

**PUNJAB STATE ELECTRICITY REGULATORY COMMISSION  
SCO NO. 220-221, SECTOR-34-A  
CHANDIGARH**

**PETITION NO. 5 OF 2008**

**IN THE MATTER OF:**

**ANNUAL REVENUE REQUIREMENT**

**FILED BY THE PUNJAB STATE ELECTRICITY BOARD**

**FOR THE FINANCIAL YEAR 2008-09**

**PRESENT** : Mr. Jai Singh Gill, Chairman  
Ms. Baljit Bains, Member  
Mr. Satpal Singh Pall, Member

Date of Order: July 03, 2008

**ORDER**

The Punjab State Electricity Regulatory Commission (Commission), in exercise of powers vested in it under the Electricity Act, 2003 (Act) passes this order determining the Annual Revenue Requirement (ARR) and Tariff for supply of electricity by the Punjab State Electricity Board (Board) to consumers of the State of Punjab for the year 2008-09. ARR filed by the Board, the facts presented by the Board in its various filings, objections received by the Commission from consumer organizations and individuals, the issues raised by the public in hearings held at Ludhiana, Bathinda, Jalandhar and Chandigarh, the responses of the Board to the objections and the observations of the Government of Punjab (Government) in this respect have been considered. The State Advisory Committee constituted by the Commission under Section 87 of the Act has also been consulted and all other relevant facts and material on record have been perused before passing this Order.

## **1.1 Background**

The Commission has in its previous five Tariff Orders determined tariff in pursuance of the ARR and Tariff Applications submitted by the Board for the years 2002-03 to 2006-07. Tariff Order for the year 2007-08 has been passed by the Commission in suo motu proceedings.

## **1.2 ARR for the year 2008-09**

The Board did not file the ARR and Tariff Application for the year 2008-09 by 30<sup>th</sup> November, 2007 which is the due date as per PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005 (PSERC Tariff Regulations) but filed a petition (No.55 of 2007) on 30.11.2007 seeking extension of time upto 31.12.2007 in filing the ARR and Tariff Application which was allowed by the Commission. The Board thereupon filed another Petition (No.1 of 2008) on 02.01.2008 for further extension of time upto 31.01.2008 and subsequently filed the ARR on 12.02.2008. Therein the Board had worked out a cumulative revenue gap of Rs.5254.47 crores for the year 2008-09 including carried over gaps of 2006-07 and 2007-08 but there was no proposal to cover up the gap depicted in the ARR. In view of Regulation 13(1) of the PSERC Tariff Regulations and Regulation 48(6) of the PSERC (Conduct of Business) Regulations, 2005, the Commission directed the Board in its letter dated 15.02.2008 to submit the Tariff proposal. In reply, the Board in its letter of 27.02.2008 submitted that as the norms and yardsticks to be applied by the Commission for determining the ARR are not known to the Board, the Commission may determine the gap and fix the tariff according to the details furnished by the Board. The Commission considered the reply of the Board on 03.03.2008 and decided that the ARR may be taken on record and put to public notice for inviting objections.

On scrutiny it was noticed that the ARR was deficient in some respects and in letter dated 19.3.2008, the Commission sought further information including the audited accounts of the Board for the year 2006-07. The Board was, in addition, asked to submit data based on actuals for the year 2007-08 upto January 2008. A part of the additional information sought was furnished by the Board in its letter dated 12.04.2008.

### 1.3 Invitation of objections and public hearings

A public notice was published in the Tribune, Hindustan Times, Ajit and Dainik Jagran on March 18, 2008 inviting objections from the general public on the ARR filed by the Board. Copies of the ARR were made available in the offices of the Chief Engineer, Commercial, PSEB, Patiala, Liaison Officer, PSEB Guest House, Opposite Yadvindra Public School, Phase-8, Mohali and also in the offices of all the Chief Engineers (Operation) and all the Superintending Engineers-in-charge of Operation Circles of the Board. In the public notice, objectors were advised to file 7 copies of their objections with the Secretary of the Commission upto April 17, 2008, with an advance copy to the Board. The public notice also indicated that after perusing the objections received, the Commission will conduct public hearings on the dates which would be subsequently notified by the Commission.

The Commission received 13 written objections by April 17, 2008 and 12 additional written objections thereafter. The Commission decided to take all these objections into consideration.

Number of objections received from individual consumers, consumer groups, organizations and others are detailed below:

<b>Sr. No.</b>	<b>Category</b>	<b>No. of Objections</b>
1.	Chambers of Commerce	2
2.	Industrial Associations	6
3	Industry	5
4	Railways	1
5	PSEB Engineers/Employees Association	2
6	Hospitals	2
7	CRPF	1
8	Individuals	4
9	Association of Affiliated Schools	1
10	Power Grid Corporation of India	1
<b>Total</b>		<b>25</b>

The list of objectors is given in Annexure-I to this Tariff Order. The Board submitted its comments to all the objections which were made available to the respective objectors.

The Commission decided to hold public hearings at Ludhiana, Bathinda, Jalandhar and Chandigarh. A public notice to this effect was published on April 22, 2008 in The Tribune, Hindustan Times, Punjabi Tribune, Punjab Kesari and Times of India informing the objectors, consumers and the general public in this respect as per details hereunder :

<b>Venue</b>	<b>Date &amp; time of public hearing</b>	<b>Category of consumers to be heard</b>
<b><u>LUDHIANA</u></b> Bachat Bhawan, Mini Secretariat, Ferozepur Road, Ludhiana	<b>April 25, 2008</b> 11 AM to 1.30 PM (To be continued in the afternoon, if necessary)	All consumers/ organizations of the area
<b><u>CHANDIGARH</u></b> Commission Office i.e. SCO No.220-221, Sector 34-A, Chandigarh	<b>April 28, 2008</b> 10.30 AM to 1.30 PM	Industry
	3 PM onwards	Agriculture consumers and their unions
<b><u>BATHINDA</u></b> Circuit House, Civil Lines, Near D.C.Residence, Bathinda	<b>April 30, 2008</b> 11 AM to 1.30 PM (To be continued in the afternoon, if necessary)	All consumers/ organizations of the area
<b><u>JALANDHAR</u></b> Circuit House, Skylark Chowk, Opp. Skylark Hotel, Jalandhar	<b>May 2, 2008</b> 11 AM to 1.30 PM (To be continued in the afternoon, if necessary)	All consumers/ organizations of the area
<b><u>CHANDIGARH</u></b> Commission Office i.e. SCO No.220-221, Sector 34-A, Chandigarh	<b>May 5, 2008</b> 10.30 AM to 1.30 PM	All consumers except Industry, Agricultural consumers and staff unions of the Board
	3 PM onwards	Staff unions of Board and other organizations

Through public notices published in various newspapers, it was notified that the Commission will conduct a public hearing at Chandigarh on May 15, 2008 in which the Board will reply to written objections by the public and issues raised during public hearings in addition to presenting its own case.

The public hearings were held as per schedule and objectors, general public and the Board were heard by the Commission. A summary of the issues raised, the response of the Board and the views of the Commission are contained in Annexure-II of this Tariff Order.

**1.4** The Government was approached by the Commission through letter dated 04.04.2008 seeking its views on the ARR to which the Government responded on June 04, 2008, which has been taken note of by the Commission.

**1.5 State Advisory Committee**

The State Advisory Committee set up under Section 87 of the Act, discussed the Board's ARR in a meeting convened for the purpose on 07.05.2008. The minutes of meeting of the State Advisory Committee are enclosed as Annexure–III to this Order.

The Commission has thus taken the necessary steps to ensure that the due process as contemplated under the Act and Regulations framed by the Commission is followed and adequate opportunity given to all stakeholders in presenting their views.

**1.6 Compliance of Directives**

In its previous Tariff Orders, the Commission had issued certain directives to the Board in public interest. A summary of directives issued along with the comments of the Commission is given in Annexure-IV of this Tariff Order.

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## Chapter 2

# True-up for the year 2006-07

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### 2.1 Background

2.1.1 The Commission approved the ARR and Tariff for the year 2006-07 in its Tariff Order dated May 10, 2006 which was based on the costs and revenues estimated by the Board. The Board furnished revised estimates for the year 2006-07 during the determination of ARR and tariff for 2007-08. There were some major differences in certain items of costs as well as projected revenues in the approvals granted by the Commission and the revised estimates furnished by the Board. The Commission in its Tariff Order for the year 2007-08 dated September 17, 2007 reviewed its earlier approvals and re-determined the same based on the pre-actuals made available. The Board has now furnished the audited accounts for the year 2006-07 which again vary in parts with the figures taken into account in review of 2006-07 by the Commission. This chapter contains a final true up of 2006-07, based on the audited annual statement of accounts (actuals) but without altering the principles and the norms approved earlier.

### 2.2 Energy Demand (Sales)

2.2.1 The sales projected by the Board in the ARR of 2006-07, sales approved by the Commission in the Tariff Order of 2006-07, revised estimates furnished during determination of ARR of 2007-08, sales approved by the Commission in review and actual sales figures now given by the Board are given in Table 2.1.

**Table 2.1: Energy Sales – 2006-07**

(MU)

Sr. No.	Category	Proposed by PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Revised Estimates of PSEB during determination of ARR of 07-08	Approved by the Commission in review	Actuals as in the ARR of 08-09	Now approved by the Commission
1	2	3	4	5	6	7	8
1	Domestic	5713	5672	5758	5758	5761	5726
2	Non-Residential	1616	1587	1639	1639	1656	1646
3	Small Power	750	719	638	638	720	716
4	Medium Supply	1532	1482	1653	1653	1503	1494
5	Large Supply	7337	7766	7998	7998	8046	7998
6	Public Lighting	129	129	129	129	130	129
7	Bulk Supply & Railway Traction	682	633	573	573	566	563
8	Total Metered sales (within State)	<b>17759</b>	<b>17988</b>	<b>18388</b>	<b>18388</b>	<b>18382</b>	<b>18272</b>
9	Agriculture pumpsets	7115	7115	8233	8233	8235	8235
10	<b>Total sales within the State</b>	<b>24874</b>	<b>25103</b>	<b>26621</b>	<b>26621</b>	<b>26617</b>	<b>26507</b>
11	Common pool	302	302	300	300	302	302
12	Outside State sales	718	659	952	848	977	847
13	<b>Total (10+11+12)</b>	<b>25894</b>	<b>26064</b>	<b>27873</b>	<b>27769</b>	<b>27896</b>	<b>27656</b>

The Board has furnished the actual sales at 27896 MU for the year 2006-07 as per annual accounts including the theft of energy of 162 MU. This theft of energy has not been apportioned to different consumer categories in the annual accounts. The Board in its ARR petition (Vol. 2) for the year 2008-09 has submitted category-wise sales for 2006-07 including theft of energy which is as per column 7 of Table 2.1.

**2.2.2 Metered Sales:** In metered sales, the Board has included 162 MU of energy on account of theft. The revenue on this account has been shown as Rs.17.90 crores in the annual accounts which is not commensurate with the revenue accruing from sale of energy of 162 MU to metered categories. The Commission has, therefore, no option but to estimate sale of energy on this account based on category-wise tariffs (which works out to 52 MU) and then apportion it to various categories on prorata basis. The figures of metered sales to all categories have been amended accordingly as reflected in column 8 of Table 2.1. *The Commission thus approves the metered sales within the State at 18272 MU with the observation that the Board may in future ensure proper category wise accounting of theft and the revenue involved.*



The Commission accepts common pool sales at 302 MU on the basis of actuals furnished by the Board. Actual sales outside the State as per the Board are 977 MU. According to the Board, royalty of Himachal Pradesh (HP) in Shanan (53 MU) and HP's share of 4.6% from Ranjit Sagar Dam (RSD) (77 MU) are a part of outside State sales. However, HP's share in RSD and royalty in Shanan are free of cost and as such are required to be excluded from outside State sales. Accordingly, the outside State sales figures work out to 847 (977-77-53) MU.

The Commission, therefore, approves the outside State sales at 847 MU.

**Metered sales now approved by the Commission after the above mentioned adjustments are as shown in column 8 of Table 2.1.**

- 2.2.3 **AP Consumption:** The Commission in its Tariff Order of 2006-07 approved Agriculture Pumpsets (AP) consumption of 7115 MU subject to review at the end of the year based on sample meter readings and other relevant factors. On review, the estimate of AP consumption of 8233 MU for the year 2006-07, was accepted. The Board has now furnished actual AP consumption during 2006-07 at 8235 MU as per sample meter readings and metered sales in this category which is agreed to.

**The Commission, therefore, approves AP consumption at 8235 MU for the year 2006-07.**

### **2.3 Transmission and Distribution Losses (T&D Losses)**

- 2.3.1 The Commission in its Tariff Order of 2006-07 fixed target of T&D losses at 20.75%. During the determination of ARR of 2007-08, the Board stated that T&D losses in 2006-07 would be 23.91% but the Commission retained the T&D losses at 20.75% in the review. The Board has now intimated that the actual losses of 2006-07 are 23.92%. The Commission, however, sees no reason for accepting T&D losses in excess of the target fixed by the Commission.

**The Commission, therefore, retains the T&D losses at 20.75% as approved in the Tariff Order for the year 2006-07.**

### **2.4 PSEB'S Own Generation**

- 2.4.1 **Thermal Generation:** The station-wise generation projected by the Board in the ARR of 2006-07, generation approved by the Commission in the Tariff Order, revised estimates furnished by the Board during determination of ARR of 2007-08, generation

approved by the Commission in the review, actuals now supplied by the Board and generation finally approved by the Commission is given in Table 2.2.

**Table 2.2: Thermal Generation - 2006-07**

(MU)

Sr. No.	Station	Projected by PSEB in ARR 06-07		Approved by the Commission T.O. 06-07		Revised Estimates of PSEB during determination of ARR for 07-08		Approved by the Commission in review		Actuals by PSEB in ARR 08-09		Now approved by the Commission	
		Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	GNDTP	2220	1949	2281	2030	2275	2015	2275	2025	2221	1966	2221	1977
2	GGSTP	8650	7903	8703	7963	9621	8800	9621	8803	9770	8952	9770	8940
3	GHTP	3120	2828	3138	2856	3378	3076	3378	3074	3443	3140	3443	3133
	Total	13990	12680	14122	12849	15274	13891	15274	13902	15434	14058	15434	14050

The gross thermal generation for 2006-07 now submitted by the Board is 15434 MU, the same as per actuals of 2006-07. However, plant-wise generation is not available in the annual statement of accounts and as such the data supplied alongwith the ARR of 2008-09 has been taken into account by the Commission.

**Accordingly, the Commission approves gross thermal generation for the year 2006-07 at 15434 MU.**

Table 2.3 depicts the proposed and approved auxiliary consumption for 2006-07.

**Table 2.3: Auxiliary Consumption - 2006-07**

Sr. No.	Station	Proposed by PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Revised Estimates of PSEB during determination of ARR for 07-08	Approved by the Commission in review	Actuals by PSEB in ARR 08-09	Now approved by the Commission
1	2	3	4	5	6	7	8
1	GNDTP	12.20%	11.00%	11.40%	11.00%	11.38%	11.00%
2	GGSTP	8.64%	8.50%	8.54%	8.50%	8.38%	8.50%
3	GHTP	9.35%	9.00%	8.92%	9.00%	8.80%	9.00%

It is observed that actual auxiliary consumption now reported by the Board is marginally higher for GNDTP and lower for GGSTP and GHTP than the approved levels. As auxiliary consumption has been approved on normative basis, the

Commission is inclined to retain the levels as approved in the Tariff Order for 2006-07.

**The net thermal generation on this basis works out to 14050 MU as shown in column 14 of Table 2.2.**

The Commission further observes that the Board has over-achieved in thermal generation by 1312 MU (15434 - 14122) gross and 1201 MU (14050 -12849) net as compared to generation originally approved, as shown in columns 5 & 6 of Table 2.2.

The Commission takes note of higher thermal generation and consequential less power purchase to that extent. This is further discussed in para 2.9.

**2.4.2 Hydel Generation:** The station-wise generation projected in the ARR of 2006-07, generation approved by the Commission in its Tariff Order, revised estimates furnished by the Board during determination of ARR of 2007-08, generation approved by the Commission in review and actuals now furnished by the Board including clarifications in its letter of 12.04.2008 and those accepted by the Commission are given in Table 2.4.

**Table 2.4: Hydel Generation - 2006-07**

(MU)

Sr. No.	Station	Projected by PSEB in ARR 06-07	Approved by Commission in T.O. 06-07	Revised Estimates of PSEB during determination of ARR for 07-08	Approved by Commission in review	*Actuals by PSEB in ARR 08-09	Now approved by the Commission
1	2	3	4	5	6	7	8
1	Shanan	516	516	493	493	495.67	495.67
2	UBDC	400	400	383	383	384.61	384.61
3	RSD	1281	1281	1657	1657	1679.48	1679.48
4	MHP	879	879	1151	1151	1170.74	1170.74
5	ASHP	656	656	681	681	666.09	666.09
6	Micro Hydel	8	8	9	9	7.96	7.96
7	Total Own Hydro						
a)	Gross	3740	3740	4374	4374	4404.55	4404.55
b)	Net	3673 <sup>1</sup>	3654 <sup>2</sup>	4324 <sup>3</sup>	4209 <sup>4</sup>	4352.46 <sup>5</sup>	4238.55 <sup>6</sup>
8	Share from BBMB including share of common pool consumers (Net)	4248 (common pool = 302)	4248 (common pool = 302)	4148 (common pool = 300)	4162 (common pool = 300)	4126.11 (common pool = 302)	4126.11 (common pool = 302)
<b>9</b>	<b>Total hydro (Net)</b>	<b>7921</b>	<b>7902</b>	<b>8472</b>	<b>8371</b>	<b>8478</b>	<b>8365</b>

\* The net generation of own hydro and BBMB share are as given in the letter dated 12.04.2008 of the Board.

**Notes:**

1. Net of auxiliary consumption (12 MU) and transformation losses (55 MU).
2. Net of HP share (free) in RSD @ 4.6% (59MU), auxiliary consumption @ 0.2% (8MU) and transformation losses @ 0.5% (19 MU) as per CERC norms.
3. Net of auxiliary consumption and transformation losses (50 MU).
4. Net of HP share (free) in RSD @ 4.6 % ( 76 MU), auxiliary consumption @ 0.5% from RSD (having static exciters) and for others at 0.2% (14 MU) and transformation losses@ 0.5% (22 MU) and HP royalty in Shanana (53 MU).
5. Net of auxiliary consumption and transformation losses (52.07 MU).
6. Net of auxiliary consumption at 0.5% (8.5MU) for RSD (having static exciters) and 0.2% for others (5.5 MU), transformation losses at 0.5% (22 MU), HP share (free) in RSD at 4.6% (77 MU) and HP Royalty in Shanana (53 MU).
7. The BBMB share including common pool shown in Col.7 Sl. 8 is net of transmission losses of 154.75 MU (3.89% ) of availability other than common pool.
8. The BBMB share including common pool approved in Col. 8, Sl.8 is net of transmission losses of 154.75 MU (3.89%) of availability other than common pool.

The actual gross hydel generation from the Board's own hydel stations for the year 2006-07 is 4404.55 MU and the Commission accepts the same. While calculating the net generation, the Board has not deducted the free HP share in RSD and royalty in Shanana. In line with the principle followed in such sales, the Commission has worked out net hydel generation by deducting these from gross generation along with the auxiliary consumption and transformation losses. Net hydel generation for the year 2006-07 thus works out to 4238.55 MU. The actual net availability from BBMB is 4126.11 MU which the Commission accepts.

**The Commission, therefore, approves net hydel generation for the year 2006-07 at 4238.55 MU from the Board's own generation and 4126.11 MU as net share from BBMB as shown in table 2.4.**

## **2.5 Power Purchase**

- 2.5.1 The Commission in its Tariff Order of 2006-07 approved net power purchase of 11886 MU. During determination of ARR of 2007-08, the Board furnished revised estimates for net power purchase of 13875 MU but in review, the Commission approved 12466 MU only. The Board has now submitted net purchases during 2006-07 of 13726.53 MU as per actuals for 2006-07. This matter is further discussed in para 2.8.

## **2.6 Energy Balance**

- 2.6.1 The details of energy requirement and availability approved by the Commission in review in the Tariff Order of 2007-08 and the actuals now furnished by the Board are given in Table 2.5. The energy balance, including T&D losses along with sales and availability now approved by the Commission is depicted in column 6 of Table 2.5.

**Table 2.5: Energy Balance – 2006-07**

(MU)

Sr. No.	Particulars	Approved by the Commission in review	Actuals by PSEB in ARR 08-09	Now approved by the Commission	Actual T&D losses as per approved sales and availability
1	2	3	4	5	6
<b>A) Energy Requirement</b>					
1	Metered Sales	18388	18382	18272	18272
2	Sales to AP consumers	8233	8235	8235	8235
3	Total Sales within the State	26621	26617	26507	26507
4	Loss percentage	20.75%	23.92%	20.75%	24.25%
5	T&D losses	6970	8367	6940	8486
6	Sales to Common pool consumers	300	302	302	302
7	Outside State sales	848	977	847	847
<b>8</b>	<b>Total requirement</b>	<b>34739</b>	<b>36263</b>	<b>34596</b>	<b>36142</b>
<b>B) Energy Available</b>					
9	Own generation (Ex-bus)				
10	Thermal	13902	14058	14050	14050
11	Hydro	4209			
12	Share from BBMB (incl. share of common pool consumers)	4162 (common pool = 300)	8478 (common pool = 302)	8365 (common pool = 302)	8365 (common pool = 302)
13	Purchase (net)	12466	13727	13727	13727
<b>14</b>	<b>Total Available</b>	<b>34739</b>	<b>36263</b>	<b>36142</b>	<b>36142</b>

2.6.2 The total energy requirement now approved by the Commission considering T&D losses at 20.75% is 34596 MU (net) as against 36263 MU projected by the Board, whereas total energy availability now approved is 36142 MU (net). The difference of 1546 MU (net) between energy requirement and energy availability is owing to the underachievement of T&D loss target as discussed in para 2.3 and depicted in columns 5 & 6 of Table 2.5. Higher T&D loss over and above the level approved by the Commission has resulted in increased net power purchase to the extent of 1546 MU (8486 - 6940) MU. The matter is further discussed in para 2.9.

**The Commission approves the total energy requirement for the year 2006-07 at 34596 MU (net) after retaining T&D losses at 20.75%.**

## 2.7 Fuel Cost

2.7.1 In its Tariff Order of 2006-07, the Commission approved the fuel cost as Rs.2258.15 crores for a gross thermal generation of 14122 MU. In review, this cost was revised to Rs.2312.46 crores for the then approved generation of 15274 MU. Details of approved fuel cost in Tariff Order and review are given in Table 2.6.

**Table 2.6: Fuel Cost - 2006-07**

Sr. No.	Station	As per T.O. 06-07		As per review	
		Gross Generation (MU)	Fuel Cost (Rs.crores)	Gross Generation (MU)	Fuel Cost (Rs.crores)
1	2	3	4	5	6
1	GNDTP	2281	415.27	2275	389.57
2	GGSTP	8703	1324.75	9621	1433.37
3	GHTP	3138	518.13	3378	489.52
	<b>Total</b>	<b>14122</b>	<b>2258.15</b>	<b>15274</b>	<b>2312.46</b>

2.7.2 The Board in its ARR of 2008-09 has indicated actual fuel cost for 2006-07 for a gross generation of 15434 MU as Rs.2431.72 crores whereas in the annual statement of accounts of 2006-07 the total generation expenses are Rs. 2448.53 crores. These comprise of Rs. 2353.09 crores for coal and oil consumption, Rs.14.30 crores for other fuel related costs including octroi, contract handling charges, siding charges etc., Rs.64.30 crores fuel related losses including transit losses and Rs.16.83 crores other operating expenses such as cost of water, lubricants, consumable stores and station supplies. Out of these, Rs.16.83 crores booked towards other operating expenses do not form a part of the fuel cost and are being considered under repair and maintenance expenses in para 2.11. Thus, the net fuel cost as per annual statement of accounts is taken as Rs.2431.70 (2448.53-16.83) crores.

2.7.3 The actual fuel cost intimated by the Board for 2006-07 in its ARR of 2008-09 for a gross thermal generation of 15434 MU is based on caloric value and price of coal / oil as given in Table 2.7A.

**Table 2.7A: Calorific Value and Price of Coal and Oil as submitted by the Board for 2006-07**

Sr.No.	Station	As Submitted by the Board					
		Calorific Value of Coal (K.Cal/Kg)	Calorific Value of Oil (K.Cal/Ltr)	Price of Oil (Rs./KL)	Price of Coal including transit loss (Rs./MT)	Transit Loss	Price of Coal excluding transit loss (calculated) (Rs./MT)
1	2	3	4	5	6	7	8
1	GNDTP	3928.00	9936.00	21583.00	2381.26	2.60%	2319.35
2	GGSTP	3825.00	10000.00	19109.66	2362.72	2.15%	2311.92
3	GHTP	4214.00	9400.00	17416.00	2613.56	1.60%	2571.74

2.7.4 Fuel cost being a major item of expense, the Commission thought it prudent to get the same verified. On verification, the Commission noted that the calorific values (CV) furnished by the Board are Net Calorific Value as fired (NCV) and not Gross Calorific Value as fired (GCV). The actual weighted average GCV was obtained from the Board along with actual price of coal and coal transit loss for 2006-07. Similarly, the Board supplied details of actual price of oil and CV of oil for 2006-07. These values have been validated and finally accepted as indicated in Table 2.7B.

**Table 2.7B: Calorific Value and Price of Coal and Oil as approved by the Commission for 2006-07**

Sr.No.	Station	As approved by the Commission					
		Calorific Value of Coal (K.Cal/Kg)	Calorific Value of Oil (K.Cal/Ltr)	Price of Oil (Rs./KL)	Price of Coal including transit loss (Rs./MT)	Transit Loss	Price of Coal excluding transit loss (calculated) (Rs./MT)
1	2	3	4	5	6	7	8
1	GNDTP	4148.00	9936.00	21596.00	2381.27	2.50	2321.73
2	GGSTP	4044.00	10000.00	19101.36	2362.72	2.11	2312.87
3	GHTP	4422.00	9400.00	17416.00	2613.40	1.63	2570.80

There is a slight difference in transit loss value of GNDTP as the Board has reportedly adopted mathematical average of monthly values instead of weighted average. The variation in the transit loss values in the case of GGSTP and GHTP, and variation in values of some other parameters of GNDTP, GGSTP and GHTP is as per validation by the Commission.

2.7.5 In the ARR petition for the year 2008-09, the Board has not reported any consumption of imported coal for the year 2006-07. But, on validation, it is noticed

that imported coal to the extent of 104922 MT and 98825 MT was used in GGSTP and GHTP respectively during 2006-07. It has also come to the notice of the Commission that a substantial quantity of coal received from the Board's captive coal mines (PANAM) was used during 2006-07 which is priced F.O.R. destination. On enquiry from the Commission, the Board intimated in its letter dated 20.05.08 that 294683.50 MT, 889469 MT and 191777 MT PANAM coal was used at GNDTP, GGSTP and GHTP, respectively, during 2006-07. The price of coal and corresponding calorific values given in the ARR and subsequent letter dated 12.04.2008 of the Board (as given in Table 2.7A) and those validated by the Commission (as given in Table 2.7B) are weighted average values of imported and indigenous coal, including PANAM coal. No transit loss has been allowed for imported coal and PANAM coal while arriving at fuel cost as prices according to the contract are on F.O.R. destination basis.

- 2.7.6 The Commission has now approved revised gross thermal generation of 15434 MU (2221 MU for GNDTP, 9770 MU for GGSTP and 3443 MU for GHTP) as discussed in para 2.4.1. The fuel cost for different thermal stations corresponding to generation now approved has been worked out, based on the parameters adopted by the Commission in its Tariff Order of 2006-07 (except coal transit loss). Price and calorific value of coal and oil has been adopted as validated and accepted by the Commission. The Commission has allowed 2% transit loss for coal (other than PANAM and imported coal) for each of the stations as discussed in para 2.7.5.
- 2.7.7 On the above basis, fuel cost for the year 2006-07 for different thermal stations corresponding to actual generation is given in Table 2.8.



**Table 2.8: Approved Fuel Cost- 2006-07**

Sr. No.	Item	Derivation	Unit	Approved for 2006-07			
				GNDTP	GGSTP	GHTP	Total
1	2	3	4	5	6	7	8
1	Generation	A	MU	2221	9770	3443	15434
2	Heat Rate	B	k.cal/kWh Generated	3000	2500	2500	
3	Specific oil consumption	C	Milli litre/kwh	3.50	2.00	2.00	
4	Calorific value of oil	D	k.cal/litre	9936	10000	9400	
5	Calorific value of coal	E	k.cal/kg	4148.00	4044.00	4422.00	
6	Overall heat	F = (A x B)	G.cal	6663000	24425000	8607500	
7	Heat from oil	G = (A x C x D) / 1000	G.cal	77237	195400	64728	
8	Heat from coal	H = (F-G)	G.cal	6585763	24229600	8542772	
9	Oil Consumption	I=(Gx1000)/D	KL	7774	19540	6886	
10	Transit loss of coal	J	(%)	2.0	2.0	2.0	
11	Consumption of Coal excluding transit loss.	K=(Hx1000/E)	MT	1587696	5991494	1931880	
12	Quantity of Imported Coal	L	MT	0	104922	98825	
13	Quantity of PANAM coal	L1	MT	294683	889469	191777	
14	Quantity of Indigenous Coal other than PANAM coal (Excluding Transit loss)	M = K - L - L1	MT	1293013	4997103	1641278	
15	Quantity of Indigenous Coal other than PANAM coal (Including Transit loss)	N=M/((1- J)/100)	MT	1319401	5099085	1674773	8093259
16	Total Quantity of Coal Required	O = L+L1+N	MT	1614084	6093476	1965375	9672935
17	Cost of Oil per KL	P	Rs	21596.00	19101.36	17416.00	
18	Cost of Coal per MT	Q	Rs	2321.73	2312.87	2570.80	
19	Total Cost of Oil	R=(Px I)/10 <sup>7</sup>	Rs crores	16.79	37.32	11.99	66.10
20	Cost of Coal	S=OxQ/10 <sup>7</sup>	Rs crores	374.75	1409.34	505.26	2289.35
21	<b>Total Fuel cost</b>	<b>T=R+S</b>	<b>Rs.crores</b>	<b>391.54</b>	<b>1446.66</b>	<b>517.25</b>	<b>2355.45</b>

**The Commission, thus, approves the fuel cost at Rs.2355.45 crores for gross thermal generation of 15434 MU for the year 2006-07.**

The difference in fuel cost now approved by the Commission (Rs.2355.45 crores) as compared to cost as per annual statement of accounts (Rs. 2431.70 crores) is mainly owing to the Board adopting NCV of coal, against the Commission's considering of GCV while arriving at the requirement of coal. Some variation is also on account of the difference in operating parameters approved by the Commission and actuals reported by the Board.

## **2.8 Power Purchase Cost**

2.8.1 The Commission, in its Tariff Order for the year 2006-07, approved a cost of Rs. 2813.34 crores for purchase of 12350 MU (gross). In review, the Commission revised it to Rs.3891.53 crores for the purchase of 12985 MU (gross), inclusive of 4% external losses.

2.8.2 The actual gross power purchase for the year 2006-07 now reported by the Board is 14393.16 MU including unscheduled interchange (UI) of 522 MU. The net power purchase after accounting for external losses of 4.63% is 13727 MU. The power purchase cost as per annual statement of accounts for 2006-07 is Rs. 4327.01 crores.

**The Commission approves a cost of Rs. 4327.01 crores for power purchase of 13727 MU net.**

## **2.9 Expenses Disapproved/Incentive approved by the Commission**

2.9.1 **Expenses disapproved on account of higher T&D losses:** As discussed in para 2.3, the Board has under achieved the T&D loss target approved by the Commission. In the Tariff Order for the year 2005-06, the Commission had decided that the financial burden to the extent of consequential additional power purchase cost on this account may not be passed on to the consumers but borne by the Board. As brought out in para 2.6, T&D loss level higher than that approved by the Commission has resulted in increased power purchase to the extent of 1546 MU (net), the pro-rata cost of which based on power purchase cost approved in para 2.8 works out to Rs.487.33 ( $4327.01 \times 1546 / 13727$ ) crores.

**The Commission, therefore, disapproves expenses to the extent of Rs. 487.33 crores on account of higher T&D losses.**

The effect of this is reflected at Sr. No. 12 (i) of Table 2.10.

**2.9.2 Incentive for higher Thermal Generation:** The Commission has noted higher thermal generation to the extent of 1312 MU gross (1201 MU net) and consequent less power purchase on this account in para 2.4.1. The station-wise increase in gross generation is 1067 MU for GGSTP (9770-8703) and 305 MU for GHTP (3443-3138). However, the actual gross generation of GNDTP is less by 60 MU (2281-2221) than approved by the Commission in the Tariff Order. The net increase in fuel cost for different stations corresponding to this variation in generation based on cost now approved works out to Rs. 193.23 crores as given in Table 2.9.

**Table 2.9: Increase in Fuel Cost due to higher Thermal Generation - 2006-07**

Sr. No.	Station	Now approved by the Commission		Increase due to higher generation	
		Generation (MU)	Fuel Cost (Rs. crores)	Increase in generation (MU)	Increase in Fuel Cost (Rs. crores)
1	2	3	4	5	6
1	GNDTP	2221	391.54	(60)	-10.58
2	GGSTP	9770	1446.66	1067	157.99
3	GHTP	3443	517.25	305	45.82
	<b>Total</b>	<b>15434</b>	<b>2355.45</b>	<b>1312</b>	<b>193.23</b>

The decrease in power purchase on account of higher thermal generation is 1201 MU (net). The pro-rata cost of 1201 MU (net) based on power purchase cost approved as per para 2.8 works out to Rs.378.58 crores (i.e. Rs.4327.01x1201/13727). Accordingly, the net saving on account of higher thermal generation is Rs.185.35 (378.58–193.23) crores.

**The Commission, therefore, approves an amount of Rs. 185.35 crores as incentive on account of higher thermal generation.**

The effect of this is reflected at Sr. No. 12 (ii) of Table 2.10.

## **2.10 Employee Cost**

2.10.1 The Commission, in the Tariff Order of 2006-07, had approved employee cost at Rs.1559.04 crores. In the review of 2006-07 in the subsequent Tariff Order, the Commission had revised the employee cost to Rs.1558.40 crores based on increase of 6.61% in the wholesale price index (WPI) for the year 2006-07. This is in accordance with the PSERC Tariff Regulations which specify that O&M expenses

(which include employee cost) will be adjusted according to the annual variation in the rate of WPI.

- 2.10.2 The Board has submitted the annual statement of accounts for 2006-07 according to which the actual employee cost is Rs.1864.63 crores (gross). After deducting capitalization of Rs.113.15 crores, the cost works out to Rs.1751.48 crores. The Board has included an amount of Rs.2.87 crores representing prior period employee cost which is being separately considered in para 2.17.3.
- 2.10.3 The Board in its additional submission dated May 16, 2008 has stated that employee cost should also be allowed for the assets added during the year on pro-rata basis from the date of commissioning for the years 2006-07, 2007-08 and 2008-09 as per Regulation 28 (6) of the PSERC Tariff Regulations.
- 2.10.4 The Commission notes that Regulation 28 (6) of the PSERC Tariff Regulations allows O&M expenses for the fixed assets added during the year on pro-rata basis from the date of commissioning. However, in the absence of revised manpower norms and considering the very high employee cost of the Board, the Commission finds no justification in allowing any additional employee cost on this account. It is relevant to mention here that the Appellate Tribunal in its Judgement dated May 26, 2006 had also observed that the employee cost of the Board will remain capped until performance parameters improve. Accordingly, the Commission retains its decision to allow the employee cost of Rs.1558.40 crores based on increase of 6.61% in WPI during 2006-07 as approved in the review.

**The Commission, therefore, retains the employee cost at Rs. 1558.40 crores for the year 2006-07.**

## **2.11 Repairs and Maintenance (R&M) expenses**

- 2.11.1 The Commission had approved R&M expenses at Rs.263.35 crores in the Tariff Order of 2006-07. In the review of 2006-07, these charges had been revised to Rs.254.53 crores, allowing an increase of 6.61% in WPI over the R&M expenses approved for the year 2005-06 as permitted in the PSERC Tariff Regulations.
- 2.11.2 Actual R&M expenses as per the annual accounts of the Board for the year are Rs.286.99 crores inclusive of Rs.16.83 crores of operating expenses. Out of this, R&M expenses of Rs.2.50 crores have been capitalized. Thus, net R&M expenses for the year work out to Rs.284.49 crores on actual basis.

2.11.3 The PSERC Tariff Regulations provide for allowing increase in O&M expenses (which include R&M expenses) equal to the increase in WPI during the year 2006-07 over the approved expenses for the year 2005-06. Thus, R&M expenses allowable for the year 2006-07 work out to Rs.254.53 crores as allowed in review. Accordingly, R&M expenses to the extent of Rs.254.53 crores only are allowed for assets valuing Rs.14778.82 crores as on 1<sup>st</sup> April, 2006.

2.11.4 The Board in its additional submission dated May 16, 2008 has stated that R&M cost should also be allowed for the assets added during the year on pro-rata basis from the date of commissioning for the years 2006-07, 2007-08 and 2008-09 as per Regulation 28 (6) of the PSERC Tariff Regulations.

2.11.5 According to Regulation 28 (6) of the PSERC Tariff Regulations, O&M expenses for fixed assets added during the year are to be considered on pro-rata basis from the date of commissioning. The Commission agrees that R&M expenses on the assets added during the year are allowable but in the absence of any norms that can be readily adopted for this purpose, the average rate of R&M as worked out in para 2.11.3 above is adopted. Accordingly, the Commission proposes to apply the rate of 1.72% of the cost of the additional assets and assumes that these assets remained in service for six months. The R&M for additional assets of Rs.634.77 crores works out to Rs.5.46 crores on this basis.

**The Commission accordingly allows the R&M expenses at Rs.259.99 (254.53 + 5.46) crores for the year 2006-07.**

## **2.12 Administration and General (A & G) expenses**

2.12.1 In the Tariff Order of 2006-07, the Commission had approved A&G expenses at Rs.57.84 crores. In the review of 2006-07, the Commission had approved A&G expenses at Rs. 58.54 crores based on an increase of 6.61% in WPI, for the period from April 2006 to March 2007, over the A&G expenses approved for the year 2005-06.

2.12.2 As per the annual statement of accounts of the Board, the A&G expenses for the year 2006-07 are Rs.79.02 crores (gross). Out of these, expenses of Rs.19.82 crores have been capitalized and the net expenses amount to Rs. 59.20 crores.

2.12.3 The PSERC Tariff Regulations provide for allowing increase in O&M expenses (which include A&G expenses) equal to the increase in WPI during the year 2006-07 over the

approved expenses for the year 2005-06. Thus, A&G expenses allowable for the year 2006-07 work out to Rs.58.54 crores for assets valuing Rs.14778.82 crores as on April 01, 2006.

2.12.4 The Board in its additional submission dated May 16, 2008 has stated that A&G cost should also be allowed for the assets added during the year on pro-rata basis from the date of commissioning for the years 2006-07, 2007-08 and 2008-09 as per Regulation 28 (6) of the PSERC Tariff Regulations.

2.12.5 The Commission proposes to adopt the same principle as has been applied to R&M expenses in para 2.11.5. Accordingly, the average rate of 0.4% of capital cost of additional assets is taken into account for arriving at additional A&G expenses of Rs.1.27 crores.

**The Commission, therefore, approves the A&G expenses of Rs. 59.81 (58.54 + 1.27) crores for the year 2006-07.**

### **2.13 Depreciation charges**

2.13.1 The Commission had approved depreciation charges at Rs.649.00 crores for the year 2006-07 in the Tariff Order. In the review of 2006-07 in the following Tariff Order, these charges were revised to Rs.626.70 crores based on the revised estimates of the Board.

2.13.2 As per the annual statement of accounts of the Board, actual depreciation charges are Rs.605.00 crores (net) after capitalization of depreciation charges of Rs.1.21 crores for the year 2006-07.

2.13.3 The Board has claimed depreciation charges of Rs.705.11 crores for the year 2006-07 after adding prior period depreciation charges of Rs.100.11 crores. As indicated in para 2.17, all the prior period items have been dealt with separately. Accordingly, the claim of the Board for depreciation charges is reduced to Rs.605.00 crores which is the same as in the annual accounts for 2006-07.

**In view of the above, the Commission approves the depreciation charges of Rs. 605.00 crores based on actuals for the year 2006-07.**

### **2.14 Interest and Finance charges**

2.14.1 The Commission had approved net interest and finance charges of Rs.858.69 crores in the Tariff Order for the year 2006-07 after disallowing Rs.100 crores on account of

diversion of capital funds for revenue purposes by the Board. In the review of 2006-07, the interest & finance charges were revised to Rs.537.86 crores after disallowing interest of Rs.100 crores of the Board and Rs.289.92 crores from interest paid/payable on the Government loans on account of diversion of capital funds for revenue purposes and variations on account of interest on working capital.

2.14.2 The interest and finance charges as per the annual statement of accounts for the year 2006-07 are Rs.884.29 crores net of capitalized interest charges of Rs.173.61 crores. These charges include interest of Rs.145.35 crores on working capital loans of Rs.2316.68 crores against admissible working capital loans of Rs.713.38 crores on normative basis. The interest charges on working capital of Rs.713.38 crores work out to Rs.90.96 crores at 12.75% which was the prevalent prime lending rate (PLR) of the State Bank of India. Thus, interest of Rs.54.39 crores is disallowed on account of excess working capital loans availed by the Board. In addition to this, the Commission retains its decision regarding disallowance of interest of Rs.100 crores on account of deficiencies in the functioning of the Board and Rs.289.92 crores on the Government loans for diversion of capital funds for revenue purposes. After disallowing interest of Rs.444.31 (289.92+100.00+54.39) crores, allowable interest and finance charges to the Board work out to Rs.439.98 (884.29-444.31) crores.

**The Commission, therefore, approves Rs.439.98 crores as net amount of interest and finance charges for the year 2006-07.**

## **2.15 Return on Equity**

2.15.1 In the Tariff Order of 2006-07, the Commission had approved a return of Rs.412.46 crores calculated at 14% on the equity of Rs.2946.11 crores as on April 01, 2006 in accordance with Regulation 25 of the PSERC Tariff Regulations.

2.15.2 In the review for the year 2006-07 in the Tariff Order of 2007-08 the Commission retained return on equity at Rs.412.46 crores for the year 2006-07. As per annual statement of accounts of the Board for the year 2006-07, the equity of the Government in the Board remained unchanged at Rs.2946.11 crores.

**Accordingly, the Commission retains Return on Equity at Rs.412.46 crores for the year 2006-07 as approved earlier in review.**

## 2.16 Subsidy and other amounts payable by the Government

2.16.1 As per annual statement of accounts for the year 2006-07, total subsidy of Rs.1423.80 crores has been paid by the Government to the Board.

2.16.2 The subsidy payable by the Government is now determined as under:

- **AP Consumption:** The Commission has accepted AP consumption at 8235 MU on which revenue @ 214 paise per unit works out to Rs.1762.29 crores. Of this, consumers have been billed for Rs. 25.26 crores and the balance of Rs.1737.03 crores excluding Rs.7.00 crores representing meter rentals and service charges was payable by the Government as AP subsidy.
- **Scheduled Castes Domestic Supply (DS) Consumers:** The Commission notes that as per decision of the Government, the quantum of free electricity upto 50 units per month with load cap of 300 watts in the case of Scheduled Castes DS consumers was raised to 200 units per month with load cap of 500 watts w.e.f. September 1, 2005. The load cap of 500 watts was further raised to 1000 watts by the Government w.e.f. October 2, 2006. Against the approved subsidy amount of Rs.76.93 crores in the review of 2006-07 in the Tariff Order of 2007-08, the Board has now reduced its claim to Rs.63.99 crores inclusive of meter rentals and service charges of Rs.5.05 crores. The Commission, accordingly, approves subsidy of Rs.63.99 crores for 2006-07 on this account as claimed by the Board.
- **Non-SC Below Poverty Line (BPL) Consumers:** The Government had also decided to give free supply of power upto 200 units per month to Non SC BPL DS consumers with connected load upto 1000 watts w.e.f. December 1, 2006. The Board has claimed subsidy of Rs.0.0162 crores which is the same as approved by the Commission in review of 2006-07 in the Tariff Order of 2007-08. Accordingly, the Commission reiterates that subsidy payable on this account by the Government will be Rs.0.02 crores (rounded off).

On the above basis, the total subsidy payable by the Government for the year 2006-07 works out to Rs.1808.04 crores against which Rs.1423.80 crores stands paid by the Government. Thus, subsidy of Rs.384.24 crores is now determined as payable by the Government to the Board for the year 2006-07.

- In para 2.16.2 of the Tariff Order of 2007-08 (true up of 2005-06) the Commission had determined Rs.7.64 crores as the past subsidy payable by the Government to



the Board for the years 2002-03 to 2005-06. After adding this amount, the total subsidy payable by the Government for the year 2006-07 works out to Rs.391.88 crores.

- In addition to subsidy payable of Rs.391.88 crores, interest of Rs.289.92 crores on the Government loans on account of diversion of capital funds for revenue purposes was determined as refundable by the Government to the Board in the Commission's Order dated September 13, 2007 passed following the directions of the Appellate Tribunal in its Judgement dated May 26, 2006. Thus, total amount payable by the Government to the Board works out to Rs.681.80 crores for the year 2006-07. This is further discussed in para 3.15.

## **2.17 Non-Tariff Income**

2.17.1 The Commission had approved non-tariff income of Rs.320.00 crores for the year 2006-07 in the Tariff Order. In the review of 2006-07, non-tariff income of the Board was increased to Rs.355.97 crores based on revised estimates.

2.17.2 As per the annual statement of accounts of 2006-07, the other income of the Board is Rs.254.02 crores besides non-tariff income of Rs.129.54 crores which is included in the sale of power. In addition, the subsidy available from the Government on account of meter rentals and service charges for AP amounting to Rs. 7.00 crores and Rs.5.05 crores for SC Domestic Supply consumers also forms a part of non tariff income of 2006-07.

2.17.3 Prior period income is one of the components of non-tariff income as specified in Regulation 34 of the PSERC Tariff Regulations. As per the annual statement of accounts for the year 2006-07, net prior period credit for the year 2006-07 is Rs. 19.01 crores after adjustment of Rs.2.87 crores of prior period expenses on account of employee cost. As the Board could not supply information with regard to the period to which these expenses pertain, these expenses are disallowed. Taking this into account, the net receipts for prior period will increase to Rs.21.88 crores. By adding this amount, the non-tariff income of the Board for the year 2006-07 amounts to Rs.417.49 (254.02 + 129.54 + 7.00 + 5.05 + 21.88) crores.

**The Commission accordingly, approves Non-Tariff Income at Rs.417.49 crores for the year 2006-07.**

## **2.18 Revenue from sale of power**

2.18.1 The Commission had approved the revenue from tariff at Rs.8270.82 crores in the Tariff Order for the year 2006-07. In the review for the year 2006-07, the revenue from existing tariff was revised to Rs.8790.39 crores, including Government subsidy.

2.18.2 As per annual statement of accounts for 2006-07, the revenue actually received from sale of power is Rs.7030.96 crores excluding the Government subsidy. This revenue includes non-tariff income of Rs.129.54 crores being meter rentals and service charges (Rs.92.95 crores), recoveries from theft of power (Rs.17.89 crores), wheeling charges (Rs.0.11 crores) and miscellaneous charges other than peak load exemption charges (Rs.18.59 crores). These receipts already stand accounted for in non-tariff income and as such, are to be deducted from the revenue from sale of power. The net revenue, therefore, works out to Rs.6901.42 crores. Subsidy of Rs.1808.04 crores payable for 2006-07 as determined in para 2.16 of this Tariff Order, includes an amount of Rs.12.05 crores related to meter rentals and service charges which are a part of non-tariff income for the year. Thus, after adding subsidy payable by the Government amounting to Rs.1795.99 (1808.04 – 7.00 – 5.05) crores, total revenue from sale of power amounts to Rs.8697.41 crores.

**The Commission, therefore, approves the revenue from sale of power at Rs. 8697.41 crores for the year 2006-07.**

## **2.19 Other items of expenditure**

### **2.19.1 Other debits and extraordinary items:**

As per annual statement of accounts for the year 2006-07, other debits and extraordinary items amounted to Rs.7.68 crores. These expenses represent bad and doubtful debts and miscellaneous losses written off etc.

**The Commission allows this expenditure of Rs.7.68 crores for the year 2006-07.**

### **2.19.2 Fringe Benefit Tax (FBT):**

The annual statement of accounts of the Board reflects the Fringe Benefit Tax (FBT) paid at Rs.4.56 crores.

**This being a statutory payment by the Board is allowed for the year 2006-07.**

## 2.20 True up of ARR for 2006-07

2.20.1 In view of the above analysis, the true up revenue requirement for the year 2006-07 is as per details given in Table 2.10.

**Table 2.10: Revenue Requirement - 2006-07**

(Rs. crores)

Sr. No.	Item of Expense	Approved by the Commission in TO for 2006-07	Approved by the Commission in TO for 2007-08	Actuals as per Annual Accounts for 2006-07	Final approval by the Commission
1	2	3	4	5	6
1	Cost of fuel	2258.15	2312.46	2448.53	2355.45
2	Cost of power purchase	2813.34	3891.53	4327.01	4327.01
3	Employee cost	1559.04	1558.40	1751.48	1558.40
4	R&M expenses	263.35	254.53	284.49	259.99
5	A&G expenses	57.84	58.54	59.20	59.81
6	Depreciation charges	649.00	626.70	605.00	605.00
7	Interest charges	858.69	537.86	884.29	439.98
8	Return on equity	412.46	412.46	412.46	412.46
9	Other debits and extraordinary items			7.68	7.68
10	Fringe Benefit Tax		4.40	4.56	4.56
11	<b>Total revenue requirement</b>	<b>8871.87</b>	<b>9656.88</b>	<b>10784.70</b>	<b>10030.34</b>
12	i) Less expenses disapproved due to higher T&D loss				487.33
	ii) Add incentive for higher thermal generation				185.35
13	<b>Revenue requirement (11-12)</b>	<b>8871.87</b>	<b>9656.88</b>	<b>10784.70</b>	<b>9728.36</b>
14	Less: non tariff income	320.00	355.97	402.57	417.49
15	<b>Net revenue requirement (13-14)</b>	<b>8551.87</b>	<b>9300.91</b>	<b>10382.13</b>	<b>9310.87</b>
16	Revenue from tariff	8270.82	8790.39	8325.20	8697.41
17	<b>Gap (15-16)</b>	<b>281.05</b>	<b>510.52</b>	<b>2056.90</b>	<b>613.46</b>
18	Gap for the year 2005-06	-385.24	-173.95		(173.95)
19	<b>Total gap (17+18)</b>	<b>-104.19</b>	<b>336.57</b>		<b>439.51</b>
20	Adjustment of excess subsidy for SC DS consumers	113.00			
21	Gap after adjustment of excess subsidy	8.81			
22	Regulatory Asset	8.81			
23	<b>Energy sales (MU)</b>	<b>26064</b>	<b>27769</b>	<b>27896</b>	<b>27656</b>

From the above true up for the year 2006-07, it is noted that there is a gap of Rs.613.46 crores against a gap of Rs.510.52 crores determined earlier by the Commission in the review of 2006-07 in the Tariff Order dated September 17, 2007. The net deficit for the year 2006-07 after adjusting a surplus of Rs.173.95

**crores carried over from the year 2005-06 works out to Rs.439.51 crores against Rs.336.57 crores determined earlier. This deficit is being carried forward for adjustment in the next year.**

# Chapter 3

## Review for the Year 2007-08

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### 3.1 Background

3.1.1 The Tariff Order of the Commission for 2007-08 contained its approvals of costs and revenue projections based on the Board's estimates for different items of cost to be incurred and revenue likely to be earned by it during the year. The Board has in its ARR for the year 2008-09 now furnished revised estimates for 2007-08.

3.1.2 There are differences in certain items of cost as well as revenues between the approvals granted by the Commission and the revised estimates now furnished by the Board. The Commission considers it appropriate and fair to re-visit and review the approvals granted by it in the Tariff Order (2007-08) with reference to the revised estimates now made available by the Board but without altering the principles and norms adopted earlier. These matters are discussed in the succeeding paragraphs.

### 3.2 Energy Demand (Sales)

#### 3.2.1 Metered Energy Sales

The Board has re-estimated energy sales to metered categories for 2007-08 on the basis of actuals for the first 6 months (April 07 to Sept 07) and by applying category wise half yearly cumulative annual growth rate (CAGR) of the second half year for the period 2003-04 to 2006-07, to the corresponding actual category wise sales in the second half of FY 06-07.

On the above lines, the Commission has now worked out the estimated sales to metered categories as 19992 MU for the year 2007-08 (detailed in Table 3.1) as against 20085 MU projected by the Board.

**Table 3.1: Estimated Energy Sales During 2007-08**

(MU)

S.No.	Category	Sales during 2nd half of 03-04 (actuals)	Sales during 2nd half of 06-07 (actuals)	3 year CAGR 2nd half 03-04 to 2nd half 06-07	Sales during 1st half of 07-08 (actuals)	Estimated sales during 2nd half of 07-08 {4+(4x5)}	Estimated sales for 07-08 (6+7)
1	2	3	4	5	6	7	8
1	Domestic	2544	2800	3.25%	3382	2891	6273
2	Non-Residential	634	833	9.53%	964	912	1876
3	Small Power	365	363	(-).0.18%	370	362	732
4	Medium Supply	805	807	0.08%	756	808	1564
5	Large Supply	3551	4283	6.45%	4266	4559	8825
6	Public Lighting	55	69	7.85%	65	74	139
7	Bulk Supply	218	225	1.06%	245	227	472
8	Railway Traction	37	52	12.01%	53	58	111
<b>9</b>	<b>Metered sales (within state)</b>						<b>19992</b>

3.2.2 The Commission has retained sales to common pool consumers at 303 MU as indicated by the Board. In the Board's ARR for the year 2008-09, it has been mentioned that Himachal Pradesh's share in RSD and royalty in Shanani are not included in its estimation of the outside State sales of 1615 MU for the year 2007-08. The Commission has, therefore, retained the outside State sales at 1615 MU as reported by the Board.

The metered energy sales projected by the Board during determination of ARR for the year 2007-08, approval granted by the Commission in the Tariff Order, the revised estimates furnished by the Board and metered energy sales now approved by the Commission are given in Table 3.2.

**Table 3.2: Metered Energy Sales - 2007-08**

(MU)

Sr. No.	Category	Projected by PSEB during determination of ARR 07-08	Approved by the Commission in T.O. 07-08	Revised Estimates by PSEB in ARR 08-09	Now approved by the Commission (MU)
1	2	3	4	5	7
1	Domestic	5,897	5,926	6,302	6,273
2	Non-Residential	1,774	1,748	1,877	1,876
3	Small Power	712	655	736	732
4	Medium Supply	1,560	1,649	1,568	1,564
5	Large Supply	8,522	8,412	8,877	8,825
6	Public Lighting	145	143	141	139
7	Bulk Supply and Railway traction	603	630	585	583
8	<b>Metered sales (within State)</b>	<b>19,213</b>	<b>19,163</b>	<b>20,085</b>	<b>19,992</b>
9	Common pool	300	300	303	303
10	Outside State sales	952	827	1,615	1,615
11	<b>Total (8+9+10)</b>	<b>20,465</b>	<b>20,290</b>	<b>22,003</b>	<b>21,910</b>

**Metered sales of 19,992 MU within the state, common pool sales of 303 MU and outside State sales of 1615 MU are now approved by the Commission as per details shown in Table 3.2.**

3.2.3 **AP Consumption:** The Commission in its Tariff Order of 2007-08 approved AP consumption as 8645 MU after allowing a normative growth of 5% over the revised approved consumption of 8233 MU for the previous year (2006-07). While doing so, the Commission observed that the methodology of computing AP consumption on the basis of sample meter readings and connected load needs further refinement. The Commission had suggested the following steps to the Board towards this end:

- making the sample more representative of the proportion of submersible to conventional mono-block pumps;
- capturing agro-climatic and hydrological factors and other local variations more accurately, possibly, on the lines suggested by PAU;

- providing an adequate number of sample meters in each division and ensuring that the number of faulty non-functional meters does not exceed a prescribed norm;
- ensuring monthly reporting of consumption to the Commission by the Board.

The Board has, in the ARR for 2008-09, reported a revised AP consumption of 9537 MU (both metered and unmetered) based on sample meter readings and metered sales. Subsequently, in its letter dated 20.5.2008, the Board further revised AP consumption to 10012 MU against an average connected load of 5351380 kW. The increase has been explained to be on account of deficient rainfall in the kharif season, increased load owing to regularization of connected load under the Voluntary Disclosure Schemes (VDS) launched during 2006-07 and 2007-08 and the increasing use of submersible pumps.

The Commission observes that the Board, in its letter of 17.4.2008, has informed that it is yet to begin validation of basic data in respect of AP feeders and co-relate results with consumption recorded from sample meters installed on these feeders. The Board has further informed that:

- nearly 38% of the sample meters were non functional as on 31.12.2007;
- average supply of electricity per day for AP feeders in 2007-08 was about 7 hours as compared to 9 hours, on an average, in 2006-07.
- the target of new agriculture pumpset connections to be released in 2007-08 was reduced from 60000 to 40000 in 2007-08 against which only 9509 connections had actually been released by the end of January 2008.

On the basis of data and information supplied by the Board, the Commission notes that:

- The Board does not appear to have taken any follow up action on further refining the computation of AP consumption as suggested in the last Tariff Order.
- 38% of the sample meters are not functioning which is a disturbingly high figure that creates doubts about the correct estimation of AP consumption.
- Average per day supply hours to AP in 2007-08 was less by about 23% as compared to 2006-07.
- Only 9509 AP connections were released upto January 2008 and the total number is not likely to exceed 11000 upto March 2008.



- The verified actual connected load of the pumpsets on which sample meters have been installed is not available.
- Lack of transparency in computing figures of load increase on account of VDS or release of additional connections and the load taken into account in working out the AP consumption factor.

The Commission observes that assessment of AP consumption is based on the calculation of AP consumption factor which in turn is worked out from sample meter readings and the connected load of pumps etc. on which these meters are installed. However, there has admittedly been no progress in verification of the latter aspect and a complete lack of transparency in reporting increased connected load be it on account of VDS or additional connections released. It is also relevant to note that the AP consumption factor in 2007-08 in the case of metered pumpsets at 1776 kWh/kW varies substantially from the consumption factor of 1870 kWh/kW in respect of unmetered connections. From the details furnished by the Board, it is also evident that total average connected load in the case of AP consumers has increased by 8.81% between 2006-07 and 2007-08 whereas AP consumption primarily computed on the basis of sample meter readings has increased by as much as 21.68% even when there is a reduction in the daily hours of supply in 2007-08 as compared to the previous year.

For all the reasons highlighted above, the Commission is not convinced of the correctness of the AP consumption for 2007-08 reported initially as 9537 MU and subsequently revised to 10012 MU. In the circumstances, the Commission is inclined to consider revision of the estimate of AP consumption in 2007-08 by applying an increase in connected load factor of 8.81% to AP consumption of 8235 MU determined for the year 2006-07. Accordingly, AP consumption in 2007-08 comes to 8960 MU.

The Commission, at the same time, notes that the Board has very fairly offered that in the event of there being any doubt as to the accuracy of consumption figures reported on the basis of sample meters, it would be only too happy to fund a study that would go into all aspects of the methodology adopted by the Board including the accuracy of the figures reported. The Commission is of the view that given the doubts that have arisen in the computation of AP consumption, it is perhaps necessary that a study on the lines indicated by the Board be undertaken. The Commission will appoint an

independent agency for this purpose and ensure that its results are available at the time of determining AP consumption in the following Tariff Order.

**Accordingly, the Commission approves total AP consumption for 2007-08 at 8960 MU.**

### 3.3 Transmission and Distribution Losses (T&D Losses)

The Board in its ARR for the year 2008-09 has reported T&D loss level of 22.70% for 2007-08 against its own projection of 22.00% in the data submitted to the Commission at the time of determination of ARR of 2007-08. For the reasons discussed in the Tariff Order of 2007-08, the Commission retains target T&D loss level at 19.50% for that year.

### 3.4 Energy Requirement

The total energy requirement to meet the demand of the system is the sum of estimated metered energy sales including common pool and outside State sales, estimated AP sales and T&D losses. The total energy requirement for 2007-08 projected during determination of ARR of 2007-08, approved by the Commission in its Tariff Order and revised estimates furnished by the Board in the ARR of 2008-09 and now approved by the Commission is given in Table 3.3.

**Table 3.3: Energy Requirement for the year 2007-08**

(MU)					
Sr. No.	Particulars	Projected by PSEB during determination of ARR 07-08	Approved by the Commission in T.O. 07-08	Revised Estimates by PSEB	Now approved by the Commission
1	2	3	4	5	6
1	Metered Sales within the State	19,213	19,163	20,085	19,992
2	Agriculture Consumption	8,939	8,645	9,537	8,960
<b>3</b>	<b>Total sales within State (1+2)</b>	<b>28,152</b>	<b>27,808</b>	<b>29,622</b>	<b>28,952</b>
4	Common pool sales	300	300	303	303
5	Outside State sales	952	827	1,615	1,615
<b>6</b>	<b>Total sales</b>	<b>29,404</b>	<b>28,935</b>	<b>31,540</b>	<b>30,870</b>
7	T&D Losses on item (3)				
(a)	Percentage	22.00%	19.50%	22.70%	19.50%
(b)	MUs	7,940	6,736	8,699	7,013
<b>8</b>	<b>Total energy input required</b>	<b>37,344</b>	<b>35,671</b>	<b>40,239</b>	<b>37,883</b>

The revised energy requirement for 2007-08 with T&D loss of 19.50% is determined as 37883 MU, which has to be met from Board's own generation (thermal & hydel) including share from BBMB, purchases from Central Generating Stations and other sources.

### 3.5 PSEB's Own Generation

3.5.1 **Thermal Generation:** The Board has estimated the gross generation for 2007-08 based on actual generation of the respective plants up to Sept, 2007 and taken the revised monthly generation target for the second half of 2007-08 into consideration. The Commission has, however, obtained the actual gross generation of different stations for the year 2007-08 till the end of March, 2008.

The station-wise generation projected by the Board during determination of ARR of 2007-08, generation approved by the Commission in its Tariff Order for that year, revised estimates now supplied by the Board and approved by the Commission on the basis of validated generation figures ending March, 2008 is given in Table 3.4.

**Table 3.4: Thermal Generation 2007-08**

Sr. No.	Station	(MU)							
		Projected by PSEB during determination of ARR for 07-08		Approved by the Commission T.O. 07-08		R.E. by PSEB in ARR 08-09		Now approved by the Commission	
		Gross	Net (Aux Con)	Gross	Net (Aux Con)	Gross	Net (Aux Con)	Gross	Net (Aux Con)
1	2	3	4	5	6	7	8	9	10
1	GNDTP	2540	2248 (11.50%)	2769	2464 (11.00%)	2884.57	2549.09 (11.63%)	3008	2677 (11.00%)
2	GGSTP	9200	8418 (8.50%)	9510	8702 (8.50%)	9356.18	8553.42 (8.58%)	9806	8972 (8.50%)
3	GHTP	4500	4095 (9.00%)	3542	3223 (9.00%)	3418.04	3109.91 (9.01%)	3509	3193 (9.00%)
	<b>Total</b>	<b>16240</b>	<b>14761</b>	<b>15821</b>	<b>14389</b>	<b>15658.79</b>	<b>14212.42</b>	<b>16323</b>	<b>14842</b>

The R.E. figures in respect of GHTP are for Stage I and II combined.

Except in the case of GHTP, gross generation from the other two plants is higher than the levels approved by the Commission. The gross generation at GHTP is lower due to late commissioning of its 3<sup>rd</sup> Unit.

**Accordingly, the Commission approves gross thermal generation for the year 2007-08 at 16323 MU, based on actuals, against 15658.79 MU projected by the Board.**

### Auxiliary Consumption & Net Generation

The Commission, in its Tariff Order for 2007-08 approved auxiliary consumption for GGSTP and GHTP at 8.50% and 9.00% respectively as per CERC norms. In the case of GNDTP such consumption was fixed at 11.00% in line with CERC norm for the Tanda station of NTPC, which like GNDTP has 4 units of 110 MW each. The revised estimates of auxiliary consumption reported by the Board are on the higher side as compared with the levels approved by the Commission. The Commission is inclined to continue adoption of normative auxiliary consumption as approved earlier.

**The Commission, thus, retains the auxiliary consumption levels as approved in the Tariff Order for 2007-08. Net thermal generation on this basis works out to 14842 MU as shown in Table 3.4.**

3.5.2 **Hydel Generation:** The Board has submitted the revised estimates of hydel generation for 2007-08 in the ARR of 2008-09. On enquiry by the Commission, the Board has in its letter dated 20.05.2008 furnished the actual plant-wise hydel generation figures for the year 2007-08 which are accepted by the Commission. The station-wise generation projected by the Board during determination of ARR for 2007-08, generation approved by the Commission in its Tariff Order and the revised estimates submitted by the Board in the ARR for 2008-09 and actuals accepted by the Commission is given in Table 3.5.

**Table 3.5: Hydel Generation - 2007-08**

(MU)					
Sr. No.	Station	Projected by PSEB during determination of ARR 07-08	Approved by Commission in T.O. 07-08	Revised Estimates by PSEB in ARR 08-09	Now Accepted by the Commission
1	2	3	4	5	6
1	Shanan	529	529	517	540
2	UBDC	446	446	380	428
3	RSD	1568	1568	1484	1539
4	MHP	1026	1026	1399	1362
5	ASHP	657	642	790	710
6	Micro Hydel	7	7	8	7
7	<b>Total Own Hydro</b>				
a)	<b>Gross</b>	<b>4233</b>	<b>4218</b>	<b>4578</b>	<b>4586</b>
b)	<b>Net</b>	<b>4203<sup>1</sup></b>	<b>4059<sup>2</sup></b>	<b>4404<sup>4</sup></b>	<b>4425<sup>6</sup></b>
8	<b>PSEB's Share from BBMB</b>				
a)	Gross	4204	4204	4653	4325
	<i>Add: Common Pool share</i>	300	300	303	303
	<i>Less: External losses</i>	161	146	183	168
b)	<b>Net</b>	<b>4343</b>	<b>4358<sup>3</sup></b>	<b>4773<sup>5</sup></b>	<b>4460<sup>7</sup></b>
9	<b>Total hydro (Net)</b>	<b>8546</b>	<b>8417</b>	<b>9177</b>	<b>8885</b>

#### Notes

1. Net of auxiliary consumption and transformation losses (30 MU).
2. Net of HP share (free) in RSD @ 4.6% (72 MU), auxiliary consumption @ 0.5% for RSD (having static exciters) and for others @ 0.2% (13MU) and transformation losses @ 0.5% (21 MU) as per CERC Norms and net of HP share in Shanana (53 MU).
3. BBMB share is net of external losses based on the actual level of losses in 2005-06 @ 3.47%.
4. Net of Auxiliary Consumption and transformation losses (53 MU), HP Royalty in Shanana (53 MU) and HP share in RSD (68 MU).
5. BBMB share is net of external losses @ 3.93% on gross availability of the Board share, excluding common pool share.
6. Net of HP share (free) in RSD @ 4.6 % (71 MU), auxiliary consumption @ 0.5% for RSD generation of 1539 MU and UBDC Stage-I generation of 143 MU (having static exciters) and for others @ 0.2% (14 MU), transformation losses @ 0.5% (23 MU) and HP Royalty in Shanana (53 MU).
7. Net availability from BBMB for 2007-08 after netting off external transmission losses @ 3.89% (as per actual in 2006-07) (168 MU) on 4325 MU from gross availability of 4628 (4325+303) MU from BBMB.

**The Commission, thus, approves revised hydel generation for the year 2007-08 at 4425 MU (net) from own hydel stations and 4460 MU (net) as share from BBMB as shown in Table 3.5.**

### **3.6 Power Purchase**

3.6.1 To meet the energy demand, the Board projected power purchase at 14037 MU (net) during determination of ARR for 2007-08. The Commission in its Tariff Order approved power purchase at 12865 MU (net).

3.6.2 The Board has now supplied revised estimates of power purchase for 2007-08 at 16850 MU (net). The approved total energy requirement during 2007-08 including common pool and outside State sales and T&D losses is determined as 37883 MU as discussed in para 3.4. The energy available from the Board's own generating stations including its share from BBMB is 23727 (14842+8885) MU as approved in para 3.5. The balance energy requirement works out to 14156 MU (net), which has to be met through purchases from central generating stations and other sources.

**The Commission, accordingly, approves the revised power purchase at 14156 MU (net) for 2007-08.**

### **3.7 Energy Balance**

3.7.1 Details of energy requirement and energy availability projected during determination of ARR for 2007-08, approved by the Commission in its Tariff Order, revised estimates supplied by the Board in the ARR of 2008-09 and now approved by the Commission is given in Table 3.6.

**Table 3.6: Energy Balance - 2007-08**

(MU)

Sr. No.	Particulars	As per PSEB during determination of ARR 07-08	Approved by the Commission in T.O. 07-08	Revised Estimates by PSEB in ARR 08-09	Now approved by the Commission
1	2	3	4	5	6
<b>A) Energy Requirement</b>					
1	Metered Sales	19213	19163	20085	19992
2	Sales to AP consumers	8939	8645	9537	8960
3	Total Sales within the State	28152	27808	29622	28952
4	Loss percentage	22.00%	19.50%	22.70%	19.50%
5	T&D losses	7940	6736	8699	7013
6	Sales to Common pool consumers	300	300	303	303
7	Outside State Sales	952	827	1615	1615
<b>8</b>	<b>Total requirement</b>	<b>37344</b>	<b>35671</b>	<b>40239</b>	<b>37883</b>
<b>B) Energy Available</b>					
9	Own generation (Ex-bus)				
10	Thermal	14761	14389	14212	14842
11	Hydro	4203	4059	4404	4425
12	Share from BBMB (incl.share of common pool consumers)	4343 (common pool = 300)	4358 (common pool = 300)	4773 (common pool = 303)	4460 (common pool = 303)
13	Purchase net	14037	12865	16850	14156
<b>14</b>	<b>Total Available</b>	<b>37344</b>	<b>35671</b>	<b>40239</b>	<b>37883</b>

### 3.8 Fuel Cost

3.8.1 The Commission in its Tariff Order of 2007-08 approved fuel cost of Rs.2404.28 crores for gross thermal generation of 15821 MU. The Board in its ARR of 2008-09 has revised estimates of fuel cost to Rs.2600.81 crores for gross thermal generation of 15658.79 MU based on calorific value and price of coal / oil for 2007-08 as given in Table 3.7.

**Table 3.7: Calorific Value and Price of Coal and Oil as submitted by the Board for 2007-08**

Sr.No.	Station	As Submitted by the Board					
		Calorific Value of Coal (K.Cal/Kg)	Calorific Value of Oil (K.Cal/Ltr)	Price of Oil (Rs./KL)	Price of Coal including transit loss (Rs./MT)	Transit Loss	Price of Coal excluding transit loss (calculated) (Rs./MT)
1	2	3	4	5	6	7	8
1	GNDTP	3883.84	9978.00	22506.00	2321.43	2.00%	2275.00
2	GGSTP	3785.00	10000.00	21064.73	2297.85	2.00%	2251.90
3	GHTP	4022.00	9400.00	22654.00	2388.00	2.00%	2340.00

Fuel cost being a major item of expense, the Commission thought it prudent to get the same verified. On verification the Commission noted that the calorific value (CV) furnished by the Board are Net Calorific Value as fired (NCV) and not Gross Calorific Value as fired (GCV). The actual weighted average GCV was obtained from the Board along with actual price of coal and coal transit loss for 2007-08 up to Jan., 2008. Similarly, the Board supplied details of actual price of oil and CV of oil for 2007-08 up to the end of Jan., 2008. These values have been validated and finally accepted as indicated in Table 3.8.

**Table 3.8: Calorific Value and Price of Coal and Oil as approved by the Commission for 2007-08**

Sr.No.	Station	As approved by the Commission					
		Calorific Value of Coal (K.Cal/Kg)	Calorific Value of Oil (K.Cal/Ltr)	Price of Oil (Rs./KL)	Price of Coal including transit loss (Rs./MT)	Transit Loss	Price of Coal excluding transit loss (calculated) (Rs./MT)
1	2	3	4	5	6	7	8
1	GNDTP	4174.00	9978.00	22819.00	2312.61	1.97%	2267.05
2	GGSTP	3963.00	10000.00	22996.00	2341.98	2.44%	2284.83
3	GHTP	4167.00	9400.00	19479.00	2354.48	1.76%	2313.04

3.8.2 It has also come to the notice of the Commission that a substantial quantity of coal received from the captive mines of the Board was used during 2007-08, the price of which is on F.O.R. destination basis. On enquiry by the Commission, the Board intimated in its letter dated 20.5.2008 that 955896.87 MT, 1842539.00 MT and 830668.00 MT of Captive mine (PANAM) coal was used for GNDTP, GGSTP and GHTP respectively during 2007-08. The price of coal and corresponding calorific values given in the ARR and subsequent letter dated 12.04.2008 of the Board (as given in Table 3.7) and those validated by the Commission (as given in Table 3.8) are

weighted average values of coal, including PANAM coal. No transit loss has been allowed for PANAM coal while arriving at fuel cost as prices according to the contract are on F.O.R. destination basis.

3.8.3 The Commission has now approved revised gross thermal generation of 16323 MU (3008 MU for GNDTP, 9806 MU for GGSTP and 3509 MU for GHTP) as discussed in para 3.5.1. The fuel cost for different stations corresponding to generation now approved has been worked out, based on the parameters adopted by the Commission in its Tariff Order of 2007-08 (except coal transit loss) and considering price and calorific value of coal and oil as validated and accepted by the Commission and detailed in Table 3.9. The Commission allows 2% transit loss for each of the stations for coal (other than PANAM coal) as earlier approved in Tariff Order 2007-08.

**Table 3.9: Approved Fuel Cost - 2007-08**

Sr. No.	Item	Derivation	Unit	Approved for 2007-08			
				GNDTP	GGSTP	GHTP	Total
1	2	3	4	5	6	7	8
1	Generation	A	MU	3008	9806	3509	16323
2	Heat Rate	B	k.cal / kWh Generated	3000	2500	2500	
3	Specific oil consumption	C	Milli litre / kwh	3.50	2.00	2.00	
4	Calorific value of oil	D	k.cal / litre	9978	10000	9400	
5	Calorific value of coal	E	k.cal / kg	4174.00	3963.00	4167.00	
6	Overall heat	$F = (A \times B)$	G.cal	9024000	24515000	8772500	
7	Heat from oil	$G = (A \times C \times D)/1000$	G.cal	105048	196120	65969	
8	Heat from coal	$H = (F-G)$	G.cal	8918952	24318880	8706531	
9	Oil Consumption	$I=(G \times 1000)/D$	KL	10528	19612	7018	
10	Transit loss of coal	J	(%)	2.0	2.0	2.0	
11	Consumption of Coal excluding transit loss	$K=(H \times 1000)/E$	MT	2136788	6136482	2089400	
12	Quantity of PANAM Coal	L	MT	955897	1842539	830668	
13	Quantity of Coal other than PANAM Coal	$M=K - L$	MT	1180891	4293943	1258732	
14	Consumption of Coal other than PANAM Coal including transit loss.	$N=M/(1-J/100)$	MT	1204990	4381575	1284421	
15	Total Quantity of Coal Required	$O=L+N$	MT	2160887	6224114	2115089	
16	Cost of oil per KL	P	Rs. / KL	22819.00	22996.00	19479.00	
17	Cost of coal per MT	Q	Rs. / MT	2267.05	2284.83	2313.04	
18	Total cost of oil	$R=P \times I / 10^7$	Rs.crores	24.02	45.10	13.67	82.79
19	Cost of coal	$S=Q \times O/10^7$	Rs.crores	489.88	1422.10	489.23	2401.21
20	<b>Total Fuel cost</b>	<b>T=R+S</b>	<b>Rs.crores</b>	<b>513.90</b>	<b>1467.20</b>	<b>502.90</b>	<b>2484.00</b>



**The Commission, therefore, approves the revised fuel cost at Rs.2484.00 crores for the now approved generation of 16323 MU.**

### **3.9 Power Purchase Cost**

3.9.1 The Commission in its Tariff Order of 2007-08 approved a cost of Rs.3410.01 crores for purchase of 13401 MU (gross) while the Board has in its ARR for the year 2008-09 given revised estimates of Rs.5619.30 crores for purchase of 17691 MU (gross). On enquiry by the Commission, the Board has intimated in its letter dated 20.05.2008 that actual power purchase cost in 2007-08 is Rs.6015.66 crores for purchase of 17807 MU (gross).

3.9.2 As discussed in para 3.6, the requirement of 14156 MU (net) has to be met through purchases from central generating stations and other sources. The transmission loss external to the Board's system has to be added to arrive at the quantum of gross energy to be so purchased. The Board has now stated that external losses on power purchase during 2007-08 have been worked out on the following basis:-

- (a) Actual losses for the first six months of the year;
- (b) Average of actual Northern Region losses for the remaining six months of the year.
- (c) Losses from power received from the eastern region and through trading have been estimated at 7.9%.

The Commission, however, decides to allow the external losses @ 4.63% which were actually incurred and claimed by the Board in 2006-07. After adding 4.63% losses, the gross energy required to be purchased works out to 14843 MU (14156MU + external losses 687 MU).

The pro-rata amount for purchase of 14843 MU works out to Rs.5014.34 (6015.66 X 14843 / 17807) crores.

**The Commission, therefore, approves the revised cost of Rs.5014.34 crores for the now determined power purchase of 14843 MU gross.**

### **3.10 Employee Cost**

- 3.10.1 As per the information supplied in the ARR of 2007-08, the Board had claimed employee cost of Rs.1973 crores for the year 2007-08 against which the Commission had approved a sum of Rs.1661.41 crores in the Tariff Order. The Board has now projected gross employee cost at Rs.2185.47 crores and net cost of Rs.2061.95 crores after capitalizing a sum of Rs.125 crores in the revised estimate for 2007-08 which includes a sum of Rs.1.48 crores on account of prior period expenses. The prior period expenses are not being allowed as the same will be considered in true up after audited accounts for the year 2007-08 are available.
- 3.10.2 The Commission has repeatedly observed that the employee cost of the Board is one of the highest in the country and has recommended that the Board needs to take effective steps to contain this cost. This issue has already been dealt with in detail in the Tariff Orders from 2002-03 to 2007-08. The Commission is thus unable to accept the revised projection of employee cost reported by the Board and is of the view that it would be more appropriate to determine such cost as per its Regulations.
- 3.10.3 The Commission had approved employee cost of Rs.1461.78 crores for 2005-06 after allowing cumulative increase of 14.69% in WPI from March 2003 to March 2006. According to Regulation 28 (4) (a) of the PSERC Tariff Regulations, O&M expenses as approved for the year 2005-06 are to be considered as the base figure for determination of such expenses in the subsequent years. The regulation further provides that the O&M expenses will be adjusted according to the annual variation in the rate of WPI. The WPI registered an increase of 6.68% in 2007-08. Accordingly, the employee cost allowable for 2007-08 works out to Rs.1662.50 crores after allowing enhancement of 6.68% over the approved cost of Rs.1558.40 crores for 2006-07.
- 3.10.4 The Board, in its letter dated May 16, 2008 had stated that O&M expenses which include employee cost be also allowed with reference to the cost of assets added during the year on pro-rata basis from the date of commissioning in accordance with Regulation 28 (6) of the PSERC Tariff Regulations.
- 3.10.5 The Commission notes that Regulation 28 (6) of the PSERC Tariff Regulations does provide for allowing O&M expenses for fixed assets added during the year on pro-rata basis from the date of commissioning. However, for the reasons already elaborated in para 2.10.4 of this Order, the Commission finds no justification in allowing any additional employee cost.

**The Commission, therefore, approves employee cost of Rs.1662.50 crores for the year 2007-08.**

### **3.11 Repair and Maintenance (R&M) expenses**

3.11.1 In the data supplied in the ARR of 2007-08, the Board had projected R&M expenses at Rs.295.66 crores against which the Commission had approved expenses to the extent of Rs.271.35 crores. The Board in the ARR of 2008-09 has revised R&M expenses to Rs.339.89 crores net of capitalization of Rs.3.45 crores and prior period expenses of Rs.0.10 crores. The prior period expenses are not being allowed as the same will be considered in the true up. According to Regulation 28 (4) (a) of the PSERC Tariff Regulations, O&M expenses as approved for the year 2005-06 are to be considered as base for determination of O&M expenses for the following years. The regulation further provides that the O&M expenses shall be adjusted according to variation in the rate of WPI per annum to determine O&M expenses for the subsequent years. The WPI registered a growth of 6.68% during the period from April 2007 to March 2008 as indicated in para 3.10. The approved R&M expenses for the year 2006-07 are Rs.259.99 crores and after allowing WPI increase of 6.68% over these expenses, Rs.277.36 crores are allowable on this account for assets worth Rs.15,413.59 crores in service as on April 1, 2007.

3.11.2 The Board, in its letter dated May 16, 2008 had stated that O&M expenses which include R&M cost be allowed for the assets added during the year on pro-rata basis from the date of commissioning in accordance with Regulation 28 (6) of the PSERC Tariff Regulations.

3.11.3 The Commission observes that the Regulations do not provide any norm for allowing O&M expenses on the assets added during the year. In the absence of norms that can be readily adopted, the Commission allows R&M expenses for assets added during the year based on the percentage of R&M expenses allowed on existing assets as in para 3.11.1. On this basis, the average rate of R&M expenses work out to 1.80% and by applying this rate to the cost of assets added during the year amounting to Rs.2843.22 crores, the allowable expenses comes to Rs.25.59 crores, assuming that the additional assets remained in service for six months on an average during 2007-08.

3.11.4 Total R&M expenses allowable for 2007-08 on the above basis work out to Rs.302.95 (277.36+25.59) crores for 2007-08 against Rs.339.99 crores claimed by the Board.

**The Commission, thus, approves R&M expenses at Rs.302.95 crores for 2007-08.**

### **3.12 Administration and General (A&G) expenses**

3.12.1 The Commission, in the Tariff Order of 2007-08 had approved A&G expenses of Rs.62.41 crores for 2007-08 by allowing increase of 6.61% over the approved expenses on this account of Rs.58.54 crores for 2006-07. The enhancement of 6.61% was equivalent to increase in WPI for the year 2006-07 since the data for the year 2007-08 was not available at the time of finalization of the Tariff Order of 2007-08.

3.12.2 In the ARR, the Board has revised A&G expenses to Rs.93.22 crores with an estimated capitalization of Rs.21.60 crores and has, further, claimed prior period expenses of Rs.0.32 crores. The prior period expenses are not being allowed as the same will be considered at the time of true up. Accordingly, net A&G expenses claimed by the Board amount to Rs.71.30 crores. Thus, an increase of 17.97% is sought to be justified on account of normative increase in inflation and higher employee training expenses. The Board has revised the estimate of training expenses to Rs.7.09 crores against the initial estimate of Rs.22.12 crores. To support its claim, the Board has referred to the National Training Policy for the Power Sector prepared by the Ministry of Power, Government of India, which specifies that expenditure on training may be considered in tariff computation by the regulatory authorities.

3.12.3 In the Tariff Order of 2007-08, the Commission had appreciated the initiative of the Board in this direction but was unable to approve the proposed expenditure on this account for want of relevant details. The Commission notes that actual expenses incurred (Rs.0.21 crores) on this account, in the first half of 2007-08 are very modest. In this situation, the Commission is inclined to determine A&G expenses as per provisions of the Regulations.

3.12.4 There has been a growth of 6.68% in WPI for the period April 2007 to March 2008 as mentioned in para 3.10. On this basis and in accordance with the PSERC Tariff Regulations, revised A&G expenses, allowable for 2007-08, work out to Rs.63.81 crores, by allowing an increase of 6.68% on the approved A&G expenses of Rs.59.81 crores for 2006-07.

3.12.5 The Board has also claimed A&G expenses on the cost of additional assets created during the year in terms of Regulation 28 (6) of the PSERC Tariff Regulations.

3.12.6 The Board has estimated that assets to the extent of Rs.2843.22 crores would be added during the year 2007-08. The A&G expenses worked out in para 3.12.4 amount to 0.41% of the existing assets which when applied to assets added during the year valued at Rs.2843.22 crores results in allowable additional A&G expenses of Rs.5.83 crores assuming that these assets were in service for six months of 2007-08.

**Total A&G expenses allowable to the Board on the above basis for the year 2007-08 is Rs.69.64 (63.81+5.83) crores which the Commission approves.**

### 3.13 Depreciation charges

The Board had projected depreciation charges at Rs.696.81 crores in the ARR for the year 2007-08. The Commission approved depreciation charges of Rs.696.82 crores in the Tariff Order. In the review of 2007-08, the Board has revised depreciation charges to Rs.640.11 crores for assets of Rs.15413.59 crores as on April 01, 2007. The function-wise depreciation rates for 2006-07 are worked out from the information supplied by the Board and the same rates of depreciation are applied in the year 2007-08. The actual depreciation charges work out to Rs.640.06 crores as detailed below in Table 3.10.

**Table 3.10: Depreciation charges - 2007-08**

Sr.No.	Item	(Rs.crores)			(Rs.crores)		
		Assets as on April 1, 2006	Depreciation charges for 2006-07	% Rate	Assets as on April 1, 2007	Depreciation charges for 2007-08	% Rate
1	2	3	4	5	6	7	8
1	Thermal	3,114.43	140.64	4.52%	2,915.31	131.77	4.52%
2	Hydro	5,669.15	131.22	2.31%	5,774.80	133.40	2.31%
3	Internal combustion	2.68	0.00	0.00%	2.68	0.00	0.00%
4	Transmission	1,731.10	86.32	4.99%	1,898.62	94.74	4.99%
5	Distribution	4,124.72	244.99	5.94%	4,685.44	278.32	5.94%
6	Others	136.74	1.83	1.34%	136.74	1.83	1.34%
	<b>Total</b>	<b>14,778.82</b>	<b>605.00</b>	<b>4.09%</b>	<b>15,413.59</b>	<b>640.06</b>	<b>4.15%</b>

**The Commission, therefore, approves depreciation charges of Rs.640.06 crores for 2007-08.**

### 3.14 Interest and Finance charges

3.14.1 The Board had claimed interest and finance charges of Rs.1334.82 crores for 2007-08 while the Commission had approved net interest and finance charges of Rs.693.75 crores in the Tariff Order. While computing allowable expenses on this account, a sum of Rs.389.92 crores was disallowed being interest on diverted funds. The Board

in the ARR of 2008-09 has revised the net interest and finance charges for 2007-08 to Rs.1087.32 crores inclusive of finance charges of Rs.37.50 crores. The amount claimed is net of capitalization of interest charges of Rs.80.17 crores.

3.14.2 The Board has provided details of interest claim of Rs.976.50 crores as under:-

<b>Particulars</b>	<b>Rs. crores</b>
Institutional loans	518.52
Working capital loans	371.99
Government loans	85.99
<b>Total</b>	<b>976.50</b>

The Commission notes that the Board has revised interest charges on Government loans to Rs.85.99 crores in the ARR against Rs.375.91 crores projected earlier while the total amount of interest has been worked out after adjustment of interest of Rs.289.92 crores disallowed by the Commission in the year 2006-07. These issues are discussed in detail in the succeeding paras.

3.14.4 **Investment Plan:** The Commission while approving an investment plan of Rs.2500 crores in the Tariff Order of 2007-08 had also observed that the Board had on an average absorbed an expenditure of Rs.1500 crores approximately every year on this account but given the Board's need to make substantial investments in strengthening the transmission and distribution network, an investment plan of Rs. 2500 crores for the year had been permitted. As per data furnished by the Board in its letter dated April 12, 2008, actual capital expenditure upto December 2007 is Rs. 1060.59 crores. Since the Board could utilize Rs.1060.59 crores only in the first three quarters of the year, the Commission revises the investment plan to Rs.1500 crores for the year 2007-08 relying on the level of actual expenditure achieved in the first three quarters.

3.14.5 **Working Capital:** The Commission had approved working capital of Rs.650.79 crores with interest cost of Rs.82.98 crores in the Tariff Order of 2007-08. In the revised estimates submitted now, the Board has projected working capital loan of Rs.1264.00 crores on which an interest liability of Rs.161.00 crores is projected. It is evident that these estimates have not been prepared in conformity with Regulation 30 of the PSERC Tariff Regulations, which provides that the working capital is to be allowed as per norms applicable to an integrated utility such as the Board. Allowable costs on this basis are depicted in Table 3.11.

**Table 3.11: Working capital requirement – 2007-08**

Sr. No.	Particulars	As submitted by the Board in the ARR		As approved by the Commission	
		Norm (period)	Amount (Rs.crores)	Period	Amount (Rs.crores)
1.	Fuel cost	CERC (two months)	433.00	One month	207.00
2.	Maintenance spares for generation	CERC	154.00	-	-
3.	Power purchase cost	One month	470.00	One month	417.86
4.	Employee cost	CERC (one month)	178.00	One month	138.54
5.	A&G expenses	CERC (one month)		One month	5.80
6.	Average cost of stores (for O&M)	CERC (one month)	29.00	One month (R&M expenses)	25.25
	<b>Total</b>		<b>1264.00</b>		<b>794.45</b>

Working capital on which interest is allowable to the Board on normative basis comes to Rs.794.45 crores. Accordingly, the Commission approves an interest of Rs.101.29 crores @ 12.75% p.a. being the short-term PLR of the State Bank of India on working capital of Rs.794.45 crores for the year 2007-08.

**3.14.6 Finance charges:** In the Tariff Order for 2007-08 finance charges @ 0.53% on the total borrowing requirement of Rs.2280 crores amounting to Rs.12.08 crores were approved. As per revised data supplied by the Board now, finance charges are claimed at Rs.37.50 crores for fresh borrowings of Rs.3095.82 crores in 2007-08. The rate of finance charges as per revised data of the Board work out to 1.21% of the proposed borrowings. The Commission has, however, approved net investment of Rs.1281 crores (Rs.1500 crores less Rs.219 crores consumer contribution considered at previous year's level). Actual loans availed of by the Board for the year 2006-07 are Rs.1597.52 crores and the finance charges as per accounts of that year are Rs.14.35 crores inclusive of other charges and Rs.3.81 crores paid as interest to consumers. Therefore, the actual finance charges work out to Rs.10.54 crores, while the rate of finance charges for 2006-07 comes to 0.66%. Applying this rate for the approved borrowings of Rs.1281 crores, the finance charges amount to Rs.8.45 crores for the year 2007-08. After allowing 5% increase on the amount of interest of Rs.3.81 crores paid to the consumers in the previous year, the interest allowable to consumers for the year 2007-08 works to Rs.4.00 crores.

**Thus, the total finance charges including interest payable to consumers comes to Rs.12.45 crores for the year 2007-08.**

### 3.14.7 Interest on Government Loans

In the Tariff Order of 2007-08 the Commission had approved annual interest of Rs.375.91 crores on Government loans payable by the Board. Out of this, interest of Rs.289.92 crores was disallowed on account of diversion of capital funds for revenue purposes and the balance interest of Rs.85.99 crores was approved as payable for the year 2007-08. According to the statement of accounts for the year 2006-07, outstanding Government loans are at Rs.3074.91 crores.

In compliance of the Appellate Tribunal's directions in its Order dated May 26, 2006, the Commission had determined cumulative diversion of capital funds of Rs.3828.23 crores for revenue purposes for 2006-07 based on the Board's accounts of 2005-06. The amount of diversion of capital funds is re-determined at Rs.3821.86 crores based on the accounts of the Board for 2006-07 in Table 3.12 as under:

**Table 3.12: Diversion of Capital Funds**

(Rs. crores)

Sl.No.	Item	Amount	
		Year 2005-06	Year 2006-07
1	Net Fixed Block	8693.15	8642.75
2	Add works in progress (WIP)	2035.95	3281.49
3	Less WIP of RSDP allocated to Irrigation Branch	0	0
4	Balance WIP (2-3)	2035.95	3281.49
5	Inventory at Const. Stores	129.12	159.06
<b>6</b>	<b>Total (1+4+5)</b>	<b>10858.22</b>	<b>12083.30</b>
7	Less Consumer contribution and grants and subsidy towards cost of capital assets	2364.99	2593.12
<b>8</b>	<b>Balance capital base (6-7)</b>	<b>8493.23</b>	<b>9490.18</b>
9	Requirement of Loans +equity	8493.23	9490.18
10	Amount of Government Loans	3074.91	3074.91
11	Less RSDP loans to be apportioned to Irrigation Branch @20.9%	0	0
12	Balance Government Loans (10-11)	3074.91	3074.91
13	Add other loans	4269.41	5247.32
14	Equity	2946.11	2946.11
15	SBI Bonds	637.35	637.35
16	Accumulations in GPF Less amount invested = GPF utilized by Board	1393.68	1406.35
17	Actual Loans + Equity (12+13+14+15+16)	12321.46	13312.04
18	Less capital base	8493.23	9490.18
<b>19</b>	<b>Amount diverted (17-18)</b>	<b>3828.23</b>	<b>3821.86</b>
20	Capital liability without interest – Bonds	637.35	637.35
21	Balance diverted amount (19-20)	3190.88	3184.51
<b>22</b>	<b>Interest effect @12.22%</b>	<b>389.93</b>	<b>389.15</b>



As the amount of cumulative diversion for 2007-08 has reduced to Rs.3821.86 crores from Rs.3828.23 crores, the interest disallowed has been revised to Rs.289.15 crores instead of Rs.289.92 crores determined for 2007-08.

For the reasons elaborated in the Tariff Orders from 2003-04 onwards, the Commission retains its decision to disallow Rs.100 crores from the interest cost of the Board.

The Government had recalled overdue loans of Rs.1362 crores on February 29, 2008 out of the total loan amounting to Rs.3074.91 crores bringing down the balance Government loans to Rs.1712.91 crores as on March 1, 2008. The interest payable on this account will be calculated for 11 months on an amount of Rs.3074.91 crores and for one month on the balance loan of Rs.1712.91 crores. At the average rate of 12.22% per annum, interest worked out on this basis comes to Rs.362.03 crores for the year 2007-08.

Keeping the above in view, the Commission revises interest cost on Government loans to Rs.72.88 crores for 2007-08 after adjustment of interest of Rs.289.15 crores disallowed for diversion of capital funds for revenue purposes by the Board.

**3.14.8 Capitalization of Interest and Finance charges:** The Commission had approved an amount of Rs.84.60 crores as capitalization of interest charges for 2007-08 in the Tariff Order of 2007-08. On the same basis, the Commission now revises capitalization of interest excluding interest on working capital in the ratio of net works-in-progress to total expenditure as reflected in the revised estimates. Accordingly, the Commission approves capitalization of interest of Rs.73.13 crores for 2007-08.

In view of above, the interest and finance charges for 2007-08 are revised as per Table 3.13.

**Table 3.13: Interest and Finance charges - 2007-08****(Rs. crores)**

Sr. No.	Particulars	Loans o/s as on 31.3.07	Receipt of loans	Repayment of loans	Loans o/s as on 31.3.08	Amount of interest
1	2	3	4	5	6	7
1	As per data furnished by PSEB (other than WCL & Government loans)	5197.17	1380.43	621.06	5956.54	518.52
2	Approved by Commission (other than WCL & Government loans)	5197.17	1281.00*	621.06	5857.11	513.90
3	Government loans	3074.91	0	1362.00	1712.91	362.03
4	Interest on GPF					105.00
5	<b>Total (2+3+4)</b>	<b>8272.08</b>	<b>1281.00</b>	<b>1983.06</b>	<b>7570.02</b>	<b>980.93</b>
6	<b>Less: Amount Disallowed on a/c of Diversion :</b>					389.15
a)	<b>Board - Rs. 100 crores</b>					
b)	<b>Government – Rs. 289.15 crores</b>					
7	<b>Total (5-6)</b>					591.78
8	Interest on working capital					101.29
9	Lease Rental					1.65
10	<b>Total interest (7+8+9)</b>					694.72
11	Add finance charges					12.45
12	<b>Grand total (10+11)</b>					707.17
13	Less: capitalization					73.13
14	<b>Net interest &amp; finance charges (12-13)</b>					634.04

\*Receipt of loan Rs.1281 crores = (Approved investment of Rs.1500 crores) - (Consumer contribution of Rs.219 crores assumed at previous year's level).

**Accordingly, the Commission approves net interest and finance charges of Rs.634.04 crores for the year 2007-08.**

### 3.15 Subsidy and other amounts payable by the Government

3.15.1 In para 6.8.6 of the Tariff Order of 2007-08, the requirement of subsidy was determined at Rs.1981.15 crores for AP and Rs.130.95 crores for Scheduled Caste Domestic Supply (DS) consumers. Besides, subsidy of Rs.7.00 crores was determined as payable being meter rentals and service charges for AP connections. Past subsidy recoverable from the Government upto the year 2006-07 was calculated at Rs.429.63 (7.64+421.99) crores. Total subsidy payable by the Government to the Board during 2007-08 was approved at Rs.2548.73 crores.

3.15.2 Based on the information now supplied by the Board in the ARR for the year 2008-09 the amount of subsidy payable by the Government to the Board for 2007-08 is revised as under:

- **AP Consumption:** The Commission has revised AP consumption for 2007-08 to 8960 MU from 8645 MU as discussed in para 3.2.3 of this order. AP consumption for the period from April 2007 to August 2007 and from September 2007 to March 2008 works out to 4442 MU and 4518 MU respectively based on reported monthly consumption of metered and un-metered AP connections in the year 2007-08. Revenue from AP supply at the existing tariff of 214 paise per unit for 4442 MU from April 2007 to August 2007 and of 240 paise per unit for 4518 MU from September 2007 to March 2008, works out to Rs.2034.91 (950.59+1084.32) crores which will now be the subsidy payable by the Government.
- **Meter Rentals and Service Charges:** There is no change in the subsidy of Rs. 7.00 crores determined earlier as payable on account of meter rentals and service charges in respect of AP consumers.
- **Scheduled Castes DS consumers:** The Government had decided to supply free power upto 200 units to Scheduled Castes DS consumers with connected load cap of 1000 watts with effect from October 2, 2006. As per fax message of May 5, 2008, the Board has claimed subsidy on actual consumption basis amounting to Rs.206.73 crores (inclusive of meter rentals and service charges of Rs.9.78 crores) against Rs.130.95 crores determined earlier in the Tariff Order of 2007-08.
- **Non-SC BPL DS consumers:** In addition, the Government had also decided to give free supply of power upto 200 units per month to Non-SC BPL DS consumers with connected load upto 1000 watts with effect from December 1, 2006. The amount of subsidy claimed by the Board amounts to Rs. 1.27 crores inclusive of meter rentals and service charges amounting to Rs.0.06 crores.
- **Additional Subsidy to neutralize the effect of enhanced tariff:** The Government has also decided to neutralize the effect of enhanced tariff to all categories of consumers w.e.f. September 2007 as ordered by the Commission in the Tariff Order of 2007-08 resulting in the liability to pay additional subsidy of Rs.292.66 crores to the Board. However, the amount of Government subsidy actually payable on this account will be trued up based on actual consumption after the audited accounts for 2007-08 become available.

3.15.3 Because of delayed payment of subsidy by the Government, the Board has in the ARR for 2008-09 claimed that during 2007-08 it had to take short term loans to cover revenue deficit in 2007-08 taking costs approved by the Commission into account and to meet the requirement of funds on account of non/delayed payment of subsidy on which estimated payment of interest is depicted as Rs.164.94 crores as per details given below:

**(Rs. crores)**

<b>Sr. No.</b>	<b>Short-term loans raised on account of</b>	<b>Interest costs estimated</b>
1	Approved Revenue Deficit (Rs.336.57 crores) for 2007-08 (April 07 – November 07)	49.75
2	Non-payment of subsidy due from 2006-07 (Rs.421.99 crores)	62.38
3	Delayed payment of subsidy due for 2007-08 as approved by the Commission	52.81
	<b>Total</b>	<b>164.94</b>

3.15.4 The Commission observes that the Board did not file its ARR for 2007-08 by November 30, 2006 as provided in the PSERC Tariff Regulations. Consequently, the issuance of the Tariff Order was delayed as suo motu proceedings had to be subsequently initiated by the Commission and the Tariff Order was ultimately issued on September 17, 2007. It was only then that the subsidy or any other amount due from the Government could be quantified and became payable to the Board. In the circumstances, the Commission is unable to agree with the claim of interest for delayed payment of subsidy by the Government as the Board was, in part, itself responsible for the delay in the issue of the Tariff Order and must, therefore, face its consequences as well. The question of seeking interest on the approved revenue deficit is dealt with in para 4.14 of this order.

3.15.5 The Commission also takes note that against the total amount of subsidy payable of Rs.2841.39 crores inclusive of Rs.292.66 crores on account of neutralization of enhanced tariff, the Government had paid an amount of Rs.1095.34 crores upto the beginning of the last quarter of the year when the entire amount had become payable in terms of the Commission's order of September 13, 2007. The Government subsequently paid the balance amount of Rs.1746.05 crores which included recall of overdue loans amounting to Rs.1362.00 crores in February and March 2008, resulting in delayed payment on which interest @ 12.22% (which is the average rate of interest on Government loans to the Board) is payable by the Government to the Board. This amount works out to Rs.35.56 crores.

Based on the above, the subsidy as well as other amounts payable by the Government for 2007-08, are as per Table 3.14.

**Table 3.14: Subsidy and other amounts payable by the Government - 2007-08**

(Rs. crores)

Particulars	Consumption finally approved in 'Review' exercise (in MU)	Total Revenue Required	Revenue collected from consumers	Amount of subsidy payable by the Government
1	2	3	4	5
AP Consumption	8960	2034.91	0	2034.91
Meter Rentals and Service Charges		7.00		7.00
<b>Sub Total (A)</b>	8960	<b>2041.91</b>	<b>0</b>	<b>2041.91</b>
Scheduled Castes DS consumers		206.73		206.73
Non-SC BPL DS consumers		1.27		1.27
<b>Sub Total (B)</b>		<b>208.00</b>		<b>208.00</b>
Additional subsidy to neutralize the effect of enhanced tariff		292.66		292.66
<b>Sub-Total (C)</b>		<b>292.66</b>		<b>292.66</b>
<b>Total Subsidy (A+B+C)</b>		<b>2542.57</b>		<b>2542.57</b>
Add: Amount payable (including subsidy) by the Government for 2006-07 (as per true up)				681.80 (391.88+289.92)
<b>Total Amount Payable by the Government</b>				<b>3224.37</b>
Add: Interest @ 12.22% payable on delayed payment of subsidy of Rs.1746.05 crores during 2007-08		35.56		35.56
<b>Total amount payable including interest</b>				<b>3259.93</b>
Amount of subsidy received as per information provided by the Board				1,486.04
Add: Recall of overdue loans for adjustment against subsidy payment				<u>1362.00</u>
<b>Total subsidy paid during 2007-08</b>				<b>2848.04</b>
<b>Amount of subsidy and interest payable by the Government upto 2007-08</b>				<b>411.89</b> <b>(121.97+289.92)</b>

The total amount of subsidy payable for the year 2007-08 works out to Rs.3224.37 crores inclusive of past subsidy and interest of Rs.681.80 crores. By adding the amount of interest of Rs.35.56 crores payable for the delayed payment of subsidy during 2007-08, the amount payable by the Government works out to Rs.3259.93 crores. After adjustment of amount of Rs.2848.04 crores paid during 2007-08, the balance amount payable by the Government upto the year 2007-08 is Rs.411.89 crores.

**The Commission, therefore, determines balance amount of subsidy and interest payable by the Government to the Board at Rs.411.89 crores upto the year 2007-08. This is further discussed in paras 6.8.6 and 6.8.7.**

### **3.16 Return on Equity**

In accordance with Regulation 25 of the PSERC Tariff Regulations, the Commission in the Tariff Order of 2007-08 permitted a return on equity @ 14% on an equity base of Rs.2946.11 crores, which worked out to Rs.412.46 crores.

There is no change in the equity of the Board as on April 1, 2007. The Board is, therefore, entitled to a return on equity of Rs.412.46 crores as approved by the Commission in the Tariff Order of 2007-08.

**The Commission, therefore, approves Return on Equity of Rs.412.46 crores for the year 2007-08.**

### **3.17 Fringe Benefit Tax (FBT)**

In the Tariff Order of 2007-08, the Commission had allowed FBT amounting to Rs.4.40 crores (as against the Board's claim of Rs.4.85 crores) at the level of actual payment for 2005-06 as per the audited accounts of the Board.

In the ARR of 2008-09, the Board has revised the liability of FBT to Rs.5.00 crores. However, the Commission allows FBT amounting to Rs.4.56 crores at the level of actual payment for the previous year as given in the Board's accounts for 2006-07.

**Accordingly, the Commission approves FBT expenses of Rs.4.56 crores for 2007-08.**

### **3.18 Extraordinary items & other debits**

In the ARR for the year 2007-08, the Board has claimed an expenditure of Rs.7.68 crores on account of extra ordinary items and other debits representing items which arise from transactions outside the ordinary activities of the Board which are expected not to occur frequently or regularly. The claim of the Board is not supported by any detail of expenditure but is based on actual expenditure incurred during 2006-07. The Commission is of the view that such items of expenditure can only be considered on actual basis in the true up exercise after audited accounts for 2007-08 become available.

### **3.19 Non-Tariff Income**

In the Tariff Order of 2007-08, the Commission had approved non-tariff income of Rs.369.44 crores against the Board's estimates of Rs.362.44 crores. In a subsequent clarification, the Board has intimated non-tariff income as Rs.356.54 crores from April 2007 to January 2008. Based on 10 months actuals, total non-tariff income of the Board for the year 2007-08 works out to Rs.427.85 crores. In addition, the subsidy receivable from the Government on account of meter rentals and service charges for AP, SC DS and Non-SC BPL DS consumers amounting to Rs.16.84 (7.00+9.78+0.06) crores is also to be accounted for as non-tariff income. Thus, the total non-tariff income for the year 2007-08 comes to Rs.444.69 crores.

**The Commission, therefore, approves Rs.444.69 crores as Non-Tariff Income of the Board for the year 2007-08.**

### **3.20 Revenue from Existing Tariff**

The Board has revised the estimates of revenue at existing tariff to Rs.10659.67 crores in place of Rs.9160.24 crores approved by the Commission in the Tariff Order of 2007-08 which the Commission now further revises to Rs.10501.59 crores as given below in Table 3.15. The variance in revenue estimated by the Board and worked out by the Commission is on account of difference in energy sales projected by the Board and approved by the Commission.

**Table 3.15: Revenue from Existing Tariff - 2007-08**

Sr. No.	Category of Consumers	Total Energy Sales (MU) (Apr ' 07 - Mar ' 08)	Sales ( Apr ' 07 - Aug ' 07 )	Sales ( Sep ' 07 - Mar ' 08 ) (3-4)	Tariff Rates (paise/unit) ( upto Aug ' 07)	Tariff Rates (paise/unit) (Sep ' 07 - Mar ' 08)	Revenue (Rs. crores)
1	2	3	4	5	6	7	8
1	Domestic						
a)	Up to 100 Units	3877	1635	2242	221	240	899.42
b)	101- 300 Units	1625	685	940	368	394	622.44
c)	Above 300 Units	771	325	446	389	416	311.96
	<b>Sub Total</b>	<b>6273</b>	<b>2645</b>	<b>3628</b>			<b>1833.82</b>
2	NRS	1876	769	1107	423	453	826.76
3	Public Lighting	139	54	85	423	453	61.35
4	Industrial Consumers						
a)	SP	732	304	428	337	361	256.96
b)	MS	1564	629	935	372	398	606.12
c)	LS *	8825	3542	5283	372	398	3560.00
	<b>Sub Total</b>	<b>11121</b>	<b>4475</b>	<b>6646</b>			<b>4423.08</b>
5	Bulk Supply						
a)	HT	430	180	250	382	409	171.01
b)	LT	42	19	23	406	434	17.70
6	Railway Traction	111	44	67	443	474	51.25
7	Common Pool	303		303			73.73
8	Outside State **	1615		1615			908.16
	<b>Sub Total</b>	<b>21910</b>	<b>8186</b>	<b>13724</b>			<b>8366.86</b>
9	AP Consumption	8960	4442	4518	214	240	2034.91
10	<b>Total</b>	<b>30870</b>	<b>12628</b>	<b>18242</b>			<b>10401.77</b>
11	Add MMC, Rebates and Other Charges						99.82
12	<b>Grand Total</b>						<b>10501.59</b>

\* LS revenue includes Rs.139.74 crores estimated for PLEC charges.

\*\* Revenues from outside State sales comprise of sale of power under Banking to other states (estimated at 615 MU at Rs.3.84 per unit) and to Traders(estimated at 1000 MU at Rs.6.72 per unit)

**The Commission, therefore, approves revenue from existing tariff at Rs.10501.59 crores for energy sale of 30870 MU for the year 2007-08.**

### 3.21 Revenue Requirement

3.21.1 A summary of the review for 2007-08 as analyzed in the preceding paragraphs is given in Table 3.16:



**Table 3.16: Revenue Requirement - 2007-08****(Rs. crores)**

<b>Sr. No.</b>	<b>Item of Expense</b>	<b>As per PSEB in ARR 07-08</b>	<b>Approved by Commission in TO 2007-08</b>	<b>Revised estimates by PSEB</b>	<b>Approved by the Commission in TO 2008-09</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1	Cost of fuel	2922.00	2404.28	2601.00	2484.00
2	Cost of power purchase	4134.00	3410.01	5619.30	5014.34
3	Employee cost	1973.00	1661.41	2061.95	1662.50
4	R&M expenses	295.66	271.35	339.99	302.95
5	A&G expenses	87.41	62.41	71.93	69.64
6	Depreciation	696.81	696.82	640.11	640.06
7	Interest charges	1334.82	693.75	1087.01	634.04
8	Return on Equity	412.50	412.46	412.50	412.46
9	Fringe Benefit Tax	4.85	4.40	5.00	4.56
10	Extra ordinary items and other Debits			7.68	-
<b>11</b>	<b>Total revenue requirement</b>	<b>11861.05</b>	<b>9616.89</b>	<b>12846.47</b>	<b>11224.55</b>
12	Less: Non tariff income	362.44	369.44	369.42	444.69
<b>13</b>	<b>Net revenue requirement (11-12)</b>	<b>11498.61</b>	<b>9247.45</b>	<b>12477.05</b>	<b>10779.86</b>
14	Revenue from tariff & subsidy	9075.50	9160.24	11373.20	10501.59
15	<b>Gap (13-14)</b>	<b>2423.11</b>	<b>87.21</b>	<b>1103.85</b>	<b>278.27</b>
16	Gap for the year 2006-07			2035.52	439.51
<b>17</b>	<b>Total Gap (15+16)</b>			<b>3139.37</b>	<b>717.78</b>

Review for the year 2007-08 indicates that there is now a gap of Rs.278.27 crores. The total gap, after taking into account a sum of Rs.439.51 crores on this account for the year 2006-07, aggregates to Rs.717.78 crores. This deficit is being carried forward to next year for adjustment.

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# Chapter 4

## Annual Revenue Requirement for 2008-09

### 4.1 Energy Demand (Sales)

4.1.1 **Metered Energy Sales:** The Board has projected metered energy sales for 2008-09 based on category wise Compounded Annual Growth Rate (CAGR) of three years from 2003-04 to 2006-07. The 3 year CAGR has been worked out from actual audited metered sales for the period 2003-04 to 2006-07 which has then been applied to the revised estimates of metered sales of respective categories for 2007-08 (except for Railway Traction) to arrive at energy sales projected for 2008-09. The Board has proposed not to apply the CAGR method in the case of Railway Traction since the CAGR for this category is abnormally high owing to unusual growth in consumption during the period 2003-04 to 2006-07 whereas it does not foresee Railway Traction demand to increase at such a rate. As such, the sales to Railway Traction for 2008-09 have been kept at the same level as the revised estimate for 2007-08. Details of the Board's projections are in Table 4.1.

**Table 4.1: Energy Sales to Metered Categories as per ARR - 2008-09**  
(MU)

Metered Energy Sales	2006-07 (Actual)	2007-08 (RE)	2008-09 (Projections)
1	2	3	4
Domestic	5,710	6,302	6,476
Non-Residential	1,641	1,877	2,039
Small Power	713	736	734
Medium Supply	1,490	1,568	1,571
Large Supply	7,975	8,877	9,394
Public Lighting	129	141	153
Bulk Supply	456	475	485
Railway Traction	106	110	110
<b>Total Sales</b>	<b>18,220</b>	<b>20086*</b>	<b>20962**</b>

\* Against 20085 shown by the Board.

\*\* Against 20963 shown by the Board.

The Commission has estimated category wise sales within the State for 2008-09 for all categories, except Railway Traction, by applying 3 years CAGR (2003-04 to 2006-07), on sales for the year 2007-08 now approved in Chapter-3. In the case of Railway Traction, sales for the year 2008-09 have been estimated at the same level as approved in Chapter-3 for the year 2007-08, for the reason advanced by the Board. Actual sales for the years 2003-04 and 2006-07, 3 year CAGR for 2003-04 to 2006-07 as calculated by the Commission, sales now approved for 2007-08 and estimated sales in 2008-09 for different metered categories within the State are given in Table 4.2.

**Table 4.2: 3-Year CAGR & Estimated Metered Sales within the State – 08-09**

(MU)

Sr. No.	Category	2003-04 (Actuals)	2006-07 (Actuals)	3 year CAGR (2003-04 to 2006-07)	Sales now approved for 2007-08	Estimated sales for 2008-09
1	2	3	4	5	6	7
1	Domestic	5271	5726	2.80%	6273	6449
2	Non-Residential	1299	1646	8.21%	1876	2030
3	Small Power	671	716	2.19%	732	748
4	Medium Supply	1559	1494	-1.41%	1564	1542
5	Large Supply	6706	7998	6.05%	8825	9359
6	Public Lighting	104	129	7.44%	139	149
7	Bulk Supply	391	457	5.34%	472	497
8	Railway Traction	64	106	18.32%	111	111
<b>9</b>	<b>Total Sales within State</b>	<b>16065</b>	<b>18272</b>		<b>19992</b>	<b>20885</b>

#### 4.1.2 Sales to common pool consumers and outside the State sales

The Board has projected sales to common pool consumers and outside the State for the year 2008-09 as below:

(MU)

	2007-08(RE)	Projection for 08-09
Sales to common pool consumers	303	303
Sales outside the State	1615	2036

Sale to common pool consumers for 2008-09 is based on actual figures of such sales for 2006-07 with no change being foreseen in this category. The Commission approves sales to common pool consumers as projected by the Board.

While computing outside State sales in 2007-08, the Board had taken the actual sales in the first half of that year while estimates for the second half were based on

committed sales on account of open access transactions and sale/banking. The Board has projected outside State sales for 2008-09 on the same basis as 2007-08.

**The Commission approves outside State sales at 2036 MU for the year 2008-09 as also the sale of 303 MU to common pool consumers as projected by the Board.**

The total estimated metered sales for the year 2008-09 depicted by the Board and approved by the Commission are given in Table 4.3.

**Table 4.3: Metered Sales - 2008-09**

(MU)

Sr. No.	Metered Category	Projected by Board	Approved by the Commission
1	2	3	4
1	Domestic	6476	6449
2	Non-Residential	2039	2030
3	Small Power	734	748
4	Medium Supply	1571	1542
5	Large Supply	9394	9359
6	Public Lighting	153	149
7	Bulk Supply	485	497
8	Railway Traction	110	111
9	<b>Total within State</b>	<b>20962</b>	<b>20885</b>
10	Common pool	303	303
11	Outside State sales	2036	2036
12	<b>Total Sales (9+10+11)</b>	<b>23301</b>	<b>23224</b>

**The Commission, thus, approves metered sales at 23224 MU against 23301 MU projected by the Board.**

- 4.1.3 **AP Consumption:** The Board has in the ARR of 2008-09 projected AP consumption at 10014 MU for the year based on an expected projected increase of 5% upon the revised estimates of 9537 MU provided by the Board for 2007-08. This projection can, in any case, not be taken into consideration as estimates of AP consumption in 2007-08 have subsequently been revised by the Board itself to 10012 MU. The Commission has discussed in detail the shortcomings in the present methodology of working out AP consumption in para 3.2.3 of chapter 3 of this Order. For those reasons, it has not been possible for the Commission to accept the revised AP consumption projected by the Board and the same has now been determined as 8960 MU for 2007-08. The Commission agrees, however, that it would be fair to apply the likely consumption

increase of 5% as suggested by the Board to the revised AP consumption approved for 2007-08. Accordingly, estimated AP consumption in 2008-09 works out to 9408 MU, which the Commission approves.

#### 4.1.4 Total Energy Demand (Sales)

The category wise metered sales, AP consumption, common pool/outside State sales projected by the Board and as approved by the Commission are given in Table 4.4.

**Table 4.4: Total Energy Sales for 2008-09**

(MU)			
S.N	Category	Projected by the Board	Approved by the Commission
1	Total metered sales within the state	20962	20885
2	AP consumption	10014	9408
3	Total sales within the State	30976	30293
4	Sales to common pool consumers	303	303
5	Outside State sales	2036	2036
6	<b>Total sales (3+4+5)</b>	<b>33315</b>	<b>32632</b>

**The Commission, thus, approves total energy sales to different categories of consumers at 32632 MU including common pool and outside State sales.**

#### 4.2 Transmission and Distribution Losses (T&D Losses)

The Board has projected Transmission and Distribution (T&D) losses at 21% for the year 2008-09 assuming AP consumption of 10014 MU in the year. This represents a loss reduction of 1.7% from T&D loss percentage of 22.7% depicted by the Board in the revised estimates for 2007-08. The revised T&D losses worked out for 2007-08 are based on AP consumption of 9537 MU in the year 2007-08. However, actual figure determined by the Commission in 2007-08 is 8960 MU and as such, losses worked out on that basis will actually increase.

T&D losses, referred to above, have to be considered taking into account the Commission's target of 19.5% to be achieved by the end of 2007-08. The basis upon which the Commission had laid down a trajectory for phased reduction of T&D losses has been brought out clearly in para 4.2.2 of the Tariff Order for 2007-08. The Board has, however, been urging that the reduction trajectory is unrealistic and, in fact, impossible to achieve. Moreover, the Board's actual performance in reduction of T&D losses is hampered by the Commission's unrealistic assumption of AP consumption figures. In addition, the Board has also contended that it is being heavily penalized

even though it is among the better performers in the country in this respect. The Board has referred to several measures it intends to take for the reduction of losses, some of which are:

- Installation of meters outside the premises;
- Replacement of Electromechanical meters;
- Deloading of Distribution Transformers and bifurcation of 11 KV feeders;
- Installation of 11 KV line capacitors and LT capacitors on AP connections;
- Conversion of overhead LT lines with Aerial Bunched Cables (ABC) in theft prone areas;
- Theft detection by enforcement agencies.

The Board has indicated that it has, accordingly, drawn up an Investment Plan which aims to reduce T&D losses in phases as under:

2007-08 (RE)	22.7%
2008-09 (Projected)	21.00%
2009-10 (Projected)	19.50%
2010-11 (Projected)	18.00%
2011-12 (Projected)	17.00%

The Commission has given careful thought to the arguments put forward by the Board for adopting a higher T&D loss figure of 21% in 2008-09. It needs to be reiterated that the Commission had determined its T&D loss reduction trajectory on the basis of actual losses of 25.35% reported by the Board in the year 2003-04. Taking that into account, it had proposed a phased reduction program and while doing so, the prescribed levels to be achieved each year were even less ambitious than what has been recommended by the Abraham Committee, the findings of which have, by and large, been widely accepted. The Commission continues to hold that if systematic and sustained efforts had been initiated at the very beginning to reduce losses in finite time frames, the reduction as proposed was achievable. It is, however, a matter of considerable concern that there is very little evidence of any such action on the part of the Board.

It is true that the manner of working out AP consumption is, even at present, less than satisfactory. This aspect has been discussed in detail in para 3.2.3 of chapter 3 of this Order. However, notwithstanding these shortcomings, the Commission has always

attempted to determine AP consumption at realistic levels. Moreover, even if the Board's projection of AP consumption is accepted, T&D losses for the years 2002-03 to 2006-07 would work out as under:

2002-03	24.54%
2003-04	25.35%
2004-05	24.27%
2005-06	25.07%
2006-07	23.92%

Clearly even accepting the Board's estimates of AP consumption does not bring about any appreciable improvement in the reduction of losses.

The Commission accepts that T&D losses of the Board are lower than those prevailing in many other States of the country. However, the fact remains that there is ample scope for further reduction and there is no reason why the consumers of the State should not be able to get the benefit of better performance by the Board on this account.

The sixth year in the T&D loss reduction trajectory determined by the Commission ended at a normative level of 19.5% in 2007-08 and the Commission was now required to determine how these losses are to be further reduced over a reasonable period of time. Instead of being in a position to go forward on the above lines, the Board is emphasizing the need to adopt a much higher target of 21% for the current year. The Commission has already observed that the reduction of losses as determined by the Commission was achievable and the fact of the Board being unable to do so should be no occasion to penalize the consumers of the State. For this reason, the Commission is not inclined to accept fixing a higher T&D loss target in the current year. At the same time, the Commission is mindful of the stipulations of the National Tariff Policy that it would be counter productive to fix unrealistic targets of T&D losses if the Distribution Licensee has consistently failed to achieve them. The Commission observes, however, that the underlying assumption behind these stipulations is that unrealistic targets should not be persisted with if the Distribution Licensee, despite best efforts, is unable to achieve them. This, however, does not appear to be the case in respect of the Board where it is difficult to discern any concerted and time bound efforts towards reduction of such losses. The fact that there is a wide disparity in the T&D loss levels of different Distribution circles of the Board seems to reinforce such a conclusion. It is no doubt true that reduction of technical losses require a high order of investment which may be beyond the means of the Board in the short run. On the other hand, the Commission notes that the Board has



so far been deficient in even initiating low cost and preliminary measures which need to be undertaken before the complex issue of T&D losses can be properly addressed in its entirety. The National Tariff Policy also enjoins all Distribution Licensees to undertake such basic steps as segregating technical and commercial losses, complete base line survey data and introduction of energy audit. The Commission has also been informed of the possibility of achieving substantial reduction of losses in domestic supply by shifting, at minimal cost, of meters from inside consumers' premises to outside. The Commission notes with regret that while some work has been initiated in respect of the above, there is no indication that it is being pursued in accordance with prescribed time lines.

In view of the position brought out in the foregoing paras, the Commission is of the considered view that no case is made out for fixing a higher T&D loss level as proposed by the Board. However, keeping in view the Board's actual performance, the Commission retains the T&D loss target at 19.5%. During the course of the year, however, the Commission will assess the overall strategy of the Board in reducing such losses and its implementation and then take a view on determining the trajectory for further reduction of T&D losses.

**Thus, the Commission approves T&D loss level of 19.5% for the 2008-09 against the loss level of 21.00% projected by the Board.**

#### 4.3 Energy Requirement

The total energy requirement is the sum of estimated energy sales including common pool and outside State sales and T&D losses. The estimated energy sales, T&D losses and energy requirement projected by the Board and as approved by the Commission for the year 2008-09 are given in Table 4.5.

**Table 4.5: Energy Requirement - 2008-09**

(MU)			
Sr. No.	Particulars	As projected by the Board for FY 08-09	As approved by the Commission
1	2	3	4
1	Metered Sales within State	20962	20885
2	AP consumption	10014	9408
<b>3</b>	<b>Total sales within State (1+2)</b>	<b>30976</b>	<b>30293</b>
4	Common pool sales	303	303
5	Outside State sales	2036	2036
<b>6</b>	<b>Total sales</b>	<b>33315</b>	<b>32632</b>
7	T&D losses on item (3)	8234	7338
		21%	19.50%
<b>8</b>	<b>Total energy input required (6+7)</b>	<b>41549</b>	<b>39970</b>

The overall energy requirement projected by the Board is higher by 1579 MU than the requirement approved by the Commission on account of difference in Metered sales, AP consumption and T&D losses approved by the Commission. The energy requirement thus works out to 39970 MU which has to be met from own generation of the Board (thermal & hydel) including share from BBMB and purchases from central generating stations and other sources. These issues are discussed in succeeding paras.

#### **4.4 PSEB's Own Generation**

4.4.1 **Thermal Generation:** The Board has projected generation for the year 2008-09 at 2411 MU, 9469 MU and 6065 MU for GNDTP, GGSTP and GHTP {3265 MU for GHTP Stage I (Units I & II) and 2800 MU for Stage II (Units III & IV)} respectively, stating that the gross generation in 2008-09 of GNDTP, GGSTP and GHTP Stage-I (Units I & II) has been worked out on the basis of average generation of each plant in the past three years' (FY 05, FY 06 and 07), the corresponding three years' average plant availability and the plant availability expected in 2008-09. The gross generation of GHTP Stage-II (Units III & IV) has been worked out on the respective commissioning schedule of Units III & IV (Feb 2008 and June 2008).

##### **Plant Availability**

The Board has submitted that -

- The Plant Availability of GNDTP for 2008-09 has been projected as 71.75% in view of the major renovation and modernization work of Unit-IV from 1.7.08 to 31.3.09 (274 days) and taking into account the past trend of forced outage of the plant's units. Shutdown of Units-I, II and III have also been planned for a total of 80 days for annual overhauling.
- The Plant Availability for GGSTP for 2008-09 has been projected at 90.11%, based on the planned maintenance schedule of its units in 2008-09 for a total of 130 days and also taking into account the last three years average of forced outages.
- The Plant Availability for GHTP Stage-I (Units I&II) for 2008-09 has been projected at 92.03% on the basis of the planned maintenance schedule of Unit-I and Unit-II for a total of 29 days and past trends in the forced outage duration of the plant's units.

- In the case of GHTP Units III & IV, the former was commissioned in Feb 2008 and latter is expected to go on stream in June 2008. Plant Availability in their case has been projected at 85.00% after considering stabilization period of both the units and also taking into account a shutdown of Unit-III for 20 days in March 2009.

The availability of GNDTP, GGSTP and GHTP – Stage I (Units I & II) based on maintenance schedules excluding forced outages (as projected by the Board) for the year 2008-09, is calculated by the Commission as 75.75%, 94.06% and 96.03% respectively.

The Commission has assessed availability and generation for the year 2008-09 based on the average of actual availability and generation for the three years (2004-05 to 2006-07). The actual availability and generation of the thermal plants for 2004-05, 2005-06 and 2006-07 along with average of three years generation and availability are as given in Table 4.6.

**Table 4.6: Actual Availability and Generation – 2004-05 to 2006-07**

Sr. No.	Station	FY 2004-05	FY 2005-06	FY 2006-07	Average of the 3 years
<b>1</b>	<b>GNDTP</b>				
	Generation (MU)	1992	2359	2221	2191
	Availability (%)	62.66	68.00	64.90	65.19
<b>2</b>	<b>GGSTP</b>				
	Generation (MU)	9082	9329	9770	9394
	Availability (%)	88.95	89.00	90.20	89.38
<b>3</b>	<b>GHTP</b>				
	Generation (MU)	3309	3146	3443	3299
	Availability (%)	92.65	88.00	94.30	91.65

Considering actual availability and generation in 2004-05, 2005-06 and 2006-07, gross generation for 2008-09 has been computed in Table 4.7.

**Table 4.7: Availability, Gross Generation and PLF of Existing Thermal Plants - 2008-09**

Sr.No.	Station	Three year average availability	Three year average generation (MU)	Assessed by the Commission for 08-09		
				Availability as per mtc. Schedules for 2008-09	Generation (MU) (4x5) / 3	PLF (Calculated)
1	2	3	4	5	6	7
1	GNDTP	65.19%	2191	75.75%	2546	66.05%
2	GGSTP	89.38%	9394	94.06%	9886	89.56%
3	GHTP	91.65%	3299	96.03%	3457	93.96%

The Board has clarified in its letter dated 9.5.2008 that Unit-III and Unit-IV of GHTP are likely to be declared on commercial operation by 30.5.2008 and 31.8.2008 respectively and total generation from these units during the year 2008-09 is likely to be 2670 MU. Gross generation from the thermal plants during the year 2008-09 will, therefore, be as given in Table 4.8.

**Table 4.8: Gross Thermal Generation - 2008-09**  
(MU)

Sr.No.	Station	Approved Generation
1	GNDTP	2546
2	GGSTP	9886
3	GHTP	6127*
4	<b>Total</b>	<b>18559</b>

\* 6127 = 3457 + 2670

**Accordingly, the Commission assesses the total gross Thermal generation as 18559 MU.**

#### **Performance parameters**

PSERC Tariff Regulations provide that CERC norms wherever specified will be followed and this approach has been adopted in the Tariff Orders for 2005-06, 2006-07 and 2007-08. CERC in its notification No.L-7/25(5)/2003-CERC dated 26.03.2004 has framed Regulations for Determining Terms and Conditions for Electricity Tariff for the five year period beginning April 1, 2004 wherein operation norms for thermal plants have also been prescribed. CERC has, however, not specified any norms for

110 MW units and the Commission has in the case of GNDTP adopted the norms specified for the Tanda station of NTPC, which like GNDTP, has 4 units of 110 MW each. The Commission notes that Units I and II of GNDTP have been put on commercial operation on 31.5.2007 and 19.1.2006 respectively, after completion of Renovation and Modernisation (R&M). As per the terms & conditions of the contract, auxiliary consumption and station heat rate to be achieved after completion of R&M are 9.10% and 2460 Kcal/kwh respectively which the Commissions decides to adopt accordingly. As nothing has been specified in the contract regarding Specific Oil Consumption, the Commission is inclined to follow the norm of 2 ml/kwh for Specific Oil consumption, as specified by CERC for Tanda Station. For Units-III and IV of GNDTP, the Commission has no reason to alter the norms adopted in the Tariff Order of 2007-08 since R&M in respect of these units is yet to be taken up.

#### Auxiliary Consumption & Net Generation

The Commission has adopted CERC norms for assessment of net generation of GGSTP and GHTP and the norm for Tanda Station in the case of GNDTP Units III and IV while the auxiliary consumption norm applicable to Units-I and II of GNDTP will be 9.10%. Accordingly, auxiliary consumption for the year 2008-09 has been determined at 9.10%, 11.00%, 8.50% and 9.00% for GNDTP (Units-I&II), GNDTP (Units-III&IV), GGSTP and GHTP respectively. Auxiliary consumption and net generation from the three thermal generating stations as projected by the Board and approved by the Commission for 2008-09 is given in Table 4.9.

**Table 4.9: Generation and Auxiliary Consumption for Thermal Plants – 2008-09**

(MU)

Sr. No.	Station	Projected by the Board			Approved by the Commission		
		Gross Generation	Auxiliary Consumption	Net Generation	Gross Generation	Auxiliary Consumption	Net Generation
1	2	3	4	5	6	7	8
1	GNDTP* Units-I&II	2411	265	2146	1542	140 9.10%	1402
	GNDTP* Units-III&IV		11.00%		1004	110 11.00%	894
2	GGSTP	9469	814 8.60%	8655	9886	840 8.50%	9046
3	GHTP Stage-I	3265	294 9.00%	2971	6127	551 9.00%	5576
	GHTP Stage-II	2800	266 9.50%	2534			
	<b>Total</b>	<b>17945</b>	<b>1639</b>	<b>16306</b>	<b>18559</b>	<b>1641</b>	<b>16918</b>

\*The gross generation of 2546 MU in case of GNDTP in Table 4.8 has been proportioned as 1542 MU by Units-I&II and 1004 MU in respect of Units III&IV based on plant availability of 91.78% and 59.73% respectively (calculated on the basis of maintenance schedule of Units I & II and Units III & IV respectively as projected by the Board in its ARR for 2008-09).

**Net thermal generation approved by the Commission is 16918 MU against 16306 MU projected by the Board.**

4.4.2 **Hydel Generation:** In the ARR for 2008-09, the Board has estimated hydel generation from its own stations for the year 2008-09 based on the three years' average of gross generation for 2004-05, 2005-06 and 2006-07. The Commission has also considered the average gross generation for three years in line with the approach adopted in its earlier Tariff Orders. The generation projected by the Board and the generation approved by the Commission is given below in Table 4.10.

**Table 4.10: Own Hydel Generation – 2008-09**

Sr. No.	Station	Generation projected by the Board for 08-09	Actual Generation			Generation estimated by the Commission (Based on 3 year average)
			04-05	05-06	06-07	
1	2	3	4	5	6	7
1	Shanan	507	515	509	496	507
2	UBDC	432	380	531	385	432
3	RSD	1586	1144	2013	1679	1612
4	MHP	1074	812	1238	1171	1074
5	ASHP	596	388	708	666	587
6	Micro Hydel	6	4	6	8	6
	<b>Total own generation (Gross)</b>	<b>4201</b>	<b>3243</b>	<b>5005</b>	<b>4405</b>	<b>4218</b>

Note: Figure of 4201 MU is against 4200 MU projected by the Board in the ARR.

The Commission approves estimated gross generation of 4218 MU from the Board's own hydel stations. The Commission also approves the Board's share and common pool share from BBMB as projected by the Board and depicted in Table 4.11.

**Table 4.11: Total Hydel Generation - 2008-09****(MU)**

<b>Sr. No.</b>	<b>Station</b>	<b>Projected by the Board for 08-09</b>	<b>Approved by the Commission</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1	Shanan	507	507
2	UBDC	432	432
3	RSD	1586	1612
4	MHP	1074	1074
5	ASHP	596	587
6	Micro Hydel	6	6
<b>7</b>	<b>Total own generation (Gross)</b>	<b>4201</b>	<b>4218</b>
<b>8</b>	<b>Total own generation (Net)</b>	<b>4027</b>	<b>4056</b>
<b>9</b>	<b>BBMB</b>		
i)	PSEB share (Gross)	4187	4187
ii)	Common Pool share	303	303
iii)	External Losses on PSEB share in BBMB	165	163
iv)	<b>Availability (Net)</b>	<b>4325</b>	<b>4327</b>
<b>10</b>	<b>Total Availability (Net)</b>	<b>8352</b>	<b>8383</b>

**Notes**

1. Board's Projection for own generation is net of auxiliary consumption and transformation losses (47 MU), royalty to HP from Shanan (53 MU) and share from RSD to HP (74 MU).
2. Commission's Assessment of own generation is net of HP share (free) in RSD @ 4.6% (74 MU), net of HP share in Shanan (53 MU), auxiliary consumption @ 0.5% for RSD generation of 1612 MU and UBDC stage-1 generation of 213 MU (having static exciters) and @ 0.2% for others (14 MU), and transformation losses @ 0.5 % ( 21 MU).
3. BBMB share is net of external losses based on the actual level of losses @ 3.89% in 2006-07.

**The Commission, thus, assesses net hydel generation of 8383 MU for the year 2008-09.**

- 4.4.3 **Total Availability of energy from own stations of the Board and BBMB:** The approved net generation from own thermal and hydel stations of the Board and share from BBMB is given in Table 4.12.

**Table 4.12: Net Own Generation - 2008-09**

<b>Sr. No.</b>	<b>Station</b>	<b>Energy available (ex-bus) (MU)</b>
<b>1</b>	<b>2</b>	<b>3</b>
1	Thermal Stations	16918
2	Hydel Stations (Own)	4056
3	Share from BBMB (including 303 MU share of common pool consumers)	4327
<b>4</b>	<b>Total own Availability</b>	<b>25301</b>

The total energy available from own generating stations of the Board including share from BBMB approved by the Commission is 25301 MU.

#### 4.5 Purchase of Power

4.5.1 The total energy required to meet the demand during 2008-09 including common pool and outside State sales is 39970 MU as discussed in para 4.3. The energy available from own generating stations of the Board including its share from BBMB is 25301 MU as approved in para 4.4.

4.5.2 The balance requirement of 14669 MU (net) has to be met through purchases from central generating stations and other sources. This is against a requirement of 16892 MU (net) projected by the Board for the year 2008-09.

#### 4.6 Energy Balance

4.6.1 The energy balance which takes into account the approved energy sales to different categories of consumers, T&D losses, energy requirement and energy available is as given in Table 4.13.

**Table 4.13: Energy Balance – 2008-09**

(MU)

Sr. No.	Particulars	Projected by the Board	Approved by the Commission
1	2	3	4
<b>A</b>	<b>Energy Requirement</b>		
1	Metered Sales within state.	20962	20885
2	Sales to AP consumers	10014	9408
3	Total sales within state.	30976	30293
4	T&D Losses	8234	7338
5	Common pool	303	303
6	Outside State sales	2036	2036
<b>7</b>	<b>Total Requirement</b>	<b>41549</b>	<b>39970</b>
<b>B</b>	<b>Energy Availability</b>		
1	Own generation (ex-bus)		
a)	Thermal	16306	16918
b)	Hydro	4027	4056
2	Share from BBMB (including share of common pool consumers=303)	4325	4327
3	Purchase (Net)	16891*	14669
<b>4</b>	<b>Total Availability</b>	<b>41549</b>	<b>39970</b>

\* Power purchase of 16891 MU is against 16892 MU shown by the Board in ARR.



## 4.7 Fuel Cost

4.7.1 **Fuel Cost Projected by the Board:** The Board has projected fuel cost of Rs.2977.72 crores for a total generation of 17945 MU during the year 2008-09 based on operational parameters and fuel prices as detailed in Table 4.14.

**Table 4.14: Fuel Parameters projected by the Board - 2008-09**

Sr.No.	Station	PLF	Heat Rate (kcal/kwh)	Transit loss of coal	Coal Price including transit loss (Rs/MT)	Calorific value of coal (kcal/kg)	Price of Oil (Rs/KL)	Specific oil consumption (ml/kwh)	Calorific Value of oil (kcal/litre)
1	2	3	4	5	6	7	8	9	10
1	GNDTP	62.55%	3,000.00	2.00%	2,321.43	3,883.84	22,506.00	3.50	9978
2	GGSTP	85.79%	2,666.67	2.00%	2,297.85	3,785.00	21,064.73	2.00	10000
3	GHTP								
(i)	Stage-I (Units-I&II)	88.74%	2,500.00	2.00%	2,388.00	4,022.00	22,654.00	2.00	9400
(ii)	Stage-II (Units-III&IV)	70.00%	2,745.00	2.00%	2,387.76	4,000.00	22,654.00	3.25	9400

4.7.2 The Board has submitted that the performance parameters and coal transit loss of all the three stations as submitted by the Board may be approved without any change considering the following:

- The Station Heat Rate (SHR) for GHTP – Stage I (Units-I & II) and GNDTP has been taken as 2500 Kcal/kWh and 3000 Kcal/kWh respectively as per CERC norms for similarly aged plants, for 2007-08 & 2008-09. For GGSTP, the Station Heat Rate has been taken at 2666.67 Kcal/kWh after considering the fact that two of its six units are more than 22 years old.
- Station Heat Rate of GHTP Stage-II (Units-III & IV) has been considered as 2745 Kcal/kwh (average of 2990 Kcal/kwh for Unit-IV being its first year of operation and 2500 Kcal/kwh for Unit-III).
- The price of coal for 2008-09 has been estimated on the basis of the actual average coal prices for the respective stations from April to September, 2007.
- The calorific values of coal for 2008-09 have been worked out as per the actual average calorific value figures for different stations between April and September, 2007.

Subsequently, the Board had in discussions with the Commission submitted that CERC had fixed the operation norms based on a study of actual results achieved by

the various central sector thermal stations. The Board was of the view that instead of simply adopting CERC norms, the Commission should carry out the study of the Board's thermal stations and fix the norms accordingly.

The Commission observes that both the Board as well as central sector thermal stations use standardized equipment and the performance parameters in either case ought to be identical. The Commission, therefore, is of the view that there is prima facie no necessity of any study to be conducted in this regard.

#### 4.7.3 Fuel Cost approved by the Commission

##### Gross Generation

The gross generation of thermal plants for the year 2008-09 has been discussed in para 4.4.1 and summarized in Table 4.8.

##### Station Heat Rate

CERC has laid down norms of gross station heat rate for coal based thermal power generating stations as given in Table 4.15.

**Table 4.15: CERC Norms for Gross Station Heat Rate**

Sr. No.	Unit size / Plant	SHR norm (kcal/kwh)
1	2	3
1	200/210/250 MW sets	2500
2	500 MW and above sets	2450
3	Talcher Thermal Power Station	3100
4	Tanda Thermal Power Station	3000

On the above basis, the Commission approves SHR at 2500 kcal/kWh for GGSTP and GHTP in accordance with CERC norms. CERC has not specified any norm for units installed at GNDTP. The Commission, however, allows SHR for GNDTP Units-III and IV at 3000 kcal/kWh at par with the Tanda Thermal Station of NTPC as has been followed in the case of auxiliary consumption. In the case of GNDTP Units-I&II, the Commission has decided in para 4.4.1 to allow Station Heat Rate of 2460 Kcal/kwh.

##### Coal Transit Loss

The Commission has permitted a Transit Loss of 2% for all power plants in its Tariff Order for 2006-07 and the same was continued for all the three Thermal Stations during the year 2007-08. As mentioned in paras 2.7.5 and 3.8.2, substantial quantities of PANAM coal was used for all the thermal stations during 2006-07 and 2007-08. The Board has intimated in its letter dated 20.05.2008 that 5,00,000 MT, 15,00,000

MT and 20,00,000 MT of PANAM coal is likely to be used in GNDTP, GGSTP and GHTP stations respectively during the year 2008-09. PANAM coal is priced on F.O.R. destination basis and no transit loss is involved. The Commission, therefore, decides to continue with the norm of 2% transit loss for coal in all the thermal stations except in the case of PANAM coal.

#### **Price and Calorific Value of Coal**

The price of coal excluding transit loss for GNDTP, GGSTP and GHTP (Stage-I&II) has been projected as Rs.2275/tonne, Rs.2251.90/tonne and Rs.2340/tonne respectively for the year 2008-09, on the basis of actual average coal prices till Sept, 2007 for each of these stations. Fuel cost being a major item of expense, the actual calorific value, price and transit loss of coal for the year 2007-08 were verified and the results are given in Table 4.16.

**Table 4.16: Actual Calorific Value, Price and Transit Loss of Coal - 2007-08**

<b>Sr.No</b>	<b>Station</b>	<b>Gross Calorific value of coal (kcal/kg)</b>	<b>Price of coal including transit loss (Rs/MT)</b>	<b>Transit Loss</b>	<b>Price of coal excluding transit loss (calculated) (Rs./MT)</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1	GNDTP	4174.00	2312.61	1.97%	2267.05
2	GGSTP	3963.00	2341.98	2.44%	2284.83
3	GHTP	4167.00	2354.48	1.76%	2313.04

In working out the cost of coal for the year 2008-09, the Commission has considered the price and calorific value of coal as validated for the year 2007-08. The price and calorific value of coal indicated above are the weighted average values of coal, including PANAM coal.

During the course of public hearings on the ARR of the Board, the Commission was informed that proper determination of gross calorific value of coal fed into the boiler was possible only if accurate measurement of weight of coal is effected at that time. However, the requisite equipment for such weighment is not available in any of the thermal plants of the Board barring GHTP Stage-II. Another connected issue raised was the manner in which coal samples were drawn and analyzed for determining calorific value. It was mentioned that coal samples were jointly drawn by the Board and the supplier upto 1995 but this method was changed to third party testing wherein the Board does not have any say.

The Commission observes that determination of GCV of coal as fired is an important input into working out the fuel cost of the Board's thermal plants and the Board needs to consider the installation of such equipment as may help in more accurately arriving at this value. It might also be useful for the Board to look into the present procedure for sampling and analysis of coal and take a view as to the need or otherwise of seeking a change therein.

### **Specific Oil Consumption, Calorific Value and Price of Oil**

The Specific Oil Consumption of GHTP Stage-I (Units-I&II) and GGSTP for 2008-09 are estimated by the Board on the basis of CERC norms at 2 ml/kwh. For GNDTP, Specific Oil Consumption is estimated at 3.5 ml/kwh as per CERC norms for Tanda Generating Station. In the case of GHTP Stage-II (Units-III & IV), Specific Oil Consumption is estimated at 3.25 ml/kwh, in accordance with the CERC norm for the consumption of secondary oil for thermal plants during the stabilization period.

The Commission has adopted CERC norms for oil consumption as in the case of other performance parameters of thermal plants. The Commission also takes note of the CERC Notification dated 27.09.2007 which states that the stabilization period and relaxed norms during the stabilization shall cease to apply from 01.04.2006. The Commission, thus, approves oil consumption of 2.0 ml/kWh for GNDTP (Units I&II), GGSTP and GHTP for the year 2008-09. In the case of GNDTP (Units III&IV), the Commission allows oil consumption at 3.5 ml/kWh at par with Tanda station of NTPC as decided in para 4.4.1. The Commission has adopted calorific value of oil and oil price as has been validated for the year 2007-08.

Based on the above, the fuel cost assessed for the year 2008-09 is as given in Table 4.17.

**Table 4.17: Fuel cost (Coal and Oil) - 2008-09**

Sr. No.	Item	Derivation	Unit	Approved for 2008-09				
				GNDTP		GGSTP	GHTP	Total
				I & II	III & IV			
1	2	3	4	5	6	7	9	
1	Generation	A	MU	1542	1004	9886	6127	18559
2	Heat Rate	B	k.cal/kWh Generated	2460	3000	2500	2500	
3	Specific oil consumption	C	Milli litre/kwh	2.00	3.50	2.00	2.00	
4	Calorific value of oil	D	k.cal/litre	9978	9978	10000	9400	
5	Calorific value of coal	E	k.cal/kg	4,174.00	4,174.00	3,963.00	4,167.00	
6	Overall heat	F = (AxB)	G.cal	3793320	3012000	24715000	15317500	
7	Heat from oil	G = (A x C x D) / 1000	G.cal	30772	35063	197720	115188	
8	Heat from coal	H = (F – G)	G.cal	3762548	2976937	24517280	15202312	
9	Oil Consumption	I = (G x 1000) / D	KL	3084	3514	19772	12254	
10	Transit loss of coal	J	(%)	2.0	2.0	2.0	2.0	
11	Consumption of Coal excluding transit loss.	K = (H x 1000/E)	MT	901425	713210	6186546	3648263	
12	Quantity of PANAM coal *	L	MT	302828	197172	1500000	2000000	
13	Quantity of coal other than PANAM coal (excluding transit loss)	M=K-L	MT	598597	516038	4686546	1648263	
14	Quantity of coal other than PANAM coal (including transit loss)	N=M/(1-J)/100	MT	610813	526569	4782189	1681901	
15	Total quantity of coal	O=L+N	MT	913641	723741	6282189	3681901	
16	Cost of oil per KL	P	Rs.	22819	22819	22996	19479	
17	Cost of Coal per MT	Q	Rs.	2,267.05	2,267.05	2,284.83	2,313.04	
18	Total cost of oil	R=P x I / 10 <sup>7</sup>	Rs.crores	7.04	8.02	45.47	23.87	84.40
19	Total cost of coal	S=Q x O/10 <sup>7</sup>	Rs.crores	207.13	164.08	1,435.37	851.64	2658.22
20	<b>Total Fuel cost</b>	<b>T = R +S</b>	<b>Rs.crores</b>	<b>214.17</b>	<b>172.10</b>	<b>1480.84</b>	<b>875.51</b>	<b>2742.62</b>

\* The quantity of PANAM coal for GNDTP is divided in the ratio of gross generation for GNDTP Units I & II and GNDTP Units III & IV.

**Based on the generation and operational parameters, approved by the Commission above, cost of fuel for the year 2008-09 works out to Rs.2742.62 crores for thermal generation of 18559 MU (gross) as detailed in Table 4.17.**

## **Fuel Cost Adjustment (FCA)**

Any change in the fuel cost from the level approved by the Commission is to be passed on to the consumers as FCA. Punjab State Electricity Regulatory Commission (Conduct of Business) Regulations, 2005 contain the FCA formula according to which any change in fuel cost would be passed on to the consumers with the prior approval of the Commission.

### **4.8 Power Purchase Cost**

**4.8.1 Projection by the Board:** The Board has projected a cost of Rs.5560 crores for purchase of 17846 MU (gross) in 2008-09. In doing so, the Board has taken the following into account: -

- Availability projections from old stations (stations in existence for last 3 years) are based upon the average of energy received in the years 2004-05 to 2006-07.
- For Tehri and Dulhasti stations, availability has been projected based on design energy/actual energy figures available. In case of Dhauliganga, average energy of last 2 years has been considered.
- Commercial operation of one machine of Kahalgaon Stage-II has been considered from December, 2007 while it is assumed as April, 2008 and July, 2008 for the second and third machines respectively of Kahalgaon Stage-II.
- For estimation of power from Mejia TPS (2x250 MW), it has been taken to be operational w.e.f. April, 2008 and an assumed share of about 30 MW has been considered.
- Projection of power to be received from RAPP-5 and RAPP-6 has been calculated based on the assumption that these units will be commercially operational w.e.f. March, 2008 and May, 2008 respectively. Power drawn has accordingly been reflected corresponding to the Board's share of 45 MW.

**4.8.2 Requirement of Energy through Purchase:** As discussed in para 4.5, the requirement of 14669 MU (net) has to be met through purchases from central generating stations and other sources. The transmission loss external to the Board's system has to be added to arrive at the total quantum of energy to be purchased.

4.8.3 **Transmission Losses External to PSEB System:** The Board has estimated external transmission losses on power purchase for 2007-08 on the basis of weighted average of losses separately for the first and second halves of 2007-08. For the 1<sup>st</sup> half, actual losses have been taken while in the case of the 2<sup>nd</sup>, average of the Northern Region losses for that half of 2006-07 have been considered. External transmission losses for the year 2008-09 have been taken as the same as the estimated values for 2007-08. Losses for power received from the Eastern Region and the losses for trading have been estimated at 7.9%. This works out to overall transmission losses being 5.35%.

The Commission has, however, considered external losses at a weighted average of 4.63% based on the actual losses in the year 2006-07. The gross energy to be purchased, thus, works out to 15381 MU (14669 MU + external transmission losses 712 MU) instead of 17846 MU projected by the Board.

4.8.4 **Entitlement from Central Generating Stations:** For estimation of energy entitlement of the Board from different Central Generating Stations (CGSs), the Commission has considered the average of the actual energy purchased by the Board for three years (2004-05, 2005-06 and 2006-07). Based on the above, the plant wise energy available from NTPC, NHPC and NPC stations is provided in Table 4.18, Table 4.19 and Table 4.20.

**Table 4.18: PSEB's Entitlement from NTPC stations - 2008-09**

Sr. No.	Station	Capacity (MW)	Firm Allocation		Energy entitlement based on 3 year average (MU)	Share allocation based on 3 year average (%)
			%	MW		
1	2	3	4	5	6	7
1	Anta(G/F)	419	11.69%	49	298	12.82%
2	Anta(R/F)				47	NA
3	Anta(L/F)				31	NA
4	Auraiya(G/F)	663	12.52%	83	444	13.25%
5	Auraiya(R/F)				77	NA
6	Auraiya(L/F)				67	NA
7	Dadri(G/F)	830	15.90%	132	689	16.45%
8	Dadri(R/F)				93	NA
9	Dadri(L/F)				96	NA
10	Singrauli	2000	10.00%	200	1562	11.07%
11	Rihand – I	1000	11.00%	110	843	12.10%
12	Rihand – II	1000	10.20%	102	*865	*11.31%
13	Unchahar-I	420	8.57%	36	282	8.85%
14	Unchahar-II	420	14.28%	60	474	15.30%
15	Unchahar-III	210	8.10%	17	*153	*15.35%
16	Farakka (ER)	1600	4.18%	67	*492	*4.18%
17	Kahalgaon-I (ER)	840	6.34%	53	*756	*12.27%
18	Kahalgaon-II (ER)	1500		53	*354	*3.53%
19	Mejia (DVC) (ER)			30	*216	*6.00%

\*Note: For the Plants Rihand-II, Unchahar-III, Kahalgaon, Farakka and Mejia, where past data is not available to estimate the 3 year average, energy entitlement and share allocation are based on the Board's projections for the year 2008-09.



**Table 4.19: PSEB's Entitlement from NHPC stations - 2008-09**

Sr. No.	Station	Capacity (MW)	Firm Allocation		Energy entitlement based on 3 year average (MU)	Share allocation based on 3 year average (%)
			%	MW		
1	2	3	4	5	6	7
1	Salal	690	26.60%	184	911	26.61%
2	Bairasul	180	46.50%	84	330	46.48%
3	Tanakpur	94	17.93%	17	74	15.75%
4	Chamera-I	540	10.20%	55	227	10.14%
5	Chamera-II	300	10.00%	30	245	17.69%
6	Uri	480	13.75%	66	348	13.75%
7	Dulhasti	390	11.55%	45	*261	*11.55%
8	DhaultiGanga	280	10.00%	28	*131	*11.20%

\* Note: For Dulhasti and Dhaultiganga stations, where past data is not available to estimate the 3 year average, energy entitlement and share allocation are based on the Board's projections for the year 2008-09.

**Table 4.20: PSEB's Entitlement from NPC Stations-2008-09**

Sr. No.	Station	Capacity (MW)	Firm Allocation		Energy entitlement based on 3 year average (MU)	Share allocation based on 3 year average
			%	MW		
1	2	3	4	5	6	7
1	NAPP	440	11.59%	51	221	12.75%
2	RAPP-3	220	22.73%	50	257	21.37%
3	RAPP-4	220	22.73%	50	270	21.12%
4	RAPP-5	220		45	*162	*10.40%
5	RAPP-6	220			*148	*11.22%

\* Note: For RAPP-5 and RAPP-6, where past data is not available to estimate the 3 year average, energy entitlement and share allocation are based on the Board's projections for the year 2008-09.

#### 4.8.5 Cost of Power Purchase

##### (a) Central Generating Stations (CGS)

CERC has issued Regulations laying down Terms & Conditions for Electricity Tariff for the five years period beginning April1, 2004.

##### **NTPC Stations**

##### **Fixed Cost**

As per CERC Regulations, fixed cost is payable in proportion to the share allocation in each of the central generating stations and the Commission has accepted this principle. The annual fixed charges (AFC) in the case of NTPC stations have been

considered as per respective CERC orders in which AFC have been determined for the 5 year period from 01.04.2004 to 31.03.2009. For Unchahar-III and Kahalgaon-II Plants, the cost has been considered as per the Board's projection for the year 2008-09.

***Variable Cost***

The Commission has assessed variable cost for 2008-09 as per NTPC bills for September, 2007 for different central generating stations as projected by the Board in the ARR. For Kahalgaon-II and Mejia Plants, the cost considered is as per the Board's projection for the year 2008-09.

***Incentive and Other Charges***

The incentive and other charges are provisionally approved as projected by the Board for the year 2008-09.

**NHPC Stations**

***Fixed Cost***

As per CERC Regulations, fixed cost is payable in proportion to the share allocation in each of the central generating stations and the Commission has arrived at the fixed charges on this basis. AFC in the case of NHPC stations have been considered as per respective CERC orders whereby these charges were fixed for the 5 year period from 1.4.2004 to 31.3.2009. For Dhauliganga and Dulhasti Plants, annual fixed charges have been considered as per the bills for September, 2007.

***Variable Cost***

The Commission has assessed variable cost for 2008-09 as per NHPC bills for September, 2007 for different central generating stations, as projected by the Board in the ARR.

***Incentive and Other Charges***

The incentive and other charges are provisionally approved as projected by the Board for the year 2008-09.

**NPC Stations**

The power purchase rate for NAPP and RAPP-3 & 4 stations has been considered by the Commission as per September, 2007 and March, 2008 bills as projected by the Board in the ARR while in the case of RAPP-5 & 6 stations, it has been considered as

the same as for RAPP-3 & 4 stations. All other charges are also as per the estimates of the Board.

**(b) Power Purchase Tariff for Co-generation Stations including Jalkheri**

The power purchase and its cost for cogeneration stations including Jalkheri are provisionally approved as per the Board's figures.

**(c) Power Purchase Rates for Banking**

The power purchase and cost of banked power obtained from HPSEB, J&K, UPCL, Rajasthan and through Traders has been provisionally approved as per the Board's projection. The Commission notes that such cost is apparently on the higher side but it accepts the same as the Board has indicated that similar rates are charged in the sale of power and as such, banking has no major cost implications in the long run.

**(d) Power Purchase Rates from Tehri and NJPC**

The annual fixed charges in 2008-09 of the NJPC station have been considered as per CERC order dated March 5, 2008 in Petition No. 20/2008, and in case of Tehri station these have been provisionally approved as per the Board's projection. The Commission has assessed variable cost in case of these stations for 2008-09 as per bills for September, 2007 as projected by the Board in the ARR while all other charges are also as per estimates of the Board.

**(e) Power Purchase from Traders**

With the approved gross purchase of power for the year 2008-09 and taking into account the power available from central generating stations and other sources, the power required to be purchased from traders will be 898 MU only against 3365 MU projected by the Board. The Commission approves the average cost of purchase from traders at Rs.5.45/kWh as projected by the Board in the ARR and other charges as projected by the Board (on proportionate basis).

The Commission has, in its earlier Tariff Orders, emphasized the need for purchasing power in a judicious and economical manner and to resort to demand management practices, if necessary, in order to minimize power purchase at abnormally high cost. An analysis of power purchases effected by the Board from different sources in 2007-08 indicates that this might not always have been the case as would be evident from instances referred to hereunder:

- CERC data for 2007-08 indicates that the Power Trading Corporation (PTC) sold a total of 9552 MU at the weighted average rate of Rs.3.79 per unit in that year. Of

this, 1125.27 MU were purchased by the Board at a much higher rate of Rs.6.41 per unit (weighted average).

- The Board procured unscheduled inter change (UI) power at an average rate of Rs.3.48 per unit from April, 2007 to December, 2007. However, the average rate of UI power for 2007-08, as a whole, increased to Rs.4.47 per unit on account of substantial quantities of UI power sourced by the Board during January to March, 2008 at an average rate of Rs.7.33 per unit.

Clearly, the Board needs to review the purchases made in 2007-08 in order to ensure that these were effected in the most economical manner and if that is not the case then remedial measures need, obviously, to be initiated. The rate of UI power has been rising and is presently at Rs.10.00 per unit for frequency below 49.02 Hz. Accordingly, the Board may need to consider the possibility of imposing a ceiling on the purchase of UI power consistent with maintaining normal supply and grid stability. This may also be necessary as over drawl of power has resulted in booking of 30.49 MU of costly power for a total amount of Rs.27.30 crores from KWGPS in 2007-08).

**The Commission reiterates that the Board needs to purchase power in a judicious and economic manner and also resort to demand management practices, if necessary, to minimize the power purchase from traders at abnormally high cost.**

**(f) Transmission Charges**

The Board has projected transmission charges payable to PGCIL as Rs.172.44 crores for the year 2008-09 which the Commission approves.

Based on the above, the cost of power purchase for the year 2008-09 works out to Rs. 4186.33 crores as detailed in Table 4.21.

**Table 4.21: Power Purchase Cost 2008-09**

Sr. No.	Source	Purchase (MU)	AFC (Rs. crores)	PSEB share	VC (Ps/ Unit)	FC (Rs. crores)	VC (Rs.crores)	Others (Rs.crores)	Total (Rs.crores)
1	2	3	4	5	6	9	8	9	10
<b>I</b>	<b>NTPC</b>								
1	Anta (G/F)	298	78.08	12.82%	98	10.01	29.20	3.52	42.73
2	Anta (R/F)	47			387		18.19		18.19
3	Anta (L/F)	31			798		24.74		24.74
4	Auraiya(G/F)	444	116.18	13.25%	104	15.39	46.18	7.20	68.77
5	Auraiya(R/F)	77			402		30.95		30.95
6	Auraiya(L/F)	67			710		47.57		47.57
7	Dadri (G/F)	689	159.51	16.45%	102	26.24	70.28	15.80	112.32
8	Dadri (R/F)	93			398		37.01		37.01
9	Dadri (L/F)	96			690		66.24		66.24
10	Singrauli	1562	350.68	11.07%	84	38.82	131.21	13.02	183.05
11	Rihand - I	843	339.92	12.10%	94	41.13	79.24	21.34	141.71
12	Rihand - II	865	526.68	11.31%	96	59.57	83.04	2.30	144.91
13	Unchahar-I	282	142.46	8.85%	135	12.61	38.07	4.26	54.94
14	Unchahar-II	474	177.87	15.30%	134	27.21	63.52	2.06	92.79
15	Unchahar-III	153	122.14	15.35%	135	18.75	20.66	0.84	40.25
16	Farakka (ER)	492	520.58	4.18%	124	21.76	61.01	0.62	83.39
17	Kahalgaon-I (ER)	756	316.00	12.27%	137	38.77	103.57	1.08	143.42
18	Kahalgaon-II (ER)	354	307.66	3.53%	137	10.86	48.50	0.51	59.87
19	Mejia (DVC)	216	0.00	6.00%	263	0.00	56.81	0.00	56.81
	<b>Sub-total</b>	<b>7839</b>				<b>321.12</b>	<b>1055.99</b>	<b>72.55</b>	<b>1449.66</b>
<b>II</b>	<b>NHPC</b>								
20	Salal	911	176.74	26.61%	65	0.00	59.22	8.02	67.24
21	Bairasuil	330	52.71	46.48%	85	0.00	28.05	4.52	32.57
22	Tanakpur	74	46.59	15.75%	85	1.06	6.29	0.60	7.95
23	Chamera-I	227	192.76	10.14%	85	0.29	19.30	5.54	25.13
24	Chamera-II	245	327.37	17.69%	85	37.08	20.83	8.26	66.17
25	Uri	348	274.17	13.75%	85	12.92	29.58	10.00	52.50
26	Dulhasti	261	497.40	11.55%	85	34.78	22.19	11.68	68.65
27	Dhaulti Ganga	131	180.55	11.20%	85	8.34	11.14	4.24	23.72
	<b>Sub-total</b>	<b>2527</b>				<b>94.47</b>	<b>196.60</b>	<b>52.86</b>	<b>343.93</b>
<b>III</b>	<b>NPC</b>								
28	NAPP	221	0.00	12.75%	191	0.00	42.21	0.00	42.21
29	RAPP-3	257	0.00	21.37%	274	0.00	70.42	0.00	70.42
30	RAPP-4	270	0.00	21.12%	274	0.00	73.98	0.00	73.98
31	RAPP-5	162	0.00	10.40%	274	0.00	44.39	0.00	44.39
32	RAPP-6	148	0.00	11.22%	274	0.00	40.55	0.00	40.55
	<b>Sub-total</b>	<b>1058</b>	<b>0.00</b>			<b>0.00</b>	<b>271.55</b>	<b>0.00</b>	<b>271.55</b>
<b>IV</b>	<b>Other Sources</b>								
33	Co-gen. Incl Jalkheri	290	0.00	100.00%	387	0.00	112.23	0.00	112.23
34	Short Term Purchases from Captive Plants	48	0.00	0.00%	349	0.00	16.75	0.00	16.75

35	<b>Banking</b>								
a)	HPSEB	180	0.00	0.00%	234	0.00	42.12	0.00	42.12
b)	J&K	321	0.00	0.00%	448	0.00	143.81	0.00	143.81
c)	UPCL	146	0.00	0.00%	328	0.00	47.89	0.00	47.89
d)	Rajasthan	89	0.00	0.00%	551	0.00	49.04	0.00	49.04
	Banking through Traders	1099	0.00	0.00%	672	0.00	738.53	0.00	738.53
36									
37	NJPC	675	1278.12	10.13%	85	129.47	57.38	27.04	213.89
38	Tehri	211	0.00	7.70%	250	22.42	52.75	3.74	78.91
39	Traders	898	0.00	0.00%	545	0.00	489.41	16.17	505.58
	<b>Sub-total</b>	<b>3957</b>				<b>151.89</b>	<b>1749.91</b>	<b>46.95</b>	<b>1948.75</b>
V	<b>Other Charges</b>								
40	PGCIL								<b>172.44</b>
41	ULDC								0
42	NRLDC								0
43	<b>Total</b>	<b>15381</b>				<b>567.48</b>	<b>3274.05</b>	<b>172.36</b>	<b>4186.33</b>

**The Commission approves power purchase cost at Rs.4186.33 crores for power purchase of 15381 MU (gross).**

#### **4.9 Employee Cost**

4.9.1 The Board has, after capitalization of Rs.135 crores, projected net employee cost at Rs.2225.01 crores in the year 2008-09, details of which are given in Table 4.23 :

**Table 4.23: Employee cost projected by the Board for 2008-09**  
(Rs. crores)

Employee Cost	FY 06-07 (Actual)	FY 07-08 (RE)	FY 08-09 (Projected)
1	2	3	4
<b>Salaries and Allowances</b>			
Basic Salaries	901.73	918	926
Overtime	6.2	9.17	10
DA	258.9	376	466
Other allowances	148.25	160	170
Bonus / Generation Incentive	49.7	52	55
Employee Cost of Additionally recruited 250 Engineers	0	6	8
<b>Salaries Total (1)</b>	<b>1364.78</b>	<b>1521.17</b>	<b>1635.00</b>
Other Staff Costs:			
Medical reimbursement Charges	8.07	9	10
Leave Travel Assistance	3.24	3.5	3.7
Add: BBMB Share	46.94	53	60
Staff Welfare Expenses	28.35	29.5	31
Payment under Workmen's Compensation Act	0.29	0.3	0.31
<b>Other Staff Cost – Total (2)</b>	<b>86.89</b>	<b>95.3</b>	<b>105.01</b>
Terminal Benefits *	392.71	549	600
SOLATIUM benefit	20.25	20	20
<b>Sub-Total (3)</b>	<b>412.96</b>	<b>569</b>	<b>620</b>
<b>Gross Employee Cost (1+2+3)</b>	<b>1864.63</b>	<b>2185.47</b>	<b>2360.01</b>
Less: Capitalization	113.15	125	135
Add prior period expenses	2.87	1.48	0
<b>Net Employee's Cost</b>	<b>1754.35</b>	<b>2061.95</b>	<b>2225.01</b>

\* includes earned leave encashment

Clarifying the basis on which these costs have been worked out, the Board has stated that:

- Basic salary has increased by 3% over the revised estimates of the previous year while DA has been estimated considering six monthly increase of 6%. DA and other allowances are at par with those paid by the Government in line with the Board's assurances to its employees at the time of their transfer from the PWD Electricity Branch in 1962-63.

- Other staff costs have been worked out taking into account the actual expenditure till September 2007.
- No control is exercisable on payment of BBMB's share of employee cost as this is reimbursed as per the actual claims of that organization.
- Terminal benefits include encashment of earned leave at the time of retirement, payment of gratuity and commutation of pension.
- The significant increase in terminal benefits is attributed to the change in pension commutation rules w.e.f. 31.10.2006.

4.9.2 The Board has also referred to a host of measures being undertaken to control employee cost including freezing fresh recruitment, complete ban on creation of new posts, outsourcing of security works, reduction in generation incentive by 10%, withdrawal of compassionate appointments to dependants of deceased employees, introducing special schemes for employees to avail long leave for self employment, computerization of cash collection centres etc. In addition, the Board has commissioned M/s Price Waterhouse Coopers to undertake a study of its man power requirements, whose report is expected in July 2008.

4.9.3 The Board's main contention is that it has taken all possible measures to restrict the number of its employees and there has been a virtual ban on creation of new posts as well as fresh recruitment. Given the fact that the Board is not in a position to make any further radical reduction in staff strength, the Board contends that it is reasonable to allow actual employee cost as incurred. The Board has specially emphasized the fact that almost Rs.600 crores of its total employee cost in 2008-09 constitute uncontrollable costs such as terminal benefits, LTA and medical reimbursement and the Commission needs to take special note of this factor and allow these costs separately even if it otherwise intends to cap employee cost in accordance with its Regulations.

4.9.4 The Commission notes that determination of employee cost has all along been a contentious issue. However, it is relevant to observe that the Commission has followed a consistent policy in this regard holding from the very beginning that the employee costs of the Board are decidedly on the higher side, seen either in normative terms or in comparison to costs incurred by similarly placed licensees in other States. Even so, the Commission had approved an employee cost of Rs.1274.66 crores for the year 2002-03 based on actual expenditure incurred by the Board on this account. While it is a fact that no further increase in such costs were



allowed in the subsequent two years (2003-04 and 2004-05), this issue was redressed in the Tariff Order of 2005-06 by allowing a cumulative increase of 15.61% on the costs determined in 2002-03 while allowing employee expenditure in 2005-06. The increase of 15.61% represented the cumulative increase in WPI between March 2002 and March 2005. Thereafter, the principle of applying WPI increase over the employee costs as determined in the base year has been incorporated in the Commission's Regulations framed in 2005 and has been consistently followed in the subsequent Tariff Orders. It is evident, therefore, that the Board had sufficient time to evolve suitable strategies for curtailing employee cost where possible as well as drawing up suitable rules and regulations with a view to ensuring that such costs can be kept under control. There is scarcely any doubt that the Board has yet to take a holistic view of its man power requirements keeping in view revised norms and productivity levels as per accepted standards. Not surprisingly, a study of its man power requirements has only recently been commissioned by the Board. The issues raised in seeking higher employee cost are not new and have been extensively dealt with in the previous Tariff Orders including that for the year 2007-08. The legal backdrop, the position in respect of Commission's own Regulations and the view taken by the Appellate Tribunal have also been elaborated therein. It may only be added that it is not appropriate for the Commission to consider the Board's uncontrollable costs apart from the totality of the expenditure incurred. In fact, the quantum of the payment on account of terminal benefits etc. are reflective of the total man power costs of the Board and can not be delinked therefrom.

- 4.9.5 In the light of the position brought out in the foregoing para, the Commission does not find sufficient justification to deviate from the Regulations in determining the employee cost of the Board. The WPI increase as on March 2008 against the corresponding period in the previous year stands at 6.68%. The Commission takes this into account and applying the same on the employee cost determined for 2007-08 arrives at the allowable employee cost of Rs.1773.55 crores in 2008-09.
- 4.9.6 The Board, in its letter dated May 16, 2008 has submitted that O&M expenses which include employee cost be allowed for the assets added during the year on prorata basis from the date of commissioning in accordance with Regulation 28 (6) of the PSERC Tariff Regulations. The Commission, however, for the reasons already elaborated in para 2.10.4 of this Order, finds no justification in allowing any additional employee cost.

**The Commission, therefore, approves Rs.1773.55 crores as employee cost for the year 2008-09.**

#### **4.10 Repair and Maintenance (R&M) expenses**

4.10.1 The Board has projected R&M expenses at Rs.398.30 crores for the year 2008-09 which translates into a 17.15% increase over the R&M cost of Rs. 339.99 crores estimated by the Board in the revised estimates for 2007-08. The Board's justification is that its power plants and T&D network are old and need more repairs and maintenance costs in addition to T&D loss reduction targets requiring higher R&M expenses. Moreover, the demand for power has increased significantly during the last 4-5 years creating pressure on the existing system. The Board has clarified that additional R&M expenses have been calculated taking into account the additional assets likely to be added during the year as envisaged in Regulation 28 (6) of the PSREC Tariff Regulations.

4.10.2 Repair and maintenance charges of Rs.398.30 crores include Rs.107.15 crores representing R&M costs share in BBMB. The gross fixed assets (GFA) as on April 1, 2008 are shown as Rs.18256.81 crores and the projected R&M expenses work out to 2.18% of GFA.

4.10.3 The PSERC Tariff Regulations provide for allowing an annual enhancement based on increase in WPI over and above R&M expenses approved for the year 2007-08. The WPI registered an increase of 6.68% during 2007-08. The Commission takes into account this increase of 6.68% and by applying the same on the base figure of the R&M costs of Rs.302.95 crores approved by the Commission for 2007-08, R&M expenses will be Rs.323.19 crores for the year 2008-09.

4.10.4 The Board, in its letter dated May 16, 2008 has submitted that O&M expenses which include R&M cost be allowed for the assets added during the year on prorata basis from the date of commissioning in accordance with Regulation 28 (6) of the PSERC Tariff Regulations. The Commission is of the view that the increase in R&M expenses demanded by the Board for additional assets to be added during the year 2008-09 cannot be allowed at this stage and will be considered at the time of review next year.

**The Commission, therefore, approves Rs.323.19 crores as R&M expenses for the year 2008-09.**

#### **4.11 Administration and General (A&G) expenses**

4.11.1 The Board has projected administration and general expenses at Rs.90.34 crores net of capitalization for the year 2008-09, an increase of 25.59% over the reviewed A&G expenses of Rs.71.93 crores for 2007-08. The high increase is mainly on account of separately identified training costs of Rs. 20 crores. The Board has, in support of the proposed training cost, submitted that the National Training Policy for the power sector prepared by the Ministry of Power, Government of India provides that 'expenditure on training may be considered for tariff computation by regulatory authorities'.

4.11.2 The Board had in review claimed Rs.7.09 crores towards training expenses for the year 2007-08. However, the actuals of A&G expenses provided by the Board in its letter of April 12, 2008 indicate that no expenditure on training has occurred upto January 2008. In para 4.11.1 of Tariff Order for 2007-08 the Commission while appreciating the initiative of the Board in enhancing skills and expertise of its employees, observed that it would not be possible to consider allowing such high expenditure without ascertaining the details thereof. The Board has elaborated that it plans to train about 50000 employees in the distribution system, 8600 employees in generating stations, 4650 employees in the transmission system and 4900 employees working in other departments of the Board involving a cost of Rs.20 crores during the year. The Commission, while conscious of the need to impart training to the employees of the Board, notes that the cost of Rs.20 crores is inordinately high especially when the Board has failed to incur any significant expenditure under this head in the previous year.

In view of the above, the Commission approves a provision of Rs.5 crores towards training expenses for the year 2008-09.

4.11.3 As per the PSERC Tariff Regulations, the Commission determines A&G expenditure based on increase in WPI. The WPI at the end of March 2008 registered an increase of 6.68% in 2007-08 and by applying the same over the approved expenses for 2007-08, A&G expenses work out to Rs.74.29 crores for the year 2008-09.

4.11.4 The Board, in its letter dated May 16, 2008 has submitted that O&M expenses which include A&G cost be allowed for the assets added during the year on prorata basis from the date of commissioning in accordance with Regulation 28 (6) of the PSERC Tariff Regulations. The Commission is of the view that the increase in A&G expenses

demanded by the Board for additional assets to be added during the year 2008-09 cannot be allowed at this stage and will be considered at the time of review next year.

**The Commission accordingly approves the A&G expenses including training cost at Rs.79.29 (74.29+5.00) crores for the year 2008-09.**

#### 4.12 Depreciation charges

4.12.1 The Board has estimated depreciation charges of Rs.783.32 crores for the year 2008-09 based on the closing block of assets of Rs.18256.81 crores as on March 31, 2008.

4.12.2 The Commission arrived at the percentage rate of depreciation for 2008-09 by taking the figures of depreciation charges from the audited accounts for the year 2006-07 into account. By applying the same rates of depreciation in the year 2008-09, depreciation charges work out to Rs.783.34 crores for 2008-09. Details of the function wise depreciation charges are given in Table 4.25.

**Table-4.25: Depreciation charges for 2008-09**

Sr. No.	Item	Assets as on April 1, 2007 (as per Balance Sheet) (Rs crores)	Rate (%)	Depreciation charges for 2007-08 (Rs crores)	Assets as on April 1, 2008 (Rs crores)	Rate (%)	Depreciation charges for 2008-09 (Rs crores)
1	2	3	4	5	6	7	8
1	Thermal	2,915.31	4.52%	131.77	4198.28	4.52%	189.76
2	Hydro	5,774.80	2.31%	133.40	5,818.23	2.31%	134.40
3	Internal Combustion	2.68	0.00%	0.00	2.68	0.00%	0.00
4	Transmission	1,898.62	4.99%	94.74	2,376.99	4.99%	118.61
5	Distribution	4,685.44	5.94%	278.32	5,696.39	5.94%	338.37
6	Others	136.74	1.34%	1.83	164.24	1.34%	2.20
	<b>Total</b>	<b>15,413.59</b>		<b>640.06</b>	<b>18256.81</b>		<b>783.34</b>

**The Commission accordingly approves depreciation charges of Rs.783.34 crores for the year 2008-09.**

#### 4.13 Interest and Finance charges

4.13.1 The Board has claimed interest and finance charges at Rs.1394.94 crores (net) as per details given below:

(Rs. crores)

A	Interest on capital liabilities	796.35
B	Interest on short term borrowings	450.00
C	Interest on GPF	105.00
D	Total A+B+C	1351.35
E	Interest on Government loan	85.99
F	Gross interest charges	1437.34
G	Less: Interest capitalized	(82.40)
H	Finance charges	40.00
I	Net interest and finance charges	1394.94

The Board has submitted that it has taken up significant capital works under various schemes and has raised loans from financial institutions such as REC and PFC to meet the capital expenditure. The Board has further stated that it has to raise loans from the market for meeting the working capital requirements and resort to short term borrowings owing to delayed payment of subsidy by the Government resulting in increase in interest charges. The Board in its letter dated May 24, 2008 submitted that due to recall of loan of Rs.1362 crores by the Government and non-payment of refund of interest of Rs.487 crores, it had to raise short term loans resulting in extra interest liability of Rs.102.56 crores which deserves to be allowed. It is stated in the ARR submissions that the Board has to raise short term loans from the market to meet approved revenue deficits of the earlier years and to meet the difference between actual costs incurred by the Board and costs approved by the Commission for the years 2005-06 to 2007-08. In this connection, the Board has referred to the disallowance of interest charges of Rs.100 crores in the ARRs since 2003-04 holding that the Board had utilized capital funds for bridging the revenue gap for the period prior to March 2002. The Board has urged that no part of interest be disallowed on diverted funds stating that this was the result of factors beyond the control of the Board. The submissions made by the Board are discussed in the succeeding paras.

4.13.2 **Investment Plan:** The Board has proposed an investment plan of Rs. 2684.26 crores in the ARR for 2008-09. It is noted by the Commission that in 2007-08, an investment plan of Rs.2500 crores was approved. The actual expenditure for 2007-08 upto December, 2007 is Rs.1060.59 crores. The Commission has now approved a revised investment plan of Rs.1500 crores for the year 2007-08. The Commission further observes that the Board invariably proposes an ambitious investment plan every year but actual capital expenditure is no where near the proposed plan. However,

considering the Board's need to make substantial investments in transmission and distribution network for providing uninterrupted and reliable power supply to the consumers and considering the level of actual capital expenditure in previous years, the Commission now allows an investment plan of Rs.2000 crores for the year 2008-09. After adjustment of consumers' contribution of Rs.219 crores, assumed at the level of 2006-07, the actual investment requirement comes to Rs.1781 crores.

4.13.3 **Working Capital:** The Board has projected a working capital requirement of Rs.1345.10 crores and estimated the interest charges at Rs.171 crores @ 12.75% based on the short term PLR of the State Bank of India. The Board has arrived at the working capital requirement of Rs.1345.10 crores adopting two months fuel cost and maintenance spares for generating plants as per CERC norms while other components of working capital are as per the PSERC Tariff Regulations. The Commission is, however, of the view that there is no reason to deviate from the norms prescribed for an integrated utility in the PSERC Tariff Regulations and adopted in previous Tariff Orders. The Commission, therefore, determines the working capital requirement as per the provisions contained in these Regulations as detailed in Table 4.26.

**Table 4.26: Working capital requirement - 2008-09**

(Rs. crores)	
Particulars	Approved by Commission for 2008-09
One month Fuel Cost	228.55
One month Power Purchase Cost	348.86
One month Employee Cost	147.80
One month Administration and General Expenses	6.61
One month Repair and Maintenance Expenses	26.93
<b>Total requirement for working capital</b>	<b>758.75</b>
Interest Rate	13%
Interest	<b>98.64</b>

The total working capital requirement as per the Regulations works out to Rs.758.75 crores against Rs.1345.10 crores claimed by the Board. The interest on the approved working capital requirement of Rs.758.75 crores by applying the short term PLR of 13% of the State Bank of India as in April 2008 works out to Rs.98.64 crores as against Rs.171 crores claimed by the Board.

#### 4.13.4 Interest on short term loans

Interest claims of the Board proposed in the ARRs are being considered and allowed by the Commission in accordance with the PSERC Tariff Regulations. Short Term borrowings are, in the normal course, for the working capital requirements and interest thereon has already been considered in para 4.13.3 above. The Board has requested for additional interest cost of Rs.102.56 crores on account of non-payment of refund of excess interest of Rs.487 crores and recall of loan of Rs.1362 crores by the Government. The Commission is of the view that the issue of refund of interest amount and recall of loan are mutual to the Board and the Government and it would be unfair to pass on any notional cost on this account to the consumers.

The claim of the Board that interest on short term loans raised to fund actual costs incurred by the Board and costs approved by the Commission need to be allowed cannot be accepted because doing so would tantamount to passing on the costs of inefficiencies of the Board to the consumers in an indirect manner. The remaining issue of interest cost of approved revenue deficits of the earlier years is discussed separately in para 4.14.

**4.13.5 Finance charges:** The Board has claimed finance charges at Rs.40 crores which work out to 1.49% of the proposed investment of Rs.2684.26 crores. The Commission notes that finance charges are usually about 0.5 to 1% of the borrowings and Commission has allowed these charges at 0.66% in the review of 2007-08 based on the actuals of 2006-07. The Commission has approved an investment plan of Rs.2000 crores in para 4.13.2. After adjustment of consumer contribution of Rs.219 crores, assumed at the level of 2006-07, the actual investment requirement comes to Rs.1781 crores. The finance charges, on this investment requirement at 0.66%, work out to Rs.11.75 crores. The Board has further included interest charges on consumer deposits in the finance charges. Interest on consumer deposits has been approved at Rs.4.00 crores for 2007-08 (para 3.14.6). Allowing an increase of 5% in consumer deposits, interest payable works out to Rs.4.20 crores. Accordingly, total finance charges are allowed at Rs.15.95 (11.75 + 4.20) crores for the year 2008-09.

**4.13.6 Capitalization of interest:** In its previous Tariff Orders, the Commission had allowed capitalization of interest excluding interest charges on working capital in the ratio of net works in progress to total capital expenditure. Based on the same principle the Commission approves capitalization of interest charges of Rs.22.29 crores for the year 2008-09.

**4.13.7 Interest on Government loans:** The Board has shown the Government loans at Rs.3074.91 crores as on April 01, 2008 and it has neither proposed any drawal of fresh loan nor repayment of the existing ones. Interest on Government loans has been shown as Rs.85.99 crores for the year 2008-09 after excluding an amount of Rs.289.92 crores determined as not payable by the Commission in the previous year. As discussed in para 3.14.7, with the recall of overdue Government loans of Rs.1362 crores in February 2008, the balance Government loans have reduced to Rs.1712.91 crores as on March 1, 2008. Accordingly, the interest on Government loans of Rs.1712.91 crores at the average rate of 12.22% comes to Rs.209.32 crores for 2008-09.

The Commission in para 4.13 of its Order dated September 13, 2007 passed in compliance with the directions of the Appellate Tribunal, directed disallowance of interest payable on Government loans amounting to Rs.289.92 crores in the ARR of 2006-07 to be given effect at the time of review of that year and the same was maintained in 2007-08. However, in 2008-09, Government loans stand reduced to Rs.1712.91 crores and interest thereon has been worked out at Rs.209.32 crores. For reasons discussed in the Order dated September 13, 2007, this amount is dis-allowed from the claim of the Board with a further direction that this amount of interest is not payable to the Government.

The Commission has been disallowing Rs.100 crores from the interest cost of the Board in the Tariff Orders of 2003-04 onwards on account of diversion of capital funds for revenue purpose. For the same reasons, the Commission decides to disallow Rs.100 crores from the interest cost of the Board for the year 2008-09 as well.

**4.13.8** On the basis of the above decisions, the Commission approves interest and finance charges as given in Table 4.27.



**Table 4.27: Interest and Finance Charges - 2008-09****(Rs. crores)**

Sr. No.	Particulars	Loans o/s as on 31.3.08	Receipt of loans	Repayment of loans	Loans o/s as on 31.3.09	Amount of interest
1	2	3	4	5	6	7
1	As per data furnished by PSEB (other than WCL & Government loans)	5956.54	2621.22	681.68	7896.08	713.41
2	Approved by Commission (other than WCL & Government loans)	5956.54	1781.00	681.68	7055.86	670.13
3	Government loans	1712.91	-	-	1712.91	209.32
4	Interest on GPF					105.00
5	<b>Total (2+3+4)</b>	<b>7669.45</b>	<b>1781.00</b>	<b>681.68</b>	<b>8768.77</b>	<b>984.45</b>
6	<b>Less: Interest Disallowed on a/c of Diversion :</b>					<b>309.32</b>
a)	<b>Board - Rs. 100 crores</b>					
b)	<b>Government - Rs. 209.32 crores</b>					
7	<b>Total (5 - 6)</b>					<b>675.13</b>
8	Interest on working capital					98.64
9	Lease Rental					0.05
10	<b>Total interest</b>					<b>773.82</b>
11	Add finance charges					15.95
12	<b>Grand total</b>					<b>789.77</b>
13	Less capitalization					22.29
14	<b>Net interest &amp; finance charges</b>					<b>767.48</b>

**The Commission, therefore, approves Rs.767.48 crores as net interest and finance charges for the year 2008-09.**

#### **4.14 Interest cost of the approved Gap for 2006-07 and 2007-08**

4.14.1 In the ARR, the Board has submitted that it has to raise short term loans from the market for meeting the gap on account of revenue deficits which are subsequently approved by the Commission in review and true up and that the interest cost of these approved revenue gaps need to be allowed. In its subsequent submissions dated May 27, 2008, the Board has stated that the outstanding short term loans of Rs.2275 crores at the end of March, 2007 have increased to Rs.4420 crores at the end of March, 2008 and the interest paid on these loans was Rs.371.30 crores. A part of these loans was utilized to meet the revenue gap of 2006-07 and 2007-08.

4.14.2 The Commission notes that on the basis of true up for 2006-07 forming a part of this order, the Commission has determined a gap of Rs.439.51 crores for the year. This amount of Rs.439.51 crores has been determined as due for 2006-07 but would be

available to the Board as revenue, only after the tariffs of 2008-09 are revised. The Commission also notes that part of the short term loans raised by the Board were for funding this approved gap. Taking into consideration these facts, the Commission is of the view that the Board is entitled to the carrying cost of the amount of Rs.439.51 crores for the period 2006-07 and 2007-08 at the PLR of the State Bank of India for short term loans. Accordingly, the carrying cost for this amount is allowed for six months of 2006-07 (taking the average period of such loans) and for 12 months of 2007-08. The PLR for short term loans of the State Bank of India was 12.75% per annum as in April, 2007 and by applying the same to the gap amount of Rs.439.51 crores for a period of 18 months, the amount of interest works out to Rs.84.06 crores.

4.14.3 The Commission has, in review of 2007-08 approved a gap of Rs.278.27 crores. Interest on this gap for a six month period of 2007-08 (taking the average period of such loans) at the PLR of 13% as on April, 2008 of the State Bank of India comes to Rs.18.09 crores which is allowed for the reasons discussed above.

**The Commission, therefore, approves Rs.102.15 (84.06 + 18.09) crores as interest cost for the approved gaps of the years 2006-07 and 2007-08.**

#### **4.15 Return on Equity**

4.15.1 The Board has claimed Rs.412.46 crores towards return on equity on a capital basis of Rs.2946.11 crores as on April 1, 2008.

4.15.2 Regulation 25 of the PSERC Tariff Regulations provides that return on equity will be computed on the paid up equity capital in accordance with Regulation 24 and that the Commission will in this respect be guided by the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004 as amended from time to time. Accordingly, return on equity is admissible @14% on equity capital as on April 1, 2008.

4.15.3 The equity capital in the Board as on April 1, 2008 is Rs.2946.11 crores and the return @ 14% on the equity works out to Rs.412.46 crores.

**The Commission, therefore, approves Return on Equity of Rs.412.46 crores for the year 2008-09.**

#### **4.16 Fringe Benefit Tax (FBT)**

The Board has estimated FBT at Rs.5 crores for the year 2008-09. The FBT is a statutory liability payable by the Board and the Commission allows FBT amounting to

Rs.4.56 crores for the year 2008-09 at the level of actual payment for the year 2006-07.

**The Commission approves FBT at Rs.4.56 crores for the year 2008-09.**

#### **4.17 Extraordinary items and other debits**

The Board has projected extraordinary and other debits at Rs.7.68 crores for the year 2008-09, keeping this at the same level as that of 2006-07 actuals. Extraordinary items are defined as those which arise from events or transactions out side the ordinary activities of the Board but are material and expected not to recur frequently. Other debits primarily include material cost variance, bad and doubtful debts written off/ provided for and miscellaneous losses.

Such items of expenditure can be considered on actual basis only. The Commission, therefore, decides that this expenditure would be considered on actual basis in the true up exercise after audited accounts for 2008-09 become available.

#### **4.18 Non – Tariff Income**

4.18.1 The Board has projected non-tariff income of Rs.342 crores for the year 2008-09, stating that revenue of Rs.70.00 crores from surcharge on late payment has not been considered as part of non-tariff income as the Board is not asking for working capital for delayed payments by its consumers or suppliers.

4.18.2 The Commission notes that it is the responsibility of the licensee to achieve the highest possible billing and collection efficiency. Moreover, security deposits collected from consumers provide for working capital. Further, Regulation 34 of the PSERC Tariff Regulations provide for taking the revenue from late payment surcharge as part of non-tariff income.

**The Commission, therefore, approves the Non-Tariff Income of Rs.412.00 {342.00 + 70.00 (on account of surcharge for delayed payments)} crores for the year 2008-09.**

#### **4.19 Revenue from existing tariff**

The Revenue from existing tariff as projected by the Board for the year 2008-09 is Rs.11397.90 crores. However, the expected revenue from existing tariff on the basis of sales approved by the Commission will work out to Rs.11231.11 crores as given in Table 4.28.

**Table 4.28: Revenue from Existing Tariff - 2008-09**

Sr. No.	Category of Consumers	Energy Sales (MU)	Tariff Rates (P/unit)	Revenue (Rs. crores)
1	2	3	4	5
1	Domestic			
a)	Up to 100 units	3925	232	910.60
b)	101-300 units	1672	383	640.38
c)	Above 300 units	852	405	345.06
	<b>Total</b>	<b>6449</b>		<b>1896.04</b>
2	NRS	2030	440	<b>893.20</b>
3	Public Lighting	149	440	<b>65.56</b>
4	Industrial Consumers			
a)	SP	748	351	262.55
b)	MS	1542	387	596.75
c)	LS *	9359	387	3761.87
	<b>Total</b>	<b>11649</b>		<b>4621.17</b>
5	Bulk Supply			
a)	HT	450	398	179.10
b)	LT	47	423	19.88
6	Railway Traction	111	461	51.17
7	Common pool	303		73.73
8	Outside State	2036		1156.22
9	<b>Total</b>	<b>23224</b>		<b>8956.07</b>
10	A P Consumption	9408	229	2154.43
11	<b>Total</b>	<b>32632</b>		<b>11110.50</b>
12	Add: MMC, Rebates & Other Charges			120.61
13	<b>Grand Total</b>	<b>32632</b>		<b>11231.11</b>

\* LS revenue includes Rs.139.94 crores estimated for PLEC charges.

- Note : (i) The slab-wise energy sales for domestic supply are taken in the same ratio as for 2006-07 (60.88:25.92:13.20).  
(ii) Revenue from outside State sales come from sale of Banked Power to other States and to Traders.  
(iii) Sale of Banked Power to other states is estimated to be 736 MU at Rs.3.84 per unit whereas sale of Banked Power to traders is estimated at 1300 MUs at Rs.6.72 per unit.

**The Commission, as such, approves revenue from existing tariff at Rs.11231.11 crores for the year 2008-09.**

#### **4.20 Revenue requirement**

The summary of the revenue requirement of the Board for the year 2008-09 as analyzed in the preceding paragraphs is given in Table 4.29.

**Table 4.29: Revenue Requirement - 2008-09****(Rs. crores)**

<b>Sr. No.</b>	<b>Item of expense</b>	<b>Proposed by the Board</b>	<b>Approved by The Commission</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1	Cost of fuel	2978.00	2742.62
2	Cost of power purchase	5560.30	4186.33
3	Employee cost	2225.01	1773.55
4	R&M expenses	398.30	323.19
5	A&G expenses	90.34	79.29
6	Depreciation	783.32	783.34
7	Interest charges	1394.94	767.48
8	Carrying cost of Gap		102.15
9	Return on Equity	412.50	412.46
10	Fringe Benefit Tax	5.20	4.56
11	Extraordinary items and debits	7.68	-
<b>12</b>	<b>Total revenue requirement</b>	<b>13855.59</b>	<b>11174.97</b>
13	Add consolidated gap for 2007-08	3139.10	717.78
<b>14</b>	<b>Gross revenue requirement (12+13)</b>	<b>16994.69</b>	<b>11892.75</b>
15	Less Non Tariff income	342.00	412.00
16	Less Revenue from existing tariff	11397.90	11231.11
<b>17</b>	<b>Net Gap for 2008-09 (14-15-16)</b>	<b>5254.79*</b>	<b>249.64</b>
<b>18</b>	<b>Energy sales (MU)</b>		<b>32632</b>

\* against Rs. 5254.47 crores shown by the Board in the ARR.

**The Annual Revenue Requirement for the year 2008-09 is assessed at Rs.11174.97 crores with energy sales of 32632 MU. The average cost of supply with this revenue requirement comes to 342.42 paise/unit. The combined average cost of supply (which is the average cost of supply after taking into account past years' gap of Rs.717.78 crores) works out to 364.45 paise/unit (11892.75/32632 MU).**

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# Chapter 5

## Tariff Related Issues

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Some Tariff related issues have been raised by consumers and Consumer Organizations during the course of public hearings held by the Commission in pursuance of the ARR filed by the Board for the year 2008-09 while other matters had come up for consideration in the earlier Tariff Orders. The Commission has examined all these issues taking into account the responses of the Board. These issues are discussed below:

### **5.1. Two Part Tariff**

On a directive by the Commission in its Tariff Order of 2003-04, the Board in its ARR for the year 2004-05 proposed to introduce two part tariff for Large Supply and Railway Traction consumers. The proposal of the Board was objected to by various Industrial Consumers Associations. The Commission had noted that a number of issues relating to two part tariff need detailed examination in view of the vastly differing views of consumers on the subject. The Board was, therefore, directed to prepare a detailed and well considered proposal and submit the same to the Commission along with its ARR and Tariff Application for the year 2005-06.

The proposal of the Board for introduction of two part tariff submitted along with its ARR 2005-06 was again objected to by Consumer Associations on several counts and the Commission in the Tariff Order for 2005-06 again directed the Board to reconsider the matter, keeping in view the issues referred to by objectors.

The Two Part Tariff proposal of the Board submitted again during the determination of ARR for the years 2006-07 and 2007-08 have again been examined by the Commission. It is observed that the National Tariff Policy enjoins the introduction of separate fixed and variable charges for Large Supply consumers with the fixed tariff representing the cost of the Licensee's infrastructure in making electricity available to a consumer. The Board's proposal for introduction of Two Part Tariff envisages the fixed charge being 10% of the existing consolidated tariff but in order to make the

proposal revenue neutral, it is liable to be enhanced on the basis of contract demand of a consumer in case the proposal results in a revenue loss to the Board.

The Commission notes that it would, perhaps, be impractical to recover the entire fixed costs through fixed charges as it would impose a very harsh burden on the consumers specially those with low utilization factor, in addition to providing undue comfort to the Licensee who would then have no incentive to perform better. An analysis of the Board's proposal further reveals that the linkage therein to contract demand introduces distortions in the resulting fixed charges as contract demand may not have any direct relationship to actual consumption with the latter varying on account of several factors including the nature of the production process, the need to install additional stand-by equipment or even the running of single or multiple shifts by a particular unit. It is likely, therefore, that implementation of the Board's proposal would result in possible advantage to a few consumers with higher consumption and better load factor as opposed to the majority who would end up paying, decidedly, higher tariffs. This in turn would raise serious equity issues besides the likelihood of eroding the competitive edge of some categories of industry or individual units. On the other hand, if a licensee is to be compensated for its infrastructure cost then the existing mechanism of MMC partly addresses the issue. The Commission further observes that the proposal of the Board is not based on recovery of actual fixed cost and variable charges. Instead, the proposal is to bifurcate the existing tariffs in two parts on adhoc basis with further adjustment according to the contract demand of a consumer. This, definitely, is not the concept of Two Part Tariff and the Commission does not consider it prudent to introduce Two Part Tariff on this basis.

**Accordingly, it is decided that Single Part Tariff for all categories of consumers including Large Supply and Railway Traction consumers will continue.**

## **5.2 KVAH Tariff**

The Commission in its Tariff Order for 2006-07 had directed the Board to examine the issues relating to introduction of KVAH tariff and while doing so focus on:

- (i) Feasibility of introduction of KVAH tariff;
- (ii) Impact of introduction of KVAH tariff on different categories of consumers;
- (iii) Impact on the revenues of the Board;
- (iv) Proposed tariff structure for different categories of consumers;



- (v) Present status of KVAH compatible meters on consumer premises and the financial implications of installing such meters for all industrial and railway traction consumers;
- (vi) Impact of introduction of KVAH tariff on reduction of T&D losses;
- (vii) The position in this respect in other States;
- (viii) Feasibility of conducting energy accounting and audit with KVAH tariff.

In the Tariff Order of 2007-08, the Commission had observed that the Board's proposal was not complete and most of the issues had not been addressed. The Commission had, therefore, reiterated that the Board should submit a comprehensive proposal alongwith the next ARR.

Some Industrial Consumer Associations and Northern Railway have requested that the rate of incentive for attaining a higher power factor should be at par with the rates of power factor surcharge. They have also brought out that the Railways and Large Supply Industrial Consumers having PIUs should be allowed incentive for achieving a power factor above 0.90 (instead of 0.95) as is the case with other Large Supply Consumers.

The Commission notes that the underlying principle of KVAH tariff has already been accepted and given partial effect to by the introduction from 2005-06 onwards of high power factor incentive and low power factor surcharge. The Board's proposal does not indicate any normative power factor which needs to be built into the KVAH tariff. On the other hand, maintaining the existing dispensation in the proposed KVAH tariff might result in distortions causing either revenue loss to the Board or windfall benefits to some categories of consumers. The Commission also notes that introduction of KVAH tariff is, perhaps, equally necessary for other categories such as NRS or even domestic consumers with higher loads. The Commission intends to look at the entire issue in totality and see whether it is feasible to draw up a road map for the phased introduction of KVAH tariff. The proposal in this respect would be finalized after comments of the consumers and the Board have been obtained and considered.

**The Commission, accordingly, decides to continue with the existing practice of power factor surcharge/incentive for Large Supply, Medium Supply and Railway Traction.**

### 5.3 High Voltage Rebate & Surcharge

Some Industrial Consumers Associations have represented that the entire issue of voltage rebate and surcharge had been considered by a committee constituted by the Government and based on its recommendations, the Board had decided that:

- (i) no surcharge would be leviable on existing consumers (as on June 1995) having a contract demand exceeding 4000 KVA and supply catered at 11 KV;
- (ii) consumers who had been issued feasibility clearance for release of load/demand exceeding 2250 KW/1500 KVA at 11 KV before March 1997 had also been exempted from the levy of surcharge;
- (iii) surcharge @ 10% leviable on Large Supply consumers with contract demand exceeding 2500 KVA and upto 4000 KVA was to be on demand in excess of 2500 KVA on pro-rata basis and not on total demand;
- (iv) rebate of 3% admissible for supply at 66 KV was meager and required to be enhanced to atleast 10% keeping in view the fact that the consumers not only install infrastructure at substantial cost but are also bearing its operation and maintenance cost including transformation and distribution losses.

These Associations contend that the position brought out above had been maintained upto 31.3.2006 but the Board has subsequently begun to raise surcharge bills with effect from 1.4.2004. It is argued that the Commission has already decided that the existing terms and conditions of supply of the Board are to continue unless they are specifically amended or dispensed with by the Commission. Thus, the exemptions available should have continued after 1.4.2006 in the normal course. On the other hand, the Board has not only begun to impose surcharge on low voltage supply but is doing so retrospectively from 1.4.2004 which is contrary to the provisions of the Act, according to which arrears for a period of more than two years can not be recovered.

The Board on its part contends that the rebates and surcharges have been appropriately determined based on a study which went into the implications of supply catered on different voltages, both for the consumers as well as the Board.

On examination of the information received from the Board, the Commission notes that the issue of low voltage surcharge is confined only to 8 LS consumers who are paying 17.5% surcharge and another 20 such consumers who are being charged @ 10%. Other LS consumers seem to have converted their supply voltage and instead of being subjected to a surcharge are being allowed rebate for availing supply at 66 KV or higher voltage. Even in the case of those persons paying surcharge, several have challenged the bills received from the Board and recovery has been stayed by

the Hon'ble Punjab & Haryana High Court. The Commission observes that it is in the process of approving the Conditions of Supply of the Board (Licensee) as required under Regulation 3 of the PSERC (Electricity Supply Code and Related Matters) Regulations. The Commission will, at that time, go into the commercial, financial and other aspects of the issue and determine whether such charges are at all leviable and, if so, whether the present rates are appropriate. After comprehensively dealing with the issue, the Commission proposes to seek the views of the public at large and decide the matter thereafter.

**In the meanwhile, existing provisions for rebates and surcharges for availing supply at different voltages will continue.**

#### **5.4 Bulk Supply Tariff**

Some Consumer Associations/consumers have submitted that Bulk Supply Tariff applicable to consumers having mixed load and undertaking distribution of energy to the actual consumers is on the higher side and needs reduction. It has been brought out that consumers availing Bulk Supply Tariff receive power supply at one point, provide their own distribution system, bear all operational and maintenance costs including T&D losses and effect payment to the Board for the entire energy received at a single point. In this background, the Commission in the Tariff Order for 2007-08 had directed the Board to carry out a study bringing out the actual consumption pattern of Bulk Supply consumers which would separately bring out power consumed for domestic, industrial, commercial and street lighting purposes to enable the Commission in taking a considered view of the matter.

The Commission observes that even though each bulk supply connection may have within it a varying mix of consumer categories, the fact remains that bulk supply is advantageous both to the Board as well as the consumers; the former saves in operational & maintenance costs and T&D losses while the latter enjoys flexibility in distribution of power within their premises. Given the benefits of such supply on either side, there is clearly a need to encourage a larger number of consumers in taking advantage thereof. **With this end in view, the Commission does not propose to effect any enhancement in the tariff of bulk supply category. At the same time, the Commission observes that the type of consumers who can be covered under this category of supply require to be clearly identified and defined.**

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# Chapter - 6

## Determination of Tariff

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### 6.1 Annual Revenue Requirement

- 6.1.1 The Commission has determined the ARR of the Board for the year 2008-09 at Rs.11174.97 crores.
- 6.1.2 The Commission has also simultaneously undertaken a true up for the year 2006-07 consequent upon the availability of audited accounts for that year which results in a net revenue gap (deficit) of Rs. 439.51 crores. In addition, the review of 2007-08 indicates a further gap (deficit) of Rs. 278.27 crores.
- 6.1.3 The combined impact of the three exercises results in gross revenue requirement of Rs.11892.75 crores for the year 2008-09. After making adjustment on account of non-tariff income and revenue from tariff at existing level, the revenue gap accepted by the Commission is Rs.249.64 crores.

### 6.2 Separate tariff for each category

- 6.2.1 In determining tariff, the Commission is guided by the principles laid down in Section 61 of the Act as well as its own Regulations which provide the framework for working out the ARR of a Power Utility and tariff for different categories of consumers. The Commission has also kept in mind the relevant aspects of the National Electricity Policy, National Tariff Policy, the norms adopted by it in earlier Tariff Orders and inputs received from consumers during the process of public hearings.
- 6.2.2 Though the Board is a vertically integrated utility, separate tariffs have been determined for generation, transmission & distribution by segregating the ARR of 2008-09 based on the information furnished by the Board in its letter dated 13.05.2008 and the annual audited accounts of 2006-07.

The allocation under each head (generation, transmission and distribution) is detailed at Annexure-V and the ROE is trifurcated on the value of fixed assets of each function. In addition, the consolidated gap upto 2007-08 has been computed in proportion to the revenue requirement (in Table 6.1) of each function.

6.2.3 The segregated ARR worked out on the above basis is given in Table 6.1. The generation function has also been further divided into thermal and hydel taking into account the fact that the regulations for determining the tariff for these are different.

**Table 6.1: Segregation of ARR for 2008-09**

**(Rs. crores)**

Sr. No.	Item of expense	Generation			Transmission	Distribution	Total
		Hydel	Thermal	Total			
1	2	3	4	5	6	7	8
1	Cost of fuel	0.00	2,742.62	2,742.62	-	-	2,742.62
2	Cost of power purchase	-	-	-	-	4,186.33	4,186.33
3.	Employee cost & Fringe benefit tax	88.73	233.11	321.84	151.14	1,305.31	1,778.11
4	R&M expenses	81.77	108.37	190.13	49.38	83.71	323.19
5	A&G expenses	4.67	8.91	13.58	15.89	49.82	79.29
6	Depreciation	173.20	185.57	358.77	113.90	310.67	783.34
7	Interest charges & carrying cost of gap	431.77	96.96	528.74	113.75	227.15	869.63
8	Return on Equity	155.91	78.78	234.69	51.27	126.50	412.46
<b>9</b>	<b>Total revenue requirement</b>	<b>936.04</b>	<b>3,454.32</b>	<b>4,390.37</b>	<b>495.33</b>	<b>6,289.49</b>	<b>11,174.97</b>
10	Add: Consolidated Gap for 2007-08	60.12	221.87	282.00	31.82	403.98	717.78
<b>11</b>	<b>Gross revenue requirement (9+10)</b>	<b>996.16</b>	<b>3,676.19</b>	<b>4,672.36</b>	<b>527.15</b>	<b>6,693.47</b>	<b>11,892.75</b>

### 6.3 Generation tariff

6.3.1 The PSERC Tariff Regulations specify that the generation tariff will have the same components as laid down in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations 2004.

6.3.2 As per CERC Regulations, generation tariff comprises of :

- (i) Annual Fixed Charges (AFC) include interest, depreciation, return on equity, O&M expenses and interest on working capital; and
- (ii) Energy (variable) charges.

These charges are recoverable on the basis of norms for thermal plants and hydel plants and are specific for each power plant.

- 6.3.3 In the case of thermal plants, AFC are payable on achievement of availability of 80% (and reduced pro-rata in case the availability is less), whereas in the case of hydel stations, full AFC are payable on achievement of capacity index of 85-90%, depending on the nature of hydel plant (storage type / run of the river). The daily capacity index is the actual capacity expressed as a percentage of the maximum available capacity for the day. Capacity index is the average of the daily capacity indices over a year.
- 6.3.4 The Commission has assessed plant wise AFC on the basis of data provided by the Board as reproduced at Annexure-VI whereas proportion of generation cost under each head is given in Annexure-VII. Accordingly, the total revenue requirement for each plant is computed as in Annexure-VIII. The plant wise AFC approved for 2008-09 is given in Table 6.2. These charges will become payable assuming an annual availability and capacity index of 80% in the case of thermal plants and 85-90% in the case of hydel plants depending on the nature of the hydel plant.

**Table - 6.2: Annual Fixed Charges – Generation – 2008-09**

Sr. No.	Plant	Annual Fixed Charges (Rs. crores)	Net Generation (MU)	Fixed Charges (paise/unit)
1	2	3	4	5
<b>A</b>	<b>Thermal Plants</b>			
1	GGSTP	473.69	9046	52
2	GNDTP	141.57	2296	62
3	GHTP	318.40	5576	57
	<b>Total</b>	933.66		
<b>B</b>	<b>Hydel Plants</b>			
1	RSD	723.07	1612	449
2	Mukerian (MHP)	61.46	1074	57
3	UBDC	30.23	432	70
4	Shanan	13.78	507	27
5	Anandpur Sahib (ASHP)	39.32	587	67
6	Micro Hydel	2.63	6	438
7	L. Bank & R. Bank	41.28		NA
8	Beas & Beas Extension	84.40		NA
	<b>Total</b>	<b>996.17</b>		

The AFC for hydel plants at Sr. No. (B) 7 and (B) 8 are determined by BBMB.

Accordingly, the total AFC recoverable in the case of thermal and hydel plants are:

- i) Thermal - Rs. 933.66 crores
- ii) Hydel - Rs. 996.17 crores

6.3.5 The AFC payable on achievement of target availability is as discussed in paras 6.3.6 and 6.3.7.

#### 6.3.6 Target availability of thermal plants

CERC norms prescribe the availability for full payment of the AFC for a thermal plant which in the case of the Board's plants is as given below in Table 6.3.

**Table 6.3: Target availability of thermal plants - 2008-09**

S.N	Plant	Target availability (%)
1	GNDTP	80%
2	GGSTP	80%
3	GHTP	80%

#### 6.3.7 Target capacity index for hydel plants

The hydel plants are allowed to recover AFC based on capacity index. The Commission notes that the Board has not been following the practice of computing the capacity index in the past and is advised to maintain data in this respect which should be furnished in the future ARR's.

#### 6.3.8 Variable (energy) charges for thermal plants

The variable (energy) charges for a thermal plant are the fuel cost to be paid to the generators and are computed as cost per unit of ex-bus energy (energy sent out). As per ARR for 2008-09, the total fuel cost for all the three thermal plants (including GHTP Stage - II) is Rs. 2742.62 crores. These costs have been worked out plant wise and the variable charges per unit of energy sent out by each plant for 2008-09 is given in Table 6.4.

**Table 6.4: Variable (energy) charges – 2008-09**

Sr. No.	Particulars	GNDTP	GGSTP	GHTP
1	2	3	4	5
1	Fuel Cost (Rs. crores)*	386.27	1,480.84	875.51
2	Net Generation (MU)	2,296	9,046	5,576
3	Variable Charge per unit sold (Rs./kWh)	1.6824	1.6370	1.5701

\* The plant wise fuel cost has been taken as approved by the Commission instead of as apportioned in Annexure – VIII.



### 6.3.9 Total Energy charges for generating plants

The total energy charges (fixed charges and variable (energy) charges) for generating plants as determined by the Commission are given in Table 6.5.

Table 6.5: Total energy charges - 2008-09

Sr. No.	Plant	Fixed charges (paise/unit)	Variable (energy) charges (paise/unit)	Total charges (paise/unit) (3+4)
1	2	3	4	5
<b>(A)</b>	<b>Thermal Plants</b>			
1	GGSTP	52	164	216
2	GNDTP	62	168	230
3	GHTP	57	157	214
<b>(B)</b>	<b>Hydel Plants</b>			
1	RSD	449	-	449
2	Mukerian (MHP)	57	-	57
3	UBDC	70	-	70
4	Shanan	27	-	27
5	Anandpur Sahib (ASHP)	67	-	67
6	Micro Hydel	438	-	438

## 6.4 Transmission Tariff

6.4.1 The PSERC Tariff Regulations specify that transmission tariff will have the following components:

- i) Charges for use of the network
- ii) Operation charges
- iii) Reactive energy charges

6.4.2 The Board has not supplied the State Load Despatch Centre (SLDC) costs to arrive at operation charges. The reactive energy charges for Intra-State Open Access customers are to be realized as per the Regulations already notified by the Commission. Hence, only the charges for use of network are being assessed.

6.4.3 Charges for use of network are to be calculated in accordance with the methodology specified in the PSERC Tariff Regulations. The revenue requirement for transmission for 2008-09 works out to Rs. 527.15 crores as given in Table 6.1 and the transmission capacity as furnished by the Board in the ARR for 2008-09 is 6095 MW. On this basis, the Commission determines the charges for use of the transmission network at Rs.2370 /MW/Day.

## **6.5 Distribution / Wheeling**

The charges for use of distribution network are to be calculated in accordance with the methodology specified in the PSERC Tariff Regulations. The revenue requirement for distribution for 2008-09 as per Table 6.1 is Rs.2507.14 crores (excluding the power purchase cost) while the Distribution Capacity is 6288 MW as furnished by the Board. Accordingly, the Commission determines wheeling charges as Rs.10924/MW/day.

## **6.6 Cost of supply and Cross subsidy**

In compliance with the judgement of the Appellate Tribunal of 26.5.2006, the Board was asked in the last Tariff Order to initiate a study for determination of cost of supply of electricity to different classes and categories of consumers. The Board, in its letter of 12.04.2008, intimated that steps have been initiated for commissioning such a study. In the light of the Appellate Tribunal's directions, the Board needs to ensure that the findings of the study as well as its own inputs thereon are submitted to the Commission as early as possible.

## **6.7 Determination of Retail tariff**

6.7.1 The Commission has determined the ARR of the Board for the year 2008-09 at Rs.11174.97 crores. The Commission has also simultaneously undertaken a true up for the year 2006-07 and review of 2007-08. The combined impact of the three exercises results in gross revenue requirement of Rs.11892.75 crores for the year 2008-09. After making adjustment on account of non-tariff income and revenue from tariff at existing level, the revenue gap accepted by the Commission is Rs.249.64 crores as shown in Table 4.29.

6.7.2 Income from tariff at existing rates taken into account for working out the percentage increase in tariff required to cover the gap, does not include income from sales to common pool consumers, outside State sales and PLEC.

6.7.3 The Commission does not propose to effect any increase in the Bulk Supply tariff for the year 2008-09 for the reasons already discussed in para 5.4.

6.7.4 The Commission observes that tariff charged in the case of Public Lighting consumers is at par with Non-Residential Supply. Representations have been received from several urban local bodies that there is need to consider reduction of tariff for this category. The State Government had also recommended such a course of action.

Taking into account that public lighting is purely a common facility, the Commission has decided not to increase the tariff of this category as well.

- 6.7.5 The Commission finds no justification for different rates of MMC in the case of Arc furnace and PIU loads and decides, therefore, to charge both categories of consumers at the rate presently applicable to arc furnaces.
- 6.7.6 'Seasonal Industry Category' tariffs for the medium supply and large supply consumers are the same, but in the off-season their rates differ. The Commission notes the variation is minor and that there is no rationale for the same and accordingly decides to charge the off season rate of large supply to the medium supply category as well.
- 6.7.7 The consolidated revenue gap of Rs.249.64 crores for the year 2008-09 is, thus, required to be covered with an increase of 2.6% in the existing tariff across all categories, except common pool consumers, outside State sales, Bulk Supply consumers and Public Lighting consumers. MMC will also increase accordingly, but there will be no change in PLEC.
- 6.7.8 The provisions of the Act, Tariff Policy and the Commission's own Regulations require that there be a gradual movement towards reduction of cross-subsidies. Therefore, with this end in view, the Commission has decided to increase the tariff of Domestic supply consumers with consumption upto 100 units by 3.4% and AP consumers by 4.8%. The tariff for Public Lighting and Bulk Supply consumers is retained at the same level and for others an increase of 2% is approved. The existing and revised tariffs are indicated in Table 6.6.

**Table 6.6: Existing and Revised Tariff for the Year 2008-09**

Sr. No.	Category of consumers	Existing Tariff		Revised Tariff approved by the Commission for 2008-09	
		Energy Rate (paise/kwh)	MMC (Rs/kw or part thereof)	Energy Rate (paise/kwh)	MMC (Rs/kw or part thereof)
<b>A) PERMANENT SUPPLY</b>					
1	Domestic				
a)	Upto 100 units	232	31	240	32
b)	101 to 300 units	383		391	
c)	Above 300 units	405		413	
2	Non-Residential	440	113	449	115
3	Public lighting	440	As per 8 hrs/Day	440	As per 8 hrs / Day
4	Agricultural Pumpsets	i) Without Govt. subsidy 229 paise/kwh or Rs. 223/ BHP / Month ii) With Government subsidy 0	N.A.	i) Without Govt. subsidy 240 paise/kwh or Rs. 250/ BHP / Month ii) With Government subsidy 0	NA
5	Industrial				
a)	Small power	351	93	358	95
b)	Medium	387	124	395	126
c)	Large				
i)	General industry	387	111/KVA	395	113 /KVA
ii)	PIU	387	307/KVA	395	298 /KVA
iii)	Arc Furnace	387	292/KVA	395	298 /KVA
6	Bulk Supply (including MES)				
	HT	398	186/KVA	398	186 /KVA
	LT	423	186/KW	423	186 /KW
7	Railway Traction	461	186/KVA	470	190 /KVA
8	Single point supply to cooperative group housing societies/ employers colony	-	-	413	60 /KVA
<b>B) SEASONAL INDUSTRY : COTTON GINNING, PRESSING AND BALING PLANTS, RICE SHELLERS/ HULLER MILLS, RICE BRAN STABILIZATION UNITS (WITHOUT T.G. SETS) (SP, MS, LS)</b>					
a)	During Season (From 1 <sup>st</sup> Sept to 31 <sup>st</sup> May next year)				
	SP	351	341	358	348
	MS	387	341	395	348
	LS	387	307/KVA	395	313 /KVA
b)	During off season				
	SP	416	NA	424	NA
	MS	449	NA	454	NA
	LS	445	NA	454	NA

C) ICE FACTORY & ICE CANDIES AND COLD STORAGE					
a)	During April to July				
	SP	351	465	358	474
	MS	387	465	395	474
	LS	387	419/KVA	395	427/KVA
b)	During August to March (next year)				
	SP	351	93	358	95
	MS	387	93	395	95
	LS	387	83/KVA	395	85 /KVA
D) GOLDEN TEMPLE, AMRITSAR AND DURGIANA TEMPLE, AMRITSAR					
a)	First 2000 units	Free	N.A.	Free	N.A.
b)	Beyond 2000 units	313	N.A.	319	N.A.
E) TEMPORARY SUPPLY					
i)	Domestic	690	Rs.573 or Rs.114/KW whichever is higher	704	Rs.584 or Rs.116/KW whichever is higher
ii)	NRS	690	Rs.1147 or Rs.287/KW whichever is higher	704	Rs.1170 or Rs.293/KW whichever is higher
iii)	Industrial (SP,MS & LS)	As per tariff approved at A(5) above for permanent supply + 100%	Rs.459/KW of sanctioned load for SP & MS and Rs.413/KVA for LS	As per tariff approved at A(5) above for permanent supply + 100%	Rs.468/KW of sanctioned load for SP and MS and Rs. 421/KVA for LS
iv)	Wheat Thresher	-do-	-do-	-do-	-do-
v)	Fairs, exhibition & melas/ congregations	Bulk supply tariff as at A(6) + 50%	Rs.4591 per service	Bulk supply tariff as at A(6) + 50%	Rs.4683 per service
vi)	Touring cinemas				
a)	Lights and fans	690	For (a) and (b) Rs. 1147 or Rs. 287/KW of sanctioned load whichever is higher	704	For (a) and (b) Rs. 1170 or Rs. 293/KW of sanctioned load whichever is higher
b)	Motive load	Rate for Industrial permanent supply as at A(5) + 100%		Rate for Industrial permanent supply as at A(5) + 100%	

## NOTES

- I Domestic consumers belonging to SC category with connected load upto 1000 watts will be given 200 units of free power per month in view of the Government subsidy;
- ii Non-SC BPL Domestic Consumers with connected load upto 1000 watts will be given 200 units free power per month in view of the Government subsidy;
- iii AP consumers and consumers mentioned in (i) & (ii) will not be charged service charges and meter rentals in view of the Government subsidy;
- iv Rebate for single point supply to cooperative group housing societies / employers colony will be as per relevant Regulations notified by the Commission vide Notification No. PSERC/Secy/Reg-38 dated 13.5.2008.
- V All other charges including rentals and deposits which are being collected by the Board as per the "Sales Regulations for Supply of Energy to Consumers" and General Conditions of Tariff & Schedules of Tariff approved by the Commission, will be continued at the existing rates till these are reviewed by the Commission;
- vi Checking of load of DS consumers shall continue to be suspended.

## 6.8 Effect of revised tariff on cross subsidy

6.8.1 The Commission in its Tariff Regulations has defined cross subsidy for a consumer category as the difference between the average realisation per unit from that category and the combined average cost of supply, expressed in percentage terms. In this manner, the total quantum of cross subsidy generated and utilized in the system as worked out in Tariff Order 2007-08 is depicted in Table 6.7.

**Table 6.7: Aggregate quantum of cross subsidy for the year 2007-08**  
(Combined average cost of supply = 343.99 paisa/unit)

Sr. No	Category	April, 2007 to August, 2007			September, 2007 to March, 2008			PLEC + MMC etc. (Rs. crores)	Non tariff income (Rs. crores)	Total Revenue (Rs. Crores) (5+8+9+10)	Energy Sales (MU)	Expected Revenue with average cost (Rs. crores)	Cross Subsidy generated (+) Utilised (-) (11-13)
		Energy Sales (MU) (Total x 5/12)	Tariff (paise / unit)	Revenue (Rs. crores)	Energy Sales (MU) (Total x 7/12)	Tariff (paise / unit)	Revenue (Rs. crores)						
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	<b>Domestic</b>												
a)	Upto 100	1503	221	332.16	2104	240	504.96	22.73	47.40	907.25	3607	1240.77	-333.52
b)	101-300	640	368	235.52	897	394	353.42	9.69	20.21	618.84	1537	528.71	90.13
c)	>300 units	326	389	126.81	456	416	189.70	4.93	10.27	331.71	782	269.00	62.71
	<b>Total</b>	<b>2469</b>		<b>694.49</b>	<b>3457</b>		<b>1048.08</b>	<b>37.35</b>	<b>77.88</b>	<b>1857.80</b>	<b>5926</b>	<b>2038.48</b>	<b>-180.68</b>
2	NRS	728	423	307.94	1020	453	462.06	11.01	22.98	803.99	1748	601.29	202.70
3	Public Lighting	60	423	25.38	83	453	37.60	0.91	1.88	65.77	143	49.19	16.58
4	<b>Industrial</b>												
a)	SP	273	337	92.00	382	361	137.90	4.13	8.61	242.64	655	225.31	17.33
b)	MS	687	372	255.56	962	398	382.88	10.40	21.69	670.53	1649	567.24	103.29
c)	LS	3505	372	1303.86	4907	398	1952.99	165.17	110.54	3532.56	8412	2893.64	638.92
	<b>Total</b>	<b>4465</b>		<b>1651.42</b>	<b>6251</b>		<b>2473.77</b>	<b>179.70</b>	<b>140.84</b>	<b>4445.73</b>	<b>10716</b>	<b>3686.19</b>	<b>759.54</b>
5	Bulk supply	212	394	83.53	298	422	125.76	3.21	6.69	219.19	510	175.43	43.76
6	Railway Traction	50	443	22.15	70	474	33.18	0.76	1.59	57.68	120	41.28	16.40
7	Common Pool	125		30.45	175		42.62	0.00	3.95	77.02	300	103.20	-26.18
8	Outside State sales	345		139.08	482		194.71	0.00	0.00	333.79	827	284.48	49.31
9	AP	3602	214	770.83	5043	240	1210.32		113.64	2094.79	8645	2973.79	-879.00
8	<b>Total</b>	<b>12056</b>		<b>3725.27</b>	<b>16879</b>		<b>5628.10</b>	<b>232.94</b>	<b>369.45</b>	<b>9955.76</b>	<b>28935</b>	<b>9953.33</b>	<b>1241.13</b> <b>-1238.70</b>

6.8.2 The position of cross subsidy levels in the system during the year 2008-09 with revised tariffs (as approved in para 6.7) is indicated in Table 6.8.

6.8.3 Since the Board has not provided category-wise details of MMC income, the same has been apportioned in the ratio of sale of energy to different categories, except AP,

Common Pool and outside State sales. Similarly, the non-tariff income has been apportioned in the ratio of sale of energy to different categories except, outside State sales while PLEC has been loaded to the LS category.

**Table 6.8: Aggregate quantum of cross subsidy for the year 2008-09 at revised tariff**

Combined average cost of supply = 364.45 paisa/unit

Sr. No	Category	Energy Sales (MU)	Proposed Tariff (paise / unit)	Revenue with Proposed tariff (Rs. crores)	PLEC + MMC etc. (Rs. crores)	Non tariff income (Rs. crores)	Total Revenue (Rs. crores) (5+6+7)	Expected Revenue with average cost (Rs. crores)	Cross Subsidy generated (+) Utilised (-) (8-9)
1	2	3	4	5	6	7	8	9	10
1	<b>Domestic</b>								
a)	Upto 100	3925	240	942.00	23.26	52.85	1018.11	1430.47	-412.36
b)	101-300	1672	391	653.75	9.91	22.51	686.17	609.36	76.81
c)	>300 units	852	413	351.88	5.05	11.47	368.40	310.51	57.89
	<b>Total</b>	<b>6449</b>		<b>1947.63</b>	<b>38.21</b>	<b>86.84</b>	<b>2072.69</b>	<b>2350.34</b>	<b>-277.66</b>
2	<b>NRS</b>	<b>2030</b>	449	<b>911.47</b>	<b>12.03</b>	<b>27.34</b>	<b>950.83</b>	<b>739.83</b>	<b>211.00</b>
3	<b>Public Lighting</b>	<b>149</b>	440	<b>65.56</b>	<b>0.88</b>	<b>2.01</b>	<b>68.45</b>	<b>54.30</b>	<b>14.15</b>
4	<b>Industrial</b>				0.00	0.00			
a)	SP	748	358	267.78	4.43	10.07	282.28	272.61	9.67
b)	MS	1542	395	609.09	9.14	20.76	638.99	561.98	77.01
c)	LS	9359	395	3696.81	195.20	126.03	4018.03	3410.89	607.14
	<b>Total</b>	<b>11649</b>		<b>4573.68</b>	<b>208.77</b>	<b>156.86</b>	<b>4939.30</b>	<b>4245.48</b>	<b>693.82</b>
5	<b>Bulk Supply</b>								
a)	HT	450	398	179.10	2.67	6.06	187.83	164.00	23.83
b)	LT	47	423	19.88	0.28	0.63	20.79	17.13	3.66
6	Railway Traction	111	470	52.17	0.66	1.49	54.32	40.45	13.87
7	Common Pool	303		73.73	0.00	4.08	77.81	110.43	-32.62
8	Out side State Sales	2036		1156.22	0.00	0.00	1156.22	742.02	414.20
9	AP	9408	240	2257.92	0.00	126.69	2384.61	3428.75	-1044.14
8	<b>Total</b>	<b>32632</b>		<b>11237.36</b>	<b>263.5</b>	<b>412.00</b>	<b>11912.85</b>	<b>11892.73</b>	<b>1509.23</b>
									<b>-1489.12</b>

Evidently, Rs.1509.23 crores subsidy is likely to be generated at the revised level of tariff against which Rs. 1489.12 crores cross subsidy will be utilized leaving a marginal surplus of Rs.20.11 crores.

6.8.4 Taking into account the quantum of cross subsidy in each consumer category determined in Tariff Order 2007-08 and as per revised tariffs brought out in Table 6.7

and Table 6.8 respectively, the gross quantum of cross subsidy from each category for the years 2007-08 and 2008-09 (revised tariff) is given in Table 6.9.

**Table 6.9: Aggregate quantum of cross subsidy – comparison**

Average Cost of supply 343.99 paise/unit as determined in TO 2007-08  
Average cost of supply 364.45 paise/unit for the year 2008-09

Sr. No.	Category	Quantum of Cross Subsidy in absolute terms			
		2007-08		2008-09	
		Energy Sales (MU)	Cross Subsidy (Rs crores)	Energy Sales (MU)	Cross Subsidy (Rs crores)
1	2	3	4	5	6
1	<b>Domestic</b>				
a)	Upto 100	3607	-333.52	3925	-412.36
b)	101-300	1537	90.13	1672	76.81
c)	>300 units	782	62.71	852	57.89
	<b>Total</b>	<b>5926</b>	<b>-180.68</b>	6449	-277.66
2	<b>NRS</b>	1748	202.70	<b>2030</b>	<b>211.00</b>
3	<b>Public Lighting</b>	143	16.58	<b>149</b>	<b>14.15</b>
4	<b>Industrial</b>				
a)	SP	655	17.33	748	9.67
b)	MS	1649	103.29	1542	77.01
c)	LS	8412	638.92	9359	607.14
	<b>Total</b>	<b>10716</b>	<b>759.54</b>	11649	693.82
5	<b>Bulk Supply</b>				
a)	HT			450	23.83
b)	LT	510	43.76	47	3.66
6	Railway Traction	120	16.40	111	13.87
7	Common pool	300	-26.18	303	-32.62
8	Outside State sales	827	49.31	2036	414.20
9	AP	8645	-879.00	9408	-1044.14
	<b>Grand Total</b>	<b>28935</b>	<b>1241.13</b>	<b>32632</b>	<b>1509.23</b>
			<b>-1238.70</b>		<b>-1489.12</b>

6.8.5 Further, the cross subsidy levels as determined in Tariff Order 2007-08 and 2008-09 (revised tariff) are as given in Table 6.10.



**Table 6.10: Cross Subsidy Levels**

Sr. No.	Category	Existing Tariff Combined Average Cost of supply 343.99 paise/unit (2007-08)				Revised Tariff Combined Average Cost of supply 364.45 paise/unit (2008-09)			
		Energy Sales (MU)	Total Revenue (Rs crores)	Realisation per unit- (paise)	Cross Subsidy levels	Energy Sales (MU)	Total Revenue (Rs Crores)	Realisation per unit- (paise)	Cross Subsidy levels
1	2	3	4	5	6	7	8	9	10
1	<b>Domestic</b>								
a)	Upto 100	3607	907.25	251.52	-26.88%	3925	1018.11	259.39	-28.83%
b)	101-300	1537	618.84	402.63	17.05%	1672	686.17	410.39	12.61%
c)	>300 units	782	331.71	424.18	23.31%	852	368.40	432.39	18.64%
	<b>Total</b>	5926	1857.80	<b>313.50</b>	<b>-8.86%</b>	6449	2072.69	<b>321.40</b>	<b>-11.81%</b>
2	<b>NRS</b>	<b>1748</b>	<b>803.99</b>	<b>459.95</b>	<b>33.71%</b>	<b>2030</b>	<b>950.83</b>	<b>468.39</b>	<b>28.52%</b>
3	<b>Public Lighting</b>	<b>143</b>	<b>65.77</b>	<b>459.93</b>	<b>33.70%</b>	<b>149</b>	<b>68.45</b>	<b>459.40</b>	<b>26.05%</b>
4	<b>Industrial</b>								
a)	SP	655	242.64	370.44	7.69%	748	282.28	377.38	3.55%
b)	MS	1649	670.53	406.63	18.21%	1542	638.99	414.39	13.70%
c)	LS	8412	3532.56	419.94	22.08%	9359	4018.03	429.32	17.80%
	<b>Total</b>	10716	4445.73	<b>414.87</b>	<b>20.61%</b>	11649	4939.30	<b>424.01</b>	<b>16.34%</b>
5	<b>Bulk Supply</b>								
a)	HT*	510	219.19	429.78	24.94%	450	187.83	417.40	14.53%
b)	LT					47	20.79	442.34	21.37%
6	Railway Traction	120	57.68	480.67	39.73%	111	54.32	489.37	34.28%
7	Common pool	300	77.02	256.73	-25.37%	303	77.81	256.80	-29.54%
8	Out side state sales	827	333.79	403.62	17.33%	2036	1156.22	567.89	55.82%
9	AP	8645	2094.79	242.31	-29.56%	9408	2384.61	253.47	-30.45%
	<b>Grand Total</b>	<b>28935</b>	<b>9955.76</b>	<b>344.07</b>		<b>32632</b>	<b>11912.85</b>	<b>365.07</b>	

\* In the case of 2007-08 the figures depicted are HT+LT.

As per Regulations framed by the Commission for determination of tariff, the tariff is to be determined in such a way that it progressively reflects combined average unit cost of supply and the cross subsidy is eliminated by December, 2015.

The Commission observes that there is reduction in the cross subsidy levels of subsidizing categories, compared to 2007-08. For all subsidizing categories, the cross subsidy level is already less than 20%, except for NRS, Public lighting and Railway traction.

### 6.8.6 Government Subsidies

After determining the ARR and tariff for the year 2008-09, the Commission in its letter No.1332 dated June 06, 2008 (Annexure-IX), solicited the views of the Government regarding its plan to extend subsidy to any consumer or class of consumers under Section 65 of the Act. In the said letter, it was indicated that Government presently subsidizes AP consumers, SC DS consumers and Non-SC BPL DS consumers. The Commission has determined AP consumption at 9408 MU for the year 2008-09. The requirement of funds for maintaining the same level of subsidy during 2008-09 and the arrears on this account for previous years is indicated in Table 6.11

**Table 6.11: Requirement of Subsidy to maintain Status Quo during 2008-09**

( Rs. crores)

Subsidy payable by Government	AP + Meter rentals and service charges	SC DS	Non - SC BPL	Total	Subsidy to neutralize the effect of enhanced tariff from September 2007	G.Total	Subsidy paid by the Govt. during the year	Balance payable
Subsidy payable for 2006-07	1737.03 (+) 7.00 1744.03	63.99	0.02	1808.04	-	1808.04		
Past subsidy payable upto 05-06						7.64		
<b>Total payable upto 06-07</b>						<b>1815.68</b>	<b>1423.80</b>	<b>391.88</b>
Subsidy payable for 2007-08	2034.91 (+)7.00 2041.91	206.73	1.27	2249.91	292.66	2542.57		
Total	2041.91	206.73	1.27	2249.91	292.66	2542.57		
Interest levied on delayed payment of subsidy						35.56		
Total for 07-08						2578.13		
Add past subsidy payable upto 06-07						391.88		
<b>Total amount payable upto 07-08</b>						<b>2970.01</b>	<b>2848.04</b>	<b>121.97</b>
Subsidy for 08-09 with AP consumption 9408 MU @240 Paise/unit	2257.92 (+) 7.00 2264.92	203.74 (+)9.78 213.52	1.26 (+)0.06 1.32	2479.76	-	2479.76	-	2479.76
Past subsidy and interest payable upto 07-08								121.97
<b>Total amount payable during 2008-09</b>								<b>2601.73</b>

The Government in its letter dated July 02, 2008 (Annexure-X) has accorded approval for the grant of subsidy for the current year. Keeping this decision of the Government in view, the Commission has incorporated the same in the tariff structure in Table 6.6.

6.8.7 The matter of interest due on Government loans has already been discussed in paras 2.14 and 3.14.7 wherein interest of Rs.289.92 crores and Rs.289.15 crores relating to 2006-07 and 2007-08 respectively has been disallowed. As regards refund of overpaid amount of interest of Rs.289.92 crores relating to 2006-07, the same has been determined refundable as depicted in Table 3.14. The Board has reported that during 2007-08 it has paid an amount of Rs.194.10 crores towards interest to the Government. In para 3.14.7, the Commission has determined interest of Rs.72.88 crores as payable to the Government after adjustment of disallowed interest of Rs.289.15 crores for the year 2007-08. Therefore, the Commission also determines that interest of Rs.121.22 (194.10-72.88) crores overpaid during 2007-08 is refundable by the Government to the Board. Thus, the total overpaid amount of interest upto 2008-09 comes to Rs.411.14 (289.92+121.22) crores which is refundable by the Government to the Board, in addition to the amount of subsidy determined in Table 6.11.

6.8.8 The Commission has already specified the manner and time frame for payment of subsidy by the Government to the Board in para 3.9 of its order dated September 13, 2007. The Commission decided that the Government will make payment of subsidy in equal quarterly installments, in advance, at the beginning of each quarter. The Commission trusts the payment of subsidy for 2008-09 by the Government to the Board will be made in accordance with this laid down procedure. The Commission further directs the Board to submit status report of payment of subsidy and interest within the first fortnight of each quarter. The first such report for 2008-09 will be due for first two quarters on July 15, 2008.

## **6.9 Open Access Charges**

6.9.1 As per the Open Access Regulations notified by the Commission, the open access charges for the year 2008-09 are computed in Table 6.12.

**Table 6.12: Open Access Charges – 2008-09**

Sr. No.	Open Access Charges	
1	Transmission charges	Rs.2370/MW/Day
2	Wheeling charges	Rs.10924/MW/Day
3	Transmission+Wheeling charges chargeable from long term customers	Rs.4431/MW/Day
4	Transmission+Wheeling charges chargeable from short term customers	Rs.2659/MW/Day
5	Transmission + Wheeling charges for wheeling of power from NRSE projects	@ 2% of energy injected to the State grid irrespective of the distance
6	T&D losses	
	(i) For voltages at 66 kv and above @ 30% of normative T&D losses	5.85%
	(ii) For voltages below 66 kv @ 50% of normative T&D losses	9.75%
7	Surcharge	Nil
8	Other charges such as additional surcharge, operation charges, UI charges, reactive energy charges shall be levied as per the Open Access Regulations/Tariff Regulations notified by the Commission.	

**6.10 Date of Effect**

The Commission notes that the ARR of the Board for the year 2008-09 covers the complete financial year. The recovery of tariff, therefore, has to be such that total revenue requirement of the Board for the year 2008-09 is recovered during the current financial year.

**The Commission, therefore, decides to make the revised tariff applicable from April 01, 2008 and the tariff structure determined above shall remain operative till March 31, 2009.**

This Order is signed and issued by the Punjab State Electricity Regulatory Commission on this the 3<sup>rd</sup> day of July, 2008.

Date: 3<sup>rd</sup> July, 2008  
Place: CHANDIGARH

Sd/-  
(S.S. PALL)  
MEMBER

Sd/-  
(BALJIT BAINS)  
MEMBER

Sd/-  
(JAI SINGH GILL)  
CHAIRMAN

CERTIFIED  
Sd/-  
(NAMITA SEKHON)  
SECRETARY  
PUNJAB STATE ELECTRICITY REGULATORY COMMISSION  
CHANDIGARH