption at 0.70% and transformation losses at 0.50% and free share of Government of Himachal Pradesh (GoHP) at 12%, works out the total saleable energy at 509.71 MU, 555.55 MU, 523.45 MU and 579.30 MU for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11 respectively.

5.16 Regulation 3 (1) (v) and 3 (1) (z) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007 stipulates that-

"*"Primary Energy" means the quantum of energy generated up to the design energy on per year basis at the generating station"*

""Saleable Primary Energy" means the quantum of primary energy available for sale (ex-bus) after allowing for free energy to the State;"

The Commission notes that the Design energy of the Station as DPR as approved by the CEA in 2000, is 586.82 MU which is equivalent to the Primary energy. After deducting the auxiliary consumption, transformation losses and free share of GoHP, the Commission worked out the net maximum saleable primary energy at 510.20 MU as summarised in the following Table 30:-

Table 30: Primary Energy (MU)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Design Energy	586.82	586.82	586.82	586.82
Auxiliary Consumption	0.70%	0.70%	0.70%	0.70%
Transformation Loss	0.50%	0.50%	0.50%	0.50%
Ex-Bus Generation	579.78	579.78	579.78	579.78
Free Power to State	12%	12%	12%	12%
Primary energy	510.20	510.20	510.20	510.20

5.17 Further, Regulation 3 (1) (cc) and 3 (1) (aa) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007 stipulates that

"Secondary Energy" means the quantum of energy generated in excess of the design energy on per year basis at the generating station;

"Saleable Secondary Energy" means the quantum of secondary energy available for sale (ex-bus) after allowing for free energy to the State;

Accordingly the Commission Worked out the Net saleable primary energy and secondary energy for FY 2007-08, FY 2008-09, FY 2009-10 and FY 2010-11, as summarised in the following Table 31:-

Table 31: Saleable Primary and Saleable Secondary Energy (MU)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Gross Energy Generation	586.25	638.97	602.05	666.39
Auxiliary Consumption	0.70%	0.70%	0.70%	0.70%
Transformation Loss	0.50%	0.50%	0.50%	0.50%
Ex-Bus Generation	579.22	631.30	594.83	658.40
Free Power to State	12%	12%	12%	12%
Total Saleable Power	509.71	555.55	523.45	579.39
Saleable Primary energy	510.20	510.20	510.20	510.20
Saleable Secondary energy	-	45.34	13.24	69.18

Secondary Energy Charge

5.18 The actual generation for Larji HEP is more than its design energy, which has resulted in secondary energy generation. Regulation 26 (2) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, stipulates that

"Rate of primary energy for all generating stations, except for pumped storage generating stations, shall be equal to the lowest variable charges of the central sector thermal power generating station of the northern region. The primary energy charge shall be computed based on the primary energy rate and saleable energy of the station:

Provided that in case the primary energy charge recoverable by applying the above primary energy rate exceeds the annual fixed charge of a generating station, the primary energy rate for such generating station shall be calculated by the following formula: -

$$\text{Primary Energy Rate} = \frac{\text{Annual Fixed Charge}}{\text{Saleable Primary Energy}}$$

Primary Energy Charge = Saleable Primary Energy x Primary Energy Rate

Secondary Energy Rate shall be equal to Primary Energy Rate;

Secondary Energy Charge = Saleable Secondary Energy x Secondary Energy Rate."

5.19 The Commission notes that the lowest variable charges of the Central Sector thermal power generating station of the northern region is Rs.0.93/kWh for FY 2008-09, Rs.0.97/kWh for FY 2009-10 and Rs.1.07/kWh for FY 2010-11. The Commission accordingly worked out the secondary energy charges as summarised in the following Table 32:-

Table 32: Secondary Energy Charge/Incentive

Particulars	**FY 2007-08**	**FY 2008-09**	**FY 2009-10**	**FY 2010-11**
Saleable Secondary energy (MU)	-	45.34	13.24	69.18
Secondary Energy Rate (Rs./kWh)	-	0.93	0.97	1.07
Secondary Energy Incentive (Rs. crore)	-	4.22	1.28	7.40

A6: TRUE UP FOR PERIOD FY 2007-08 TO FY 2010-11

Introduction

6.1 The Commission issued its MYT Order for the erstwhile HPSEB for the period of FY 2008-09 to FY 2010-11, wherein the Commission fixed the tariff for sale of energy generated from Larji HEP for Period FY 2007-08 to FY 2010-11. This Chapter details the true-up of the provisional Annual Fixed Charges approved by the Commission for Larji HEP in the MYT Order of the HPSEB Ltd for period FY 2008-09 to FY 2010-11.

Interest Charges

6.2 The Commission in its MYT Order dated May 30, 2011 had approved the total loan amount at Rs.911.89 crore which included Rs.170 crore from KCC bank and Rs.741.89 crore from the PFC. The Commission had considered an interest rate of 9.5% for the PFC loans and 9% for other loans. The Commission allowed the interest paid as per actual repayment schedule and actual interest paid during the year. Now the Commission has computed the Interest charges as discussed in table 25 of this Order. The Interest charges approved by the Commission in MYT Order and now trued up by the Commission are shown in the following Table 33:-

Table 33: Interest Charges (Rs. crore)

Particulars	FY 2007-08		FY 2008-09		FY 2009-10		FY 2010-11	
	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up
Interest Charges	82.79	85.68	72.94	78.32	62.84	68.08	52.73	56.84

Return on Equity

6.3 The Commission in its MYT Order had considered the total equity at Rs 48.11 crore only because the erstwhile HPSEB was not able to provide any evidence on the source of any other equity infused in Larji HEP. The return on equity had been approved as Rs.6.74 crore per year at 14% for the Control Period. The Commission has now worked out the return on equity as discussed in Table 26 of this Order. The Return on Equity approved by the Commission in MYT Order and now trued up by the Commission are shown in the following Table 34 :-

Table 34: Return on Equity (Rs. crore)

Particulars	FY 2007-08		FY 2008-09		FY 2009-10		FY 2010-11	
	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up
Return on Equity	6.74	21.78	6.74	21.78	6.74	21.78	6.74	21.78

O&M expenses

6.4 The Commission in its MYT Order had worked out the O&M expense in accordance with the HPERC Tariff Regulations. The Commission had provisionally approved the Capital cost at Rs.960 crore. For Base year, the Commission had computed O&M expenses at 1.5% of the approved capital cost and for succeeding years the Commission provided an escalation of 4% over the O&M expense approved for preceding year. The Commission has now worked out the O&M expenses as discussed in Table 27 of this Order. The O&M expenses approved by the Commission in MYT Order and now trued up by the Commission are shown in the following Table 35:-

Table 35: O&M Expenses (Rs. crore)

Particulars	FY 2007-08		FY 2008-09		FY 2009-10		FY 2010-11	
	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up
O&M Expenses	14.14	6.40	14.71	10.54	15.29	11.09	15.91	13.85

Depreciation

6.5 The Commission in its MYT Order had computed the Depreciation in accordance with the HPERC Tariff Regulations. The Commission has now worked out the Deprecation expenses as discussed in Table 23 of this Order. The Depreciation expenses approved by the Commission in MYT Order and now trued up by the Commission are shown in the following Table 36:-

Table 36: Depreciation (Rs. crore)

Particulars	FY 2007-08		FY 2008-09		FY 2009-10		FY 2010-11	
	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up
Depreciation	24.66	28.18	24.66	28.18	24.66	28.18	24.66	28.18

Interest on Working Capital:

6.6 The Commission in its MYT Order had computed the Working Capital requirement in accordance with the HPERC Tariff Regulations. The rate of interest of 12.25% was used for computation of interest on working capital. The Commission has now worked out the interest on working capital as discussed in Table 28 of this Order. The interest on working capital approved by the Commission in MYT Order and now trued up by the Commission are shown in the following Table 37:-

Table 37: Interest on Working Capital (Rs. crore)

Particulars	FY 2007-08		FY 2008-09		FY 2009-10		FY 2010-11	
	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up	Approved in MYT Order	True Up
Interest on Working Capital	3.70	3.04	4.03	3.01	3.84	2.81	3.65	2.56

Revenue Surplus/Gap

6.7 Based on the year wise AFC approved from FY 2008-09 to FY 2010-11 in the MYT Order and AFC approved in this Order based on approved Project Cost, the Commission has worked out the revenue surplus/gap from FY 2007-08 to FY 2010-11. The Commission has worked out revenue gap of Rs.13.05 crore for FY 2007-08, Rs.22.96 crore for FY 2008-09, Rs.19.85 crore for FY 2009-10 and Rs.26.92 crore for FY 2010-11 as shown in the following Table 38:-

Table 38: Revenue Surplus/Deficit (Rs. crore)

Particulars	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
AFC Approved in MYT Order	132.03	123.08	113.37	103.69
AFC Requirement	145.08	141.83	131.94	123.21
Secondary Energy Charge	-	4.22	1.28	7.40
Surplus (+)/Deficit(-)	**(13.05)**	**(22.96)**	**(19.85)**	**(26.92)**
Cumulative Surplus (+)/Deficit(-)	**(13.05)**	**(36.01)**	**(55.86)**	**(82.78)**

Thus the Commission has worked out a cumulative revenue deficit of Rs.82.78 crore for the period from FY 2007-08 to FY 2010-11.

6.8 Regarding recovery of deficit of Larji HEP in subsequent years, the Commission is of the view that since the Board was functioning as a vertically integrated utility till June 2010 and that the existing generating stations as well as ongoing generation projects of the Board still remain functioning under the successor entity, i.e. the HPSEB Ltd. Further, the HPSEB Ltd continues to file a combined ARR of the entire activities under its ambit including distribution and generation. Therefore, recovery of deficit, if any as well as its carrying cost has to be considered and decided upon for the combined ARR of distribution and generation of the HPSEB Ltd as a whole. . The Commission noted that while carrying out truing-up for FY 2008-09 in its Second APR Order dated June 10, 2010 had determined a surplus amounting to Rs.288.42 crore in respect of ARR of the HPSEB Ltd and further that the truing-up of ARR of FY 2009-10 is also currently underway. Therefore, in the light of the above facts, the Commission decides that all deficits and surpluses, including the above determined revenue gap for Larji HEP, shall have to be considered together for the HPSEB Ltd as a single entity and appropriate treatment shall be given while undertaking the truing up of the HPSEB Ltd for the entire first Control Period.

A7: ANNUAL FIXED COST AND TARIFF FOR NEXT CONTROL PERIOD FROM FY 2011-12 TO FY 2013-14

7.1 Larji HEP has achieved its commercial operation on February 28, 2007. The Commission, in its Tariff Order dated May 30, 2011 provisionally fixed the Capital Cost of the Project at Rs.960 crore and based on the same determined the tariff for the Larji HEP for First Control Period from FY 2007-08 to FY 2010-11 in accordance to Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007, which were applicable for the First Control Period from FY 2008-09 to FY 2010-11.

7.2 Now, the Commission has determined the Capital Cost of the Project at Rs.1098.70 crore and based on the same undertaken truing-up of Annual Fixed Cost for the first Control Period from FY 2007-08 to FY 2010-11 in the preceding chapters of this Order.

7.3 In the meantime, the Commission has also notified Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011 on April 01, 2011. These Regulations are applicable from the date of its publication i.e. April 01, 2011.

7.4 Regulation 2 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, stipulates that-

"These Regulations shall apply in all cases where tariff for a generating station or a unit thereof is to be determined by the Commission under the Section 62 of the Act, read with Section 86, thereof.",

7.5 Regulation 11 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, stipulates that -

"Provided further that in case of the existing projects, the capital cost admitted by the Commission prior to 01.04.2011 and the additional capital expenditure projected to be incurred for the respective years of the control period, as may be admitted by the Commission, shall form the basis for determination of tariff."

7.6 The Commission, therefore, based on the Capital Cost determined in this Order and in accordance to these Regulations now determines the Annual Fixed Cost as well as tariff for Larji HEP for next Control Period from FY 2011-12 to FY 2013-14.

Annual Fixed Cost

7.7 Regulation 25 of Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, stipulates that

"*The annual fixed cost (AFC) of a generating station shall consist of the following components:-*
a. Return on equity;
b. Interest on loan capital;
c. Depreciation;
d. Interest on working capital;
e. Operation and maintenance expenses."

7.8 Accordingly, the Commission has worked out the Annual Fixed Cost for Larji HEP for Control Period from FY 2011-12 to FY 2013-14. The details of the approved AFC components are discussed in the following paras.

Return on Equity

7.9 In accordance with Regulation 21 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up by the tax rate for the year applicable to concerned generating company.

7.10 The Commission notes that, Larji HEP is eligible to avail 10 years' tax holidays under the benefits of section 80 IA of Income Tax Act. During the tenure of income tax holidays, the only Minimum Alternate Tax (MAT) will be applicable. The Commission has considered first 10 years beginning from the date of COD and therefore computed the tax applicable during the years in which tax holiday will be applicable as 20.01% [18.5% x (1+5%) x (1+3%)]. This includes 18.5% base tax rate, 5% corporate surcharge and 3% education cess. Accordingly, the Commission worked out applicable rate of return as 19.38% [15.5% / (1-20.01%)] by grossing up the base rate of 15.5% by applicable tax rate of 20.01%.

7.11 Further, for the remaining life of the project, corporate tax is applicable. The Commission, therefore, has computed the corporate tax applicable as 32.45% [30% x (1+5%) x (1+3%)]. This includes 30% base tax rate, 5% corporate surcharge and 3% education cess. The Commission accordingly worked out the applicable rate of return of 22.94% [15.5 %/ (1-32.45%)] by grossing up the base rate of 15.5% by applicable tax rate of 32.45%.

7.12 As discussed in para 4.66, the Commission has allowed a total equity of Rs.155.57 crore for Larji HEP. Applying the rate of return of 19.38% , the Commission works out return on equity at Rs.30.14 crore from FY 2011-12 to FY 2013-14 as depicted in the following Table 39:-

Table 39: Return on Equity for Second Control Period (Rs. crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14
Equity	155.57	155.57	155.57
Rate of Return	19.38%	19.38%	19.38%
Return on Equity	**30.14**	**30.14**	**30.14**

Interest on Loan capital

7.13 In accordance with Regulation 17 (1) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, Interest and Finance charges shall be computed on the outstanding loans, duly taking into account the schedule of repayment in accordance with the terms and conditions of the relevant agreement of loans.

7.14 The Commission has determined the interest charges by considering the repayment schedule in accordance to the loan agreements. Interest charges are computed by taking weighted average rate of interest calculated on the basis of actual loan portfolio at the beginning of each year. Accordingly, the interest charges worked out by the Commission for the Control Period from FY 2011-12 to FY 2013-14 is summarised in the following Table 40:-

Table 40: Interest Charges for Second Control Period (Rs. crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14
Opening loan	544.62	423.31	308.99
Repayment	121.31	114.31	87.31
Closing Balance	423.31	308.99	221.68
Weighted Average Rate of Interest	9.41%	9.45%	9.48%
Interest Charges	45.56	34.59	25.16

Depreciation

7.15 In accordance with the provisions of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, provides that depreciation shall be calculated annually based on straight line method and at rates specified in the Appendix to the said Regulations.

7.16 Appendix to the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011 provides depreciation rate of 3.34% for buildings and roads, 5.28% for plant and machinery and 0% for land under ownership. The Commission has apportioned total capital cost into buildings, land and Plant and machinery cost. The Commission accordingly worked out weighted average depreciation applicable at 5.17%.

Table 41: Depreciation Rate for Second Control Period

Particulars	Rs. crore	Depreciation Rate
Buildings	55.52	3.34%
Plant and Machinery	1,040.87	5.28%
Land	2.31	0%
Total	**1,098.70**	**5.17%**

7.17 The Commission in para 5.4 has determined depreciable value of Larji HEP at Rs.1096.39 crore. The Commission applied the depreciation rate of 5.17% on this depreciable value and worked out the allowable depreciation at Rs.56.69 crore each for FY 2011-12, FY 2012-13 and FY 2013-14. The Depreciation amount worked out by the Commission for second Control Period i.e. for FY 2011-12 to FY 2013-14 is summarized in the following Table 42 :-

Table 42: Depreciation Charges for Second Control Period (Rs. crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14
Total Depreciable Value	1096.39	1096.39	1096.39
Depreciation Rate	5.17%	5.17%	5.17%
Depreciation	**56.69**	**56.69**	**56.69**

Interest on Working Capital

7.18 In accordance with Regulation 17 and 18 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, the Commission has considered the following components for determining the working capital requirement:

a) Operation and Maintenance Expenses for one month

b) Maintenance spares equivalent to 15% of the O&M expenses

c) Receivables equivalent to two months of fixed cost

7.19 Further, while computing interest on working capital the Commission has considered the interest rates of 11.75% for FY 2011-12 to FY 2013-14 equivalents to the prevailing SBI PLR on 1st April of FY 2010-11. The summary of interest on working capital as approved by the Commission is given in the following Table 43:-

Table 43: Interest on Working Capital for Second Control Period (Rs. crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14
O&M Expense for one month	1.25	1.35	1.47
Maintenance Spare @ 15% of O&M expenses	2.25	2.44	2.64
Receivable for 2 months	25.13	23.48	22.11
Working Capital Requirement	**28.63**	**27.27**	**26.22**
Interest Rate @ SBI PLR as on 1st April of FY 2010-11	11.75%	11.75%	11.75%
Interest on working Capital	**3.36**	**3.20**	**3.08**

Operation and Maintenance (O&M) Expenses

7.20 Regulations 22 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, stipulates that

"(2) Operation and maintenance expenses, for the existing generating stations which have been in operation for 3 years or more in the base year of 2010-11, shall be derived on the basis of actual operation and maintenance expenses for the years 2007-08 to 2009-10, based on the audited balance sheets, excluding abnormal operation and maintenance expenses, if any, after prudence check by the Commission

(3) The normalised operation and maintenance expenses after prudence check, for the years 2007-08 to 2009-10, shall be escalated @ 8.32% to arrive at the normalized operation and maintenance expenses at the 2009-10 price level respectively and then averaged to arrive at normalised average operation and maintenance expenses for the 2007-08 to 2009-10 at 2009-10 price level. The average normalized operation and maintenance expenses for year 2009-10 shall be escalated by 8.32% to arrive at the normalized operation and maintenance of base year 2010-11. The normalized operation and maintenance expenses or the actual operation and maintenance expenses for the base year 2010-11, whichever is lower shall be escalated at the rate of 8.32% to arrive at the operation and maintenance expenses for year 2011-12.

......

(7) Of the O&M expenses so determined based on the above regulations, at least 30% shall be spent towards repair and maintenance activities."

7.21 The Commission is of the view that O&M expenses should be allowed on efficient as well as commercial terms. Further, the R&M expense which is a part of O&M expenses shall be sufficient to keep the generation plant in good condition. The actual O&M expenses available for FY 2007-08 and FY 2009-10 do not include the impact of pay revision, terminal benefits, pension, etc. The Commission therefore, taking a small divergence from the Regulations considered actual O&M expenses FY 2010-11 as base O&M expenses for projecting O&M from FY 2011-12 onwards. The Commission in accordance to the Regulations has worked out O&M expense for FY 2011-12 by applying the escalation rate of 8.32% over the base O&M expense and further applies the escalation rate of 8.32% over the O&M expenses allowed for FY 2011-12, to work out the O&M expenses for subsequent years. O&M expenses shall also include head office expenses, Pension retirement benefits of employees w.r.t. this project. The summary of the O&M expenses is given in the following Table 44:-

Table 44: O&M Expenses for Second Control Period (Rs. crore)

Particulars	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14
Actual O&M expense	13.85			
Base O&M expense	13.85			
Escalation Rate		8.32%	8.32%	8.32%
O&M expense for succeeding years		15.00	16.25	17.60
Total O&M Expenses		**15.00**	**16.25**	**17.60**
Minimum R&M expense as per Regulation @ 30% of O&M expenses [Reg. 22(7)]		**4.50**	**4.88**	**5.28**

Annual Fixed Cost

7.22 Accordingly, based on the discussion in the preceding paras, the Commission has worked out the Annual Fixed Cost as summarized in the following Table 45:-

Table 45: Annual Fixed Cost for Second Control Period (Rs. crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14
Depreciation	56.69	56.69	56.69
Interest on Loan	45.56	34.59	25.16
Return on Equity	30.14	30.14	30.14
O&M Expenses	15.00	16.25	17.60
Interest on working Capital	3.36	3.20	3.08

Annual Fixed Cost	**150.77**	**140.89**	**132.68**

Thus the Commission has worked Annual Fixed Cost of Rs.150.77 crore, Rs.140.89 crore and FY Rs.132.68 crore for FY 2011-12, FY 2012-13 and FY 2013-14 respectively.

Energy Generation from the Station

7.23 The Commission has considered the Gross energy generation from Larji HEP equivalent to the Design Energy of the project. The design energy of Larji HEP is 586.82 MU. The Commission notes that Larji HEP is an underground hydro electric power generating station with static excitation system, for which Regulations specify auxiliary consumption of 1.20%. The Commission, therefore, deducts the Auxiliary consumption of 1.20% from the design energy to determine the ex-bus generation. Further, the Commission need to deduct the free share of 12% of GoHP to determine the saleable primary energy. Thus, the Commission works out the saleable primary energy of 510.20 MU for FY 2011-12 to FY 2013-14.

Tariff for the Second Control Period

7.24 As discussed in para 7.22 above, the Commission has approved Annual Fixed Cost at Rs.150.77 crore, Rs.140.89 crore, and Rs.132.68 crore for FY 2011-12, FY 2012-13 and FY 2013-14 respectively. Regulation 26 (1) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, stipulates that-

"The fixed cost of a hydro generating station shall be computed on annual basis, based on norms specified under these regulations, and recovered on monthly basis under capacity charge (inclusive of incentive) and energy charge, which shall be payable by the beneficiaries in proportion to their respective allocation in the saleable capacity of the generating station, that is to say, in the capacity excluding the free power to the State:"

7.25 Further, Regulation 26 (2) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011 stipulated that -

"(2) The capacity charge (inclusive of incentive) payable to a hydro generating station for a calendar month shall be -

AFC x 0.5 x NDM / NDY x (PAFM / NAPAF) (in Rupees)
Where,
AFC = Annual fixed cost specified for the year, in Rupees.
NAPAF = Normative plant availability factor in percentage
NDM = Number of days in the month

NDY = Number of days in the year
PAFM = Plant availability factor achieved during the month, in percentage

(3) The PAFM shall be computed in accordance with the following formula:-
$PAFM = 10000 \times \sum_{i=1}^{N} DC_i / f\{N \times IC \times (100 - AUX)\}$ %

Where,
AUX = Normative auxiliary energy consumption in percentage
DCi = Declared capacity (in ex-bus MW) for the ith day of the month which the station can deliver for at least three (3) hours, as certified by the State Load Dispatch Centre after the day is over.
IC = Installed capacity (in MW) of the complete generating station
N = Number of days in the month.

(4) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy charge payable to the generating company for a month shall be -

(Energy charge rate in Rs./kWh) x {Scheduled energy (ex-bus) for the month in kWh} x (100 – FEHS) / 100

(5) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula, subject to the provisions of sub-regulation (7):-

ECR = AFC x 0.5 x 10 / {DE x (100 – AUX) x (100 – FEHS)}

Where,
DE = Annual design energy specified for the hydro generating station, in MWh, subject to the provisions of sub- regulations (6)
FEHS = Free energy for State, in per cent, as defined in regulation 28."

7.26 The Commission accordingly determines the Capacity Charge and Energy charge as shown in the following Table 46:-

Table 46: Capacity Charge and Energy Charge Rate for Second Control Period

Particulars	**FY 2011-12**	**FY 2012-13**	**FY 2013-14**
Annual Fixed Cost (Rs. crore)	150.77	140.89	132.68
Capacity Charge (Rs. crore) (AFC x 0.5)	75.38	70.44	66.34
Capacity Charge per month (Rs. crore)	**6.28**	**5.87**	**5.53**
Energy Charge (Rs. crore)	75.38	70.44	66.34

Particulars	FY 2011-12	FY 2012-13	FY 2013-14
(AFC x 0.5)			
Saleable Primary Energy (MU)	510.20	510.20	510.20
Energy Charge Rate (Rs. /unit)	**1.48**	**1.38**	**1.30**

7.27 The Capacity Charge approved by the Commission will be recovered by the HPSEB Ltd in accordance with the formula provided in the Regulations based on the Actual Plant Availability Factor. In case the actual availability is less than the Normative Availability, the Capacity Charge will be recovered on pro-rata basis.

7.28 Further, as regards energy generation in excess of Design Energy, Regulations 26 (7) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011, stipulates that:

"(7) In case the energy charge rate (ECR) for a hydro generating station, as computed in sub-regulation (5) of this regulation, exceeds eighty paise per kWh, and the actual saleable energy in a year exceeds {DE x (100 – AUX) x (100 – FEHS) / 10000} MWh, the Energy charge for the energy in excess of the above shall be billed at eighty paise per kWh only: "

7.29 As Commission in Table 46 has determines the energy charge rate, which are more than eighty paisa for each year of the Control Period. Therefore, the rate of energy generated above the design energy shall be eighty paisa per unit.

7.30 The Commission hereby directs the HPSEB Ltd to make necessary arrangements to ensure appropriate billing from Larji HEP on monthly basis in accordance with the relevant provisions of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011

A8: LEVELISED TARIFF COMPUTATIONS

Background

8.1 The Commission has determined the tariff for First Control Period in chapter A5 and for Second Control Period in chapter A7 of this Order. This chapter covers the computation of levelised tariff for electricity generated from Larji HEP for the entire useful life span of the Project. Levelised tariff is the weighted average tariff for the useful life of the project wherein Present Value Factor for a year is the weight applied to normative tariff for that year. The empirical formula for levelised tariff is provided as follows:-

Levelised Tariff = ∑ (Normative Tariff x Present Value Factor)/∑Present Value Factor

8.2 The Commission has determined the levelised tariff in accordance with the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011. The computation of levelised tariff is discussed in the subsequent paras.

Useful life of the Project

8.3 Regulation 3 (36) of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011 stipulates that:-

*"**"useful life"** in relation to a unit of a hydro generating station shall be 40 years from the COD;"*

The Commission accordingly considers the life of Larji HEP as 40 years and determines the tariff for the useful life of the Project.

Discount Rate

8.4 Discount rate is the rate by which tariffs of future years are discounted to bring it at present price level. Central Electricity Regulatory Commission (CERC) has specified the discount rate of 10.74% in its Notification No. **Eco 1/2011-CERC dated March, 31 2011.** The Commission has considered the discount rate of 10.74% for computation of levelised tariff for Larji HEP.

Normative and Levelised Tariff of the Project

8.5 In chapter A6, the Commission has determined the tariff for period from FY 2007-08 to FY 2010-11 in accordance with the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007. In chapter A7, the Commission has determined the tariff for next Control Period from FY 2011-12 to FY 2013-14 in accordance with the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011. For the remaining life of the Project the Commission has determined the tariff in accordance with the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2011 except escalation rate for O&M expenses which the Commission has considered 4% beyond Second Control Period onwards.

8.6 The Commission has considered the gross energy generation equivalent to the Design Energy of 586.82 MU and deducted the Auxiliary consumption of 1.2% as well as GoHP free share of 12% to arrive at the net saleable energy of 510.20 MU for each year of the remaining years of useful life. Based on this saleable primary energy, the Commission has worked out the tariff for each of the financial year of the remaining useful life of the Project. It is observed that Larji HEP would have minimum tariff of Rs.1.47 per kWh in FY 2019-20 and maximum tariff of Rs.2.95 per kWh in FY 2011-12. The computation of normative tariff for useful life of the project is summarized in Table 47. For a useful life of 40 years at a discounting rate of 10.74% as mentioned in para 8.4, the levelised tariff for the Larji HEP works out to Rs.2.34 per kWh as shown in the Table 48,.

Table 47: Normative Tariff for useful life of the Project

Particulars	unit	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Depreciation	Rs. Cr	28.18	28.18	28.18	28.18	56.69	56.69	56.69	56.69	56.69	56.69
Interest on Loan	Rs. Cr	85.68	78.32	68.08	56.84	45.56	34.59	25.16	17.86	11.47	5.07
Return on Equity	Rs. Cr	21.78	21.78	21.78	21.78	30.14	30.14	30.14	30.14	30.14	30.14
O&M Expenses	Rs. Cr	6.40	10.54	11.09	13.85	15.00	16.25	17.60	18.31	19.04	19.80
Interest on working Capital	Rs. Cr	3.04	3.01	2.81	2.56	3.36	3.20	3.08	2.97	2.88	2.79
Total AFC	**Rs. Cr**	**145.08**	**141.83**	**131.94**	**123.21**	**150.77**	**140.89**	**132.68**	**125.98**	**120.22**	**114.50**
Net Saleable Energy	MU	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20
Saleable Rate per unit	Rs./kWh	2.84	2.78	2.59	2.41	2.95	2.76	2.60	2.47	2.36	2.24

Particulars	unit	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 202-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Year		**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Depreciation	Rs. Cr	56.69	56.69	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02
Interest on Loan	Rs. Cr	0.94	-	-	-	-	-	-	-	-	-
Return on Equity	Rs. Cr	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69
O&M Expenses	Rs. Cr	20.59	21.42	22.27	23.16	24.09	25.05	26.06	27.10	28.18	29.31
Interest on working Capital	Rs. Cr	2.85	2.87	2.08	2.12	2.17	2.21	2.26	2.31	2.36	2.42
Total AFC	**Rs. Cr**	**116.77**	**116.68**	**75.07**	**76.00**	**76.97**	**77.98**	**79.03**	**80.12**	**81.26**	**82.44**
Net Saleable Energy	MU	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20
Saleable Rate per unit	Rs./kWh	2.29	2.29	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.62

Particulars	unit	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32	FY 2032-33	FY 2033-34	FY 2034-35	FY 2035-36	FY 2036-37
Year		**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Depreciation	Rs. Cr	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02
Interest on Loan	Rs. Cr	-	-	-	-	-	-	-	-	-	-
Return on Equity	Rs. Cr	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69
O&M Expenses	Rs. Cr	30.48	31.70	32.97	34.29	35.66	37.09	38.57	40.11	41.72	43.39
Interest on working Capital	Rs. Cr	2.47	2.53	2.59	2.66	2.72	2.79	2.86	2.94	3.01	3.09
Total AFC	**Rs. Cr**	**83.67**	**84.95**	**86.27**	**87.66**	**89.09**	**90.59**	**92.14**	**93.76**	**95.44**	**97.19**
Net Saleable Energy	MU	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20
Saleable Rate per unit	Rs./kWh	1.64	1.66	1.69	1.72	1.75	1.78	1.81	1.84	1.87	1.90

Particulars	unit	FY 2037-38	FY 2038-39	FY 2039-40	FY 2040-41	FY 2041-42	FY 2042-43	FY 2043-44	FY 2044-45	FY 2045-46	FY 2046-47
Year		**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Depreciation	Rs. Cr	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02	15.02
Interest on Loan	Rs. Cr	-	-	-	-	-	-	-	-	-	-
Return on Equity	Rs. Cr	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69	35.69
O&M Expenses	Rs. Cr	45.12	46.93	48.80	50.75	52.78	54.90	57.09	59.38	61.75	64.22
Interest on working Capital	Rs. Cr	3.18	3.26	3.35	3.45	3.54	3.64	3.75	3.86	3.97	4.09
Total AFC	**Rs. Cr**	**99.01**	**100.90**	**102.87**	**104.91**	**107.04**	**109.25**	**111.55**	**113.95**	**116.44**	**119.02**
Net Saleable Energy	MU	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20	510.20
Saleable Rate per unit	Rs./kWh	1.94	1.98	2.02	2.06	2.10	2.14	2.19	2.23	2.28	2.33

Table 48: Levelised Tariff for useful life of the Project

Particulars	unit	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Saleable Rate per unit	Rs./kWh	2.84	2.78	2.59	2.41	2.95	2.76	2.60	2.47	2.36	2.24
Discount Rate	%	10.74%									
PV Factor		1.00	0.90	0.82	0.74	0.66	0.60	0.54	0.49	0.44	0.40
Present Value of Tariff	Rs./kWh	2.84	2.78	2.59	2.41	2.95	2.76	2.60	2.47	2.36	2.24
Levelised Tariff for 40 year Useful Life	Rs./kWh	**2.34**									

Particulars	unit	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 202-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Year		**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Saleable Rate per unit	Rs./kWh	2.29	2.29	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.62
PV Factor		0.36	0.33	0.29	0.27	0.24	0.22	0.20	0.18	0.16	0.14
Present Value of Tariff	Rs./kWh	0.83	0.74	0.43	0.40	0.36	0.33	0.30	0.28	0.25	0.23

Particulars	unit	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32	FY 2032-33	FY 2033-34	FY 2034-35	FY 2035-36	FY 2036-37
Year		**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Saleable Rate per unit	Rs./kWh	1.64	1.66	1.69	1.72	1.75	1.78	1.81	1.84	1.87	1.90
PV Factor		0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.06	0.05
Present Value of Tariff	Rs./kWh	0.21	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10

Particulars	unit	FY 2037-38	FY 2038-39	FY 2039-40	FY 2040-41	FY 2041-42	FY 2042-43	FY 2043-44	FY 2044-45	FY 2045-46	FY 2046-47
Year		**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Saleable Rate per unit	Rs./kWh	1.94	1.98	2.02	2.06	2.10	2.14	2.19	2.23	2.28	2.33
PV Factor		0.09	0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04
Present Value of Tariff	Rs./kWh	1.94	1.98	2.02	2.06	2.10	2.14	2.19	2.23	2.28	2.33

A9: CONCLUSION

9.1 While undertaking determination of Capital Cost and Generation Tariff, the Commission is guided by the applicable provisions of the Electricity Act, the National Tariff Policy, the HPERC Hydro Generation Tariff Regulations, 2007 and the HPERC Hydro Generation Tariff Regulations 2011. The Commission has determined the Capital cost of Larji HEP under Regulations 5 and 12 of the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2007. Further, the Commission has also followed the principle set by Hon'ble APTEL in its Judgment on Parli Unit 6, wherein, the reasons for time over run of the project have been categorised into three categories i.e. (i) factors entirely attributable to the generating company, (ii) factors beyond the control of the generating company and (iii) situation not covered under (i) and (ii) and respective treatment to the increase in cost due to time over run under these categorised reasons.

9.2 Additionally, the Commission has also taken note of the findings of the two Committees appointed for determination of reasonable cost of the Project had analysed various facets of the Project in detail. These Reports have been considered by the Commission at appropriate places while determination of Capital Cost of the Project. However, it is pertinent to note that while both the Reports specified the Capital Cost of the Project, but in both the Reports detailed analysis and explanation were limited to the Hard Cost components of the Project Cost only. In both the Committees' Report, the segregation of the amount finally recommended to be considered as Capital Cost of the Project in various heads of Hard Cost, IDC, Overheads, etc. is not provided. Therefore, the Commission has not been able to take reference of the total Capital Cost recommended in the Committees' Reports, though, it has considered and referred to observations made in these Reports at appropriate places, while computing the Hard Cost in general and Civil Works in particular.

9.3 Further, it is also pertinent to note that, though, the Commission has considered 4½ years as a reasonable period for COD as against approx. 7 years actually taken for actual commissioning of the Project, however, it has also allowed the 50% of the amount so disallowable on account of time over-run in various heads specially IDC, Overheads and price escalation, in the light of APTEL Judgment as mentioned in detail in the previous chapter of this Order. Therefore, effectively the Commission has allowed completion period in the range of approx. 5½ to 6 years for the COD of this Project.

9.4 The Board in its MYT Petition had submitted total Capital Cost of Larji HEP at Rs.1293.69 crore, which, in the present Petition has been revised to Rs.1461.33 crore. However, based on the factual discrepancies noted in the figures evident from the submissions made by the HPSEB Ltd through its various communications, the Commission worked out the corrected claim of Capital Cost of the Project at Rs.1340.00 crore. Thereafter, the Commission analysed each item of Capital Cost in detail, applied prudence check and finally determined the gross total Capital Cost of the Project at Rs.1101. 39 crore. However, in accordance with provisions of Regulation 14 and 26(2) of the HPERC (Terms and Conditions of Tariff Regulations for determination of Hydro Generation Tariff) Regulations, 2011 the Commission worked out total revenue generated from infirm power at Rs.2.68 crore. The Commission deducted the same from the approved total capital cost of the project and accordingly works out the net Capital Cost to be approved at Rs.1098.70 (1102.38 – 2.68) crore. Accordingly, an amount of Rs.241.30 (1340.00 – 1098.70) crore has been disallowed by the Commission.

9.5 By disallowing an amount of Rs.241.30 crore, the Commission does not in any way conclude that this amount has actually not been incurred on the Project. The Commission, while determining the Capital Cost of the Project has considered that what portion of the total Capital Cost incurred and claimed by the HPSEB Ltd is reasonable, just and more importantly in accordance with its applicable Tariff Regulations to be passed on to the consumers by way of tariff. Accordingly, based on its Regulations, prudence check, recommendations of the Committees constituted by the Commission and the HPSEB and in the light of recent APTEL Judgment in case of Parli Unit 6, has arrived at an approved Capital Cost of Rs.1098.30 crore for Larji Project, resulting in a disallowance of Rs.241.30 crore to the HPSEB Ltd. The Commission observe that even after disallowance of Rs.241.30 crore, the cost allowed by the Commission is Rs.8.72 crore per MW, which is quite high.

9.6 However, the Commission also took note of unique features claimed by the HPSEB Ltd in the Petition as referred in para 2.17 of this Order, and various other factors of this Project. The Larji Project should not be envisaged as a pure commercial project but also be considered for its other importance. Even at the time of Techno Economic Clearance by CEA in the year 2000, the Project was not considered economically attractive at Rs.6.33 crore per MW in comparison to other Hydro Electric projects.

9.7 Further, subsequent to the COD, the Project is turning out to be an excellent HEP on the front of performance, as it has been able to generate substantial quantum of secondary energy at 45 MU, 13 MU and 69 MU (approx.) in FY 2008-09, FY 2009-10 and FY 2010-11 respectively, which is expected to continue in future years also.

9.8 The Commission noted the fact that Larji Project was awarded by the State Government to the Board as a developmental project, which apart from commercial viability had also social and developmental implications. Accordingly, the Commission acknowledges the fact that this Project needs to be considered from overall perspective also, other than that of Regulatory and commercial perspective, which has resulted in a disallowance of Capital Cost to the extent of Rs.241.30 crore to the HPSEB Ltd. It is important to note that these types of projects do have a social and developmental obligation, apart from commercial and economic viability. The Board, being a Public Sector Utility, the Project necessarily involve investment of public money. Further, post restructuring of the Board, the HPSEB Ltd has become a distribution licencee and in accordance with second proviso to section 51 of the Act, the other business of the distribution licencee (generation from Larji in this case) shall neither get subsidises nor encumbers the distribution assets to support its business. Therefore, keeping in view the spirit of this provision of the Act, it is imperative that the disallowed capital cost shall be recovered from the Project itself.

9.9 Keeping in view the above, it is also important for the HPSEB Ltd to recover the disallowed portion of Capital cost amounting to Rs.241.30 crore from Larji Project itself without burdening the consumers, which is possible. The amount allowable to the HPSEB Ltd under Return on Equity, Generation Incentive from the secondary energy generated from the Project and savings on account of efficiency improvement in O&M expenses, Working Capital Management, etc. can be utilised by the HPSEB Ltd to meet the disallowed cost of Rs.241.30 crore. For example, the Commission has allowed cumulative return on equity of Rs.87.12 crore from FY 2007-08 to FY 2010-11 and Rs.90.43 crore in the Second Control Period i.e. from FY 2011-12 to FY 2013-13. Further, the Commission also has allowed secondary energy charge of Rs.12.90 crore till end of FY 2010-11. Thus total amount more than Rs.190.45 crore would be available with the HPSEB Ltd from Larji HEP. The Commission has, therefore, endeavoured to keep a balanced approach between protection of consumers' interest on one side by not passing on the undue and unjustified burden of Capital Cost through tariff as well as ensuring economic and commercial viability of the Project as well as the Utility on the other side.

Annexure A

Financial Year		1999-2000	2000-01				2001-02			
Quarter	**Unit**	**Q-1**	**Q-2**	**Q-3**	**Q-4**	**Q-5**	**Q-6**	**Q-7**	**Q-8**	**Q-9**
Phasing of Project Cost excluding IDC up to Scheduled COD	**%**	13.33%	3.13%	3.13%	3.13%	3.13%	4.38%	4.38%	4.38%	4.38%
Capital Cost Requirement (excl IDC) up to COD of Project	**Rs. Cr**	110.19	25.83	25.83	25.83	25.83	36.16	36.16	36.16	36.16
IDC	**Rs. Cr**	-	-	0.38	0.85	1.29	3.63	4.06	4.79	5.46
Financing Charges	**Rs. Cr**	-	2.69	-	-	0.30	-	0.05	-	-
Total Requirement	**Rs. Cr**	110.19	28.52	26.21	26.68	27.42	39.78	40.27	40.95	41.62
Cumulative Requirement	**Rs. Cr**	110.19	138.71	164.92	191.59	219.01	258.79	299.06	340.01	381.63
Equity Funding										
Upfront Equity	**Rs. Cr**	110.19	28.52	10.75	-	-	-	-	-	-
Remaining Equity Funding	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Cumulative Equity Funding	**Rs. Cr**	110.19	138.71	149.46	149.46	149.46	149.46	149.46	149.46	149.46
Debt Requirement	**Rs. Cr**									
Cumualtive Fund Reqd - Cumulative Equity	**Rs. Cr**	-	-	15.46	42.13	69.55	109.33	149.60	190.55	232.17
Debt Funding	**Rs. Cr**	-	-	15.46	26.68	27.42	39.78	40.27	40.95	41.62
PFC Loan 1	**Rs. Cr**	-	-	9.06	14.03	15.12	22.33	21.48	23.18	24.75
PFC Loan 2 - 214 Cr	**Rs. Cr**	-	-	-	-	-	-	-	-	-
PFC Loan 3 - 178 Cr	**Rs. Cr**	-	-	-	-	-	-	-	-	-
KCC Loan 3 - 170 Cr	**Rs. Cr**	-	-	6.40	12.64	12.30	17.45	18.79	17.77	16.88
PNB Loan 3 - 43.20 Cr	**Rs. Cr**	-	-	-	-	-	-	-	-	-
PNB Loan 3 - 56.80 Cr	**Rs. Cr**	-	-	-	-	-	-	-	-	-

Financial Year		2002-03				2003-04				2004-05			Total
Quarter	Unit	Q-10	Q-11	Q-12	Q-13	Q-14	Q-15	Q-16	Q-17	Q-18	Q-19	Q-20	
Phasing of Project Cost excluding IDC up to Scheduled COD	%	5.42%	5.42%	5.42%	5.42%	5.63%	5.63%	5.63%	5.63%	4.17%	4.17%	4.17%	**100.00%**
Capital Cost Requirement (excl IDC) up to COD of Project	Rs. Cr	44.77	44.77	44.77	44.77	46.49	46.49	46.49	46.49	34.43	34.43	34.43	**826.43**
IDC	Rs. Cr	8.75	9.35	10.13	10.81	14.23	15.61	16.36	16.64	18.46	19.18	6.45	**166.45**
Financing Charges	Rs. Cr	-	-	-	-	0.21	-	-	-	-	-	1.39	**4.64**
Total Requirement	Rs. Cr	53.52	54.12	54.90	55.59	60.93	62.10	62.85	63.12	52.90	53.62	42.27	**997.53**
Cumulative Requirement	Rs. Cr	435.15	489.27	544.17	599.76	660.69	722.79	785.64	848.76	901.66	955.28	997.56	
Equity Funding													
Upfront Equity	Rs. Cr	-	-	-	-	-	-						**149.46**
Remaining Equity Funding	Rs. Cr	-	-	-	-	1.00	1.00	1.00	1.00	0.70	0.70	0.70	**6.11**
Cumulative Equity Funding	Rs. Cr	149.46	149.46	149.46	149.46	150.46	151.46	152.46	153.46	154.16	154.87	155.57	**155.57**
Debt Requirement	Rs. Cr												
Cumualtive Fund Reqd - Cumulative Equity	Rs. Cr	285.69	339.81	394.71	450.30	510.23	571.33	633.18	695.30	747.50	800.42	841.99	
Debt Funding	Rs. Cr	53.52	54.12	54.90	55.59	59.93	61.10	61.85	62.12	52.20	52.92	41.57	**841.99**
PFC Loan 1	Rs. Cr	33.88	35.19	37.20	44.09	53.64	49.63	14.43					**398.00**
PFC Loan 2 - 214 Cr	Rs. Cr	-	-	-		6.29	11.46	47.43	62.12	49.06	37.64		**214.00**
PFC Loan 3 - 178 Cr	Rs. Cr	-	-	-	-	-	-	-	-	3.14	15.27	41.57	**59.99**
KCC Loan 3 - 170 Cr	Rs. Cr	19.64	18.93	17.70	11.49								**170.00**
PNB Loan 3 - 43.20 Cr	Rs. Cr	-	-	-	-	-	-	-	-	-	-	-	**-**
PNB Loan 3 - 56.80 Cr	Rs. Cr	-	-	-	-	-	-	-	-	-	-	-	**-**

Financial Year		1999-2000	2000-01				2001-02			
Quarter	**Unit**	**Q-1**	**Q-2**	**Q-3**	**Q-4**	**Q-5**	**Q-6**	**Q-7**	**Q-8**	**Q-9**
IDC Computations										
PFC Loan 1- 398 Cr										
Loan Disbursement	**Rs. Cr**	-	-	9.06	14.03	15.12	22.33	21.48	23.18	24.75
Cumulative Actual Disbarment	**Rs. Cr**	-	-	9.06	23.09	38.20	60.53	82.01	105.19	129.93
Interest Rate	**%**	0.00%	11.49%	13.48%	12.04%	10.88%	13.92%	11.95%	10.47%	9.31%
Interest	**Rs. Cr**	-	-	0.31	0.69	1.04	2.11	2.45	2.75	3.02
PFC Loan 2 - 214 Cr										
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	-
PFC Loan 3 - 178 Cr										
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	-
KCC Loan 1 - 170 Cr										
Loan Disbursement	**Rs. Cr**	-	-	6.40	12.64	12.30	17.45	18.79	17.77	16.88
Cumulative Actual Disbursement	**Rs. Cr**	-	-	6.40	19.04	31.35	48.80	67.59	85.36	102.24
Interest Rate	**%**	0.00%	0.00%	0.05	0.03	3.25%	12.45%	9.55%	9.55%	9.55%
Interest	**Rs. Cr**	-	-	0.07	0.15	0.25	1.52	1.61	2.04	2.44
PNB Loan 1 - 43.20 Cr										
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	-
PNB Loan 2 - 56.80 Cr										
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	-

Financial Year		2002-03				2003-04				2004-05			Total
Quarter	Unit	Q-10	Q-11	Q-12	Q-13	Q-14	Q-15	Q-16	Q-17	Q-18	Q-19	Q-20	
IDC Computations													
PFC Loan 1- 398 Cr													
Loan Disbursement	**Rs. Cr**	33.88	35.19	37.20	44.09	53.64	49.63	14.43	-	-	-	-	**398.00**
Cumulative Actual Disbarment	**Rs. Cr**	163.81	199.01	236.20	280.30	333.94	383.57	398.00	398.00	398.00	398.00	398.00	
Interest Rate	**%**	12.11%	10.53%	9.31%	8.35%	10.40%	10.25%	10.10%	9.95%	9.64%	9.64%	9.64%	
Interest	**Rs. Cr**	4.96	5.24	5.50	5.85	8.68	9.82	10.04	9.90	9.59	9.59	3.20	**94.75**
PFC Loan 2 - 214 Cr													
Loan Disbursement	**Rs. Cr**	-	-	-	-	6.29	11.46	47.43	62.12	49.06	37.64	-	**214.00**
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	6.29	17.75	65.18	127.30	176.36	214.00	214.00	
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	8.29%	8.29%	5.53%	4.14%	7.62%	7.28%	6.96%	
Interest	**Rs. Cr**	-	-	-	-	0.13	0.37	0.90	1.32	3.36	3.89	1.24	**11.21**
PFC Loan 3 - 178 Cr													
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	3.14	15.27	41.57	**59.99**
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	3.14	18.42	59.99	
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.33%	6.17%	4.11%	
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	0.10	0.28	0.21	**0.59**
KCC Loan 1 - 170 Cr													
Loan Disbursement	**Rs. Cr**	19.64	18.93	17.70	11.49	-	-	-	-	-	-	-	**170.00**
Cumulative Actual Disbursement	**Rs. Cr**	121.88	140.81	158.51	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	
Interest Rate	**%**	12.45%	11.68%	11.68%	11.68%	12.75%	12.75%	12.75%	12.75%	12.75%	12.75%	12.75%	
Interest	**Rs. Cr**	3.79	4.11	4.63	4.96	5.42	5.42	5.42	5.42	5.42	5.42	1.81	**59.91**
PNB Loan 1 - 43.20 Cr													
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-	-	-	**-**
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-	-	-	**-**
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**-**
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	-	-	-	**-**
PNB Loan 2 - 56.80 Cr													
Loan Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-	-	-	**-**
Cumulative Actual Disbursement	**Rs. Cr**	-	-	-	-	-	-	-	-	-	-	-	**-**
Interest Rate	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**-**
Interest	**Rs. Cr**	-	-	-	-	-	-	-	-	-	-	-	**-**