

**PUNJAB STATE ELECTRICITY REGULATORY COMMISSION**

SCO 220-221, SECTOR 34-A, CHANDIGARH.

**PETITION NO. 7 OF 2007**

**IN THE MATTER OF:**

**SUO MOTU DETERMINATION OF ANNUAL REVENUE REQUIREMENT AND TARIFF  
FOR THE FINANCIAL YEAR 2007-08**

**PRESENT**

: Mr. Jai Singh Gill, Chairman

Mrs. Baljit Bains, Member

Mr. Satpal Singh Pall, Member

Date of Order : September 17, 2007

**ORDER**

The Punjab State Electricity Regulatory Commission (Commission), in exercise of the 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 the consumers in the State of Punjab for the year 2007-08. The order is being passed in a suo motu proceeding initiated by the Commission and on the basis of information provided by the Board in its various submissions. Objections received by the Commission from the Board, consumer organizations and individuals and issues raised by the Public in hearings held at Ludhiana, Amritsar, Chandigarh and Bathinda, the responses of the Board to the objections and the observations of the Government of Punjab in this respect have been considered. The Commission has kept in view the various directions issued by the Hon'ble Appellate Tribunal (Tribunal) in its judgement dated May 26, 2006. 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

1.1.1 The Commission has in the past passed five Tariff Orders determining tariff in pursuance of the ARRs and Tariff Applications submitted by the Board for the years 2002-03, 2003-04, 2004-05, 2005-06 and 2006-07.

1.1.2 As per provisions of Section 64 of the Act, it is incumbent upon the Licensee to make an application to the State Regulatory Commission for determination of tariff in such manner as may be determined by Regulations framed by the Commission. Regulation 13 of the Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2005 lays down that each licensee is to file tariff application on or before 30<sup>th</sup> November each year, with the Commission.

### 1.2 Suo-Motu Proceeding for 2007-08

1.2.1 The Board did not file the ARR and Tariff Application for the year 2007-08 by the due date as per PSERC (Terms & Conditions for Determination of Tariff) Regulations, 2005 i.e. by November 30, 2006. The Board submitted a petition for extension of time up to March 31, 2007 for filing the ARR and Tariff Application for the year 2007-08. During the processing of the petition, the Board requested for extension of time up to April 20, 2007. The Commission granted extension to the Board to file the ARR and Tariff Application for the year 2007-08 up to April 16, 2007. The Board again filed a petition with the Commission for extension of time up to May 31, 2007 for filing the ARR and Tariff Application for the year 2007-08. The Commission in its order dated April 30, 2007 rejected the petition filed by the Board for grant of extension up to May 31, 2007 and ordered for suo-motu determination of ARR and tariff for the year 2007-08.

1.2.2 The Board was asked to submit information required for determination of ARR and Tariff which was filed by it in its letters dated May 18, 2007 and June 12, 2007. On scrutiny of the information, a number of deficiencies were observed which were conveyed to the Board. The Board submitted additional information in its letter dated June 13, 2007.

1.2.3 Based on such information submitted by the Board and all other relevant data, the Commission has assessed the Annual Revenue Requirement for 2007-08 including any surplus/deficit after the true-up exercise for 2005-06 and review of 2006-07.

### 1.3 Invitation of Objections and Public Hearings

1.3.1 A Public Notice was issued in The Tribune, Times of India, Jagbani, Punjabi Tribune and Punjab Kesri (Hindi) on July 6th and 8th, 2007 inviting objections from the general public to the Tariff proposal. Copies of the Tariff proposal were made available at the Commission office as well as uploaded on the website of the Commission- [www.pserc.nic.in](http://www.pserc.nic.in). As per this public notice, objectors were advised to file 7 copies of their objections with the Secretary of the Commission by July 30th, 2007. It was specifically stated in the notice that after perusing the objections received in response to the notice, the Commission will conduct public hearings on the dates, which would be subsequently notified.

1.3.2 The Commission received 27 written objections within the due date expressing concern over the proposed increase in tariffs and other tariff related matters. The Commission also received 8 more objections during the course of public hearings and in the office of the Commission. Out of a total of 35 objections so received and taken on record, 15 are on affidavits and the remaining without them. However all these objections have been taken into consideration by the Commission.

1.3.3 Category wise number of objections received from consumers, individuals, consumer groups/ organizations and others in response to the public notice are detailed below:

Sr. No.	Category	No. Of Objections
1.	Chambers of Commerce	3
2.	Industrial Associations	12
3	Industry	4
4	Railways	1
5	PSEB	1
6	PSEB Engineers/Employees Association	2
7	Consumer Protection and Grievances Redressal Forum	1
8	Trade unions	1

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9	Hotel/Hospital	2
10	Reliance Communications and Others	1
11	MES	1
12	Individuals	5
13	Municipal Council	1
	<b>Total</b>	<b>35</b>

1.3.4 The Commission decided to hold public hearings at Ludhiana, Bathinda, Amritsar and Chandigarh. Public notice was issued on 26<sup>th</sup>, 27<sup>th</sup> and 28<sup>th</sup> July, 2007 in The Tribune, Hindustan Times, Punjab Kesri, Jagbani and Punjabi Tribune informing objectors, consumers and the general public about the holding of public hearings at the following places on the dates shown against each venue.

Venue	Date & time of public hearing	Category of consumers to be heard.
<b><u>LUDHIANA</u></b> Circuit House, Jagraon Road, Ludhiana	<b>August 1, 2007</b> 11 AM to 1.30 PM (To be continued in the afternoon, if necessary.)	All consumers/ organizations of the area.
<b><u>AMRITSAR</u></b> Bachat Bhawan (Guest House), B-Block, Ranjit Avenue, Amritsar.	<b>August 3, 2007</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>August 6, 2007</b> 10.30 AM to 1.30 PM 3 PM Onwards	Industry  Agricultural consumers and their unions

<b><u>CHANDIGARH</u></b> Commission Office i.e. SCO No.220-221, Sector 34-A, Chandigarh.	<b>August 8, 2007</b> 10.30 AM to 1.30PM.	All consumers except Industry, Agricultural consumers and Staff Unions of the Board.
	3 PM Onwards	Staff Unions of the Board and other organizations
<b><u>BHATINDA</u></b> Circuit House, Civil Lines, Near D.C. Residence, Bhatinda	<b>August 10, 2007</b> 11 AM to 1.30 PM (To be continued in the afternoon, if necessary)	All consumers/ organizations of the area.

Through a different public notice published in various news papers it was notified that the Commission would hold public hearing on August 21, 2007 at Commission's office at Chandigarh to hear the comments of the Board to the objections received from the public and the observations of the Commission besides Board's own view regarding the ARR and Tariff Determination by the Commission.

The public hearings were held as per schedule and the objectors, general public and the Board were heard by the Commission. The issues raised by the objectors in brief, response of the Board and the view of the Commission on each objection are contained in Annexure I of this Tariff Order.

#### **1.4 Views of the Government**

The Government of Punjab (GoP) was approached by the Commission through letter dated July 7, 2007 to give its views on the Tariff proposal. The State Government conveyed its observations on the Tariff proposal in its letter dated August 20, 2007, which have been taken note of by the Commission.

#### **1.5 State Advisory Committee**

The constitution of the State Advisory Committee under Section 87 of the Act was published in the Punjab Government Gazette on June 26, 2007. The Tariff proposals were discussed in a meeting of the State Advisory Committee convened for this purpose on August 14, 2007. The minutes of the meeting are enclosed as Annexure II to this Tariff Order.

The Commission has thus ensured that due process as contemplated under the Act and the Regulations framed by the Commission was followed at every step and adequate opportunity was provided to all concerned to present their points of view.

### **1.6 Compliance of Directives**

In its previous Tariff Orders, the Commission had issued certain directives to the Board in the public interest as a part of the Tariff Order. A summary of directives issued, level of compliance by the Board along with comments of the Commission is given in Annexure III of this Tariff Order.

## Chapter 2

# True-up for the year 2005-06

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### 2.1 Background

2.1.1 The Commission had approved the ARR and Tariff for the year 2005-06 in its Tariff Order dated June 14, 2005. The approval was based on the estimates presented by the Board for costs to be incurred and revenues likely to be generated by the Board during the year. In its ARR and Tariff Application for the next year, 2006-07, the Board furnished revised estimates for the year 2005-06. 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 2006-07 dated May 10, 2006, reviewed the approvals earlier granted and re-determined these with reference to the revised estimates made available by the Board. While furnishing data for the year 2007-08 in its letter dated 18.5.2007, the Board has furnished the audited accounts for the year 2005-06 which again vary in some parts as compared to the figures earlier taken into account by the Commission in its review for the year 2005-06 in the Tariff Order for 2006-07. This chapter contains a final true-up of 2005-06, based on the audited annual statement of accounts 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 for the year 2005-06, sales approved by the Commission in the Tariff Order of 2005-06, revised estimates in the ARR of 2006-07, sales accepted by the Commission in the Tariff Order of 2006-07 and actual sales figures now given by the Board in letter No. 1213/CC/DTR/221/Vol.V dated 18.5.2007 are given in Table 2.1.

Table 2.1: Energy Sales - 2005-06

(MU)

Sr. No.	Category	Proposed by PSEB in ARR 05-06	Approved by the Commission in T.O. 05-06	Revised Estimates by PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Actuals by PSEB	Now approved by the Commission
1	2	3	4	5	6	7	8
1	Domestic	6075	5528	5441	5402	5371	5354
2	Non-Residential	1587	1444	1481	1454	1466	1461
3	Small Power	678	707	730	699	697	695
4	Medium Supply	1862	1581	1505	1456	1467	1462
5	Large Supply	6706	6979	7127	7543	7473	7450
6	Public Lighting	127	123	120	120	123	122
7	Bulk Supply & Railway Traction	504	583	611	567	556	555
8	Total Metered sales (within State)	17539	16945	17015	17241	17153	17099
9	Agriculture	7364	7000	6776	7000	7317	7317
10	<b>Total sales within the State</b>	<b>24903</b>	<b>23945</b>	<b>23791</b>	<b>24241</b>	<b>24470</b>	<b>24416</b>
11	Common pool	381	381	302	302	303	303
12	Outside State sales	553	360	516	593	691	545
13	<b>Total (10+11+12)</b>	<b>25837</b>	<b>24686</b>	<b>24609</b>	<b>25136</b>	<b>25464</b>	<b>25264</b>

The Board has in its communication of 18.5.2007 furnished the actual sales at 25464 MU for the year 2005-06. The sales as per annual statement of accounts for the year 2005-06 are also 25464 MU including theft of energy at 116 MU. However, in the annual statement of accounts, theft of energy has not been apportioned to different consumer categories. In Table 2.1, the category-wise sales for the year 2005-06 have, therefore, been shown on the basis of figures supplied by the Board in its letter dated 18.5.2007.

**2.2.2 Metered Sales:** In the metered sales, the Board has included 116 MU of energy on account of theft. The revenue on this account has been depicted as Rs. 22.17 crores, but this figure is not compatible with the average realization from sale of energy from these categories. The Commission has worked out the equivalent sale of energy on this account as 62 MU and has accordingly amended figures relating to the metered sales on proportionate basis. The Commission thus approves the metered sales within the State at 17099 MU. The Commission accepts common pool sales at 303 MU as per the actuals furnished by the Board. The actual sales outside the state as per the Board are 691 MU. The Board has intimated that royalty of Himachal Pradesh (HP) in Shanani (53 MU) and HP's share of 4.6% from RSD (93 MU) forms a part of outside state sales. However, HP's share in RSD and royalty in Shanani are free of cost and as such are required to be excluded from such outside state sales. Accordingly, the outside state



sales have been netted off from these units (93+53 MU) to arrive at 545 MU. The Commission, therefore, approves the outside state sales at 545 MU.

**The metered sales now approved by the Commission after the above mentioned adjustments are as shown in Table 2.1.**

2.2.3 **Agriculture Consumption:** The Commission in its Tariff Order for the year 2005-06 approved AP consumption of 7000 MU subject to its settlement at the end of the year based on sample meter readings and other relevant factors. The Board has now furnished actual AP consumption during 2005-06 at 7317 MU as per sample meter readings.

**The Commission accepts and approves agriculture consumption at 7317 MU for the year 2005-06 based on actual sample meter readings.**

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

2.3.1 The Commission's Tariff Order for the year 2005-06 fixed T&D losses at 22.00% for 2005-06. In the ARR for the year 2006-07, the Board stated that T&D losses in 2005-06 would be 24.00% but the Commission retained the T&D losses for that year at 22.00% in the subsequent Tariff Order as well. In its letter of 18.5.2007, the Board has intimated that losses during the year 2005-06 are 25.07%. However, the Commission sees no reason for accepting T&D losses in excess of the approved norm.

**The Commission, therefore, retains the T&D losses at 22.00% as approved in the Tariff Order for the year 2005-06.**

### 2.4 PSEB'S Own Generation

2.4.1 **Thermal Generation:** The station-wise generation projected by the Board in the ARR of 2005-06, generation approved by the Commission in the Tariff Order for the same year, revised estimates furnished in the ARR of 2006-07, generation approved by the Commission in the Tariff Order for that year, actuals now furnished by the Board and figures finally approved by the Commission are given in Table 2.2.

Table 2.2: Thermal Generation - 2005-06

(MU)

Sr. No.	Station	Projected by PSEB in ARR 05-06		Approved by the Commission T.O. 05-06		Revised Estimates by PSEB in ARR 06-07		Approved by the Commission T.O. 06-07		Actuals by PSEB		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	2100	1840	2220	1976	2100	1840	2358	2099	2359	2071	2359	2100
2	GGSTP	8650	7842	8638	7904	8650	7903	9320	8528	9329	8535	9329	8536
3	GHTP	3120	2820	3089	2811	3120	2828	3134	2852	3146	2864	3146	2863
	Total	13870	12502	13947	12691	13870	12571	14812	13479	14834	13470	14834	13499

The actual gross thermal generation for 2005-06 as per latest information supplied by the Board is 14834 MU, which is the same as per annual statement of accounts of 2005-06. However, plant-wise generation is not available in the annual statement of accounts and as such the values supplied in letter of 18.5.2007 have been taken into account by the Commission.

**Accordingly, the Commission approves gross thermal generation for the year 2005-06 at 14834 MU.**

The position of auxiliary consumption is given in Table 2.3.

Table 2.3: Auxiliary Consumption - 2005-06

Sr. No.	Station	Projected by PSEB in ARR 05-06	Approved by the Commission in T.O. 05-06	Revised Estimates by PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Actuals by PSEB	Now approved by the Commission
1	2	3	4	5	6	7	8
1	GNDTP	12.40%	11.00%	12.40%	11.00%	12.20%	11.00%
2	GGSTP	9.34%	8.50%	8.64%	8.50%	8.51%	8.50%
3	GHTP	9.60%	9.00%	9.35%	9.00%	9.00%	9.00%

It is observed that the actual auxiliary consumption now furnished by the Board is higher than the approved levels only in the case of GNDTP with the other two plants by and large managing their auxiliary consumption within the approved norms.

**Accordingly, the Commission sees no justification for allowing increase in auxiliary consumption at any of the plants and therefore, retains the auxiliary**

consumption as approved in the Tariff Order for the year 2005-06. The net thermal generation on this basis works out to 13499 MU as shown in Table 2.2.

The Commission observes that the Board has over-achieved in thermal generation by 887 MU (14834 – 13947) gross and 808 MU (13499 – 12691) net as compared to the approvals in the Tariff Order for the year 2005-06, as shown in Table 2.2.

**The Commission accordingly approves incentive for higher thermal generation and consequential less power purchase on this account. This is discussed further in para 2.9.**

2.4.2 **Hydel Generation:** The station-wise generation projected in the ARR of 2005-06, generation approved by the Commission in its Tariff Order for that year, revised estimates furnished in the ARR of 2006-07, generation approved by the Commission in the Tariff Order for that year and actuals now furnished by the Board and those accepted by the Commission are given in Table 2.4.

**Table 2.4: Hydel Generation - 2005-06**

(MU)

Sr. No.	Station	Projected by PSEB in ARR 05-06	Approved by Commission in T.O. 05-06	Revised Estimates by PSEB in ARR 06-07	Approved by Commission in T.O. 06-07	Actuals by PSEB	Now approved by the Commission
1	2	3	4	5	6	7	8
1	Shanan	460	502	514	509	509	509
2	UBDC	380	380	451	531	531	531
3	RSD	1020	1309	1802	2013	2013	2013
4	MHP	830	997	1030	1237	1238	1238
5	ASHP	528	696	744	709	708	708
6	Micro Hydel	10	10	10	6	6	6
7	Total Own Hydro						
a)	Gross	3228	3894	4551	5005	5005	5005
b)	Net	3205 <sup>1</sup>	3754 <sup>2</sup>	4486 <sup>3</sup>	4877 <sup>4</sup>	4931	4818
8	Share from BBMB incl share of common pool consumers (Net)	3743	4507	4773	4778	4966	4804
		(common pool = 381)	(common pool = 381)	(common pool = 302)	(common pool = 302)	(common pool = 303)	(common pool = 303)
9	<b>Total hydro (Net)</b>	<b>6948</b>	<b>8261</b>	<b>9259</b>	<b>9655</b>	<b>9897</b>	<b>9622</b>

Notes:

1. Net of auxiliary consumption (7 MU) and transformation losses (16 MU).
2. Net of HP royalty in Shanan (53 MU), HP share (free) in RSD @ 4.6% (60MU), auxiliary consumption @ 0.2% (8MU) and transformation losses @ 0.5% (19 MU).
3. Net of auxiliary consumption (11 MU) and transformation losses (54 MU).

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4. Net of HP share (free) in RSD @ 4.6 % ( 93 MU), auxiliary consumption @0.2% (10MU) and transformation losses @ 0.5% (25 MU).
5. In Column 7, Sr. No. 7(b) - PSEB's net generation available from own generating stations in column 7 is net of auxiliary consumption and transformation losses.
6. In Column 8, Sr. No. 7(b) - The Commission's approval for net generation available from own stations in column 8 is net of HP share (free) in RSD @ 4.6 % ( 93 MU), auxiliary consumption @ 0.5% (10MU) for RSD (having static exciters) and @ 0.2% for others (6 MU) and transformation losses @ 0.5% (25 MU) and HP Royalty in Shanan (53 MU).
7. In Column 8, Sr. No. 8 - The Commission's approval for net generation available from BBMB in column 8 is net of transmission losses @ 3.47% (162 MU on 4663) from gross availability of 4966 (4663+303) MU.

The actual gross hydel generation from the Board's own hydel stations for the year 2005-06 is 5005 MU and the Commission accepts the same. For calculating the net generation, the Board has not deducted the HP share (free) in RSD and royalty in Shanan. 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. The net hydel generation for the year 2005-06 thus works out to 4818 MU. The actual net availability from BBMB is 4804 MU and the Commission accepts the same.

**The Commission, therefore, approves the net hydel generation for the year 2005-06 at 4818 MU from own hydel stations and 4804 MU as the net share from BBMB as shown in Table 2.4.**

### 2.5 Power Purchase

- 2.5.1 The Commission in its Tariff Order for the year 2005-06 approved a net power purchase of 10488 MU. In the ARR for the year 2006-07, the Board furnished revised estimates for net power purchase of 10292 MU and the Commission approved only 8839 MU. In its letter dated 18.5.2007, the Board has now submitted that actual net purchases during 2005-06 were 10447 MU which is the same as given in the annual statement of accounts for 2005-06. The matter has been 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 Tariff Order of 2006-07, actuals now furnished by the Board and those approved by the

Commission are given in Table 2.5. The Energy balance, T&D losses along with sales and availability now approved by the Commission is shown in column 6 of Table 2.5.

Table 2.5: Energy Balance - 2005-06

(MU)

Sr. No.	Particulars	Approved by the Commission in T.O. 06-07	Actuals by PSEB	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	17241	17153	17099	17099
2	Sales to Agriculture	7000	7317	7317	7317
3	Total Sales within the State	24241	24470	24416	24416
4	Loss percentage	22.00%	25.07%	22.00%	25.38%
5	T&D losses	6837	8188	6887	8304
6	Sales to Common pool consumers	302	303	303	303
7	Outside State Sales	593	691	545	545
8	Total requirement	31973	33652	32151	33568
<b>B) Energy Available</b>					
9	Own generation (Ex-bus)				
10	Thermal	13479	13470	13499	13499
11	Hydro	4877	4931	4818	4818
12	Share from BBMB (incl.share of common pool consumers)	4778 (common pool = 302)	4804 (common pool = 303)	4804 (common pool = 303)	4804 (common pool = 303)
13	Purchase net	8839	10447	10447	10447
14	<b>Total Available</b>	<b>31973</b>	<b>33652</b>	<b>33568</b>	<b>33568</b>

2.6.2 The total energy requirement now approved by the Commission is 32151 MU (net) whereas total energy availability now approved is 33568 MU (net). The difference of 1417 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. The higher T&D loss above the level approved by the Commission has resulted in increased net power purchase to the extent of 1417 MU (8304 - 6887) MU. The matter is discussed further in para 2.9.2.

**The Commission approves the total energy requirement for the year 2005-06 at 32151 MU (net).**

### 2.7 Fuel Cost

2.7.1 In its Tariff Order for the year 2005-06, the Commission approved the fuel cost as Rs. 2176.19 crores for a gross thermal generation of 13947 MU. In the Tariff Order for the subsequent year, this cost for 2005-06 was revised as Rs. 2311.32 crores for the then approved generation of 14812 MU. The details of approved fuel cost are given in Table 2.6.

**Table 2.6: Previously Approved Fuel Cost - 2005-06**

Sr. No.	Station	As per T.O. 05-06		As per T.O. 06-07	
		Gross Generation (MU)	Fuel Cost (Rs.crores)	Gross Generation (MU)	Fuel Cost (Rs.crores)
1	2	3	4	5	6
1	GNDTP	2220	391.27	2358	415.59
2	GGSTP	8638	1317.07	9320	1421.06
3	GHTP	3089	467.85	3134	474.67
	Total	<b>13947</b>	<b>2176.19</b>	<b>14812</b>	<b>2311.32</b>

2.7.2 The Board has in its letter dated 18.5.2007, further indicated that actual fuel cost for 2005-06 is Rs. 2342.79 crores whereas the annual statement of accounts for 2005-06 depict the total generation expenses as Rs. 2403.41 crores. These comprise of Rs. 2276.78 crores for consumption of coal and oil, Rs.19.65 crores as other fuel related costs which include octroi, contract handling charges, railway staff charges, siding charges etc., Rs. 91.24 crores towards fuel related losses including transit losses and Rs.15.74 crores for other operating expenses such as cost of water, lubricants, consumable stores and station supplies. Out of these, the expenses of Rs.15.74 crores towards other operating expenses do not form part of the fuel cost and have been considered under repair and maintenance expenses in para 2.11. Thus the fuel cost as per annual Statement of accounts is Rs. 2387.67 (2403.41 - 15.74) crores.

The Board has now supplied the actual calorific value of coal, price of coal and coal transit loss for the year 2005-06 which are given in Table 2.7. These values have been validated and the final accepted values are also indicated in the same Table. During validation, it was found that the Board has also used some quantity of imported coal at GGSTP and GHTP. While calculating the transit loss, quantum of imported coal is not to be considered as its price is FOR destination. This has resulted in difference in transit loss reported by the Board and as accepted by the Commission.

Table 2.7: Actual Calorific Value, Price and Transit Loss of Coal - 2005-06

Sr. No.	Station	As submitted by PSEB				As accepted by the Commission			
		Calorific value of coal (kCal/Kg)	Price of coal including transit loss (Rs./MT)	Transit loss	Price of coal excluding Transit loss (Rs./MT)	Calorific value of coal (kCal/Kg)	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	9	10
1	GNDTP	3916.56	2467.20	4.90%	2346.30	3916.56	2467.20	4.90%	2346.31
2	GGSTP	3852.00	2366.60	3.00%	2301.50	3852.00	2366.60	2.75%	2301.52
3	GHTP	4153.00	2698.00	2.88%	2622.50	4153.00	2698.00	2.93%	2618.95

2.7.3 The Commission had in the Tariff Order of 2005-06 adopted for that year the same calorific value of coal while calculating fuel cost as was verified in Tariff Order of 2004-05 for the previous year. These values were 3935 Kcal/Kg, 3825 Kcal/kg and 4058 Kcal/Kg for GNDTP, GGSTP and GHTP respectively. The same values were adopted in the Tariff Order of 2006-07 while reviewing fuel cost for the year 2005-06.

Based on verification now available with the Commission, revised values of 4271.53 Kcal/Kg, 4068.75 Kcal/Kg and 4364.66 Kcal/Kg for GNDTP, GGSTP and GHTP respectively were proposed to be taken into account in the Tariff Order of 2007-08 while computing fuel cost in the true up for 2005-06.

The Board has objected to the calorific value of coal taken by the Commission for calculating the fuel cost stating that the computation of coal consumption by the Commission has been done as per the Gross Calorific Value (GCV) of coal whereas the same was computed on the basis of Net Calorific value (NCV) in all the previous tariff orders issued by the Commission. The Board has further stated that effecting any change at this stage would be unwarranted as it would tantamount to change in parameters/principles adopted by the Commission at the time of the “truing up” for the year 2005-06.

The Commission has examined the whole issue and has observed that in the Terms and Conditions for Determination of Tariff Regulations notified by the Commission on November 21, 2005 (published on December 2, 2005) it was decided to follow CERC norms in this respect. As per Regulation 22 of CERC Regulations notified on March 26,

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2004 for Determining Terms and Conditions for Electricity Tariff, quantum of fuel is to be calculated on the basis of Gross Calorific Value of fuel “as fired”. However, as the PSERC (Terms and Conditions for Determination of Tariff) Regulations were notified when the better part of the year 2005-06 had already passed, the Commission has decided not to retrospectively adopt the GCV of coal.

The Commission has, therefore, computed fuel cost for the year 2005-06 on the basis of calorific value of coal as intimated by the Board and in the manner followed by the Commission in its previous Tariff Orders.

The Board has also submitted that it has inadvertently reported the price of coal exclusive of transit loss for GNDTP and GHTP stations in the column where such price is to be inclusive of transit loss and as such the transit loss has been applied twice while computing the fuel cost. The Commission has examined this contention of the Board and finds that is factually correct. Accordingly, the necessary correction in the price of coal of GNDTP and GHTP has been effected.

2.7.4 On the above basis, fuel cost for the year 2005-06 for different stations corresponding to actual generation is given in Table 2.8.

**Table 2.8: Approved Fuel cost (Coal and Oil) - 2005-06**

Sr. No.	Item	Derivation	Unit	Approved for 2005-06			
				GNDTP	GGSTP	GHTP	Total
1	2	3	4	5	6	7	8
1	Generation	A	MU	2359	9329	3146	14834
2	Heat Rate	B	k.cal/kWh Generated	2770	2500	2500	
3	Specific oil consumption	C	Milli litre/kwh	2.00	2.00	2.00	
4	Calorific value of oil	D	k.cal/litre	9610	10000	9400	
5	Calorific value of coal	E	k.cal/kg	3916.56	3852.00	4153.00	
6	Overall heat	$F = (A \times B)$	G.cal	6534430	23322500	7865000	
7	Heat from oil	$G = (A \times C \times D) / 1000$	G.cal	45340	186580	59145	
8	Heat from coal	$H = (F - G)$	G.cal	6,489,090	23,135,920	7,805,855	
9	Oil Consumption	$I = (G \times 1000) / D$	KL	4718	18658	6292	
10	Transit loss of coal	J	(%)	0.8	0.8	0.8	
11	Consumption of Coal including transit loss.	$K = (H \times 1000 / E) / (1 - J / 100)$	MT	1670196	6054647	1894728	
12	Cost of oil per KL	L	Rs./KL	16008	14658	17116	
13	Cost of coal per MT	M	Rs./MT	2,346.31	2,301.52	2,618.95	
14	Total cost of oil	$N = L \times I / 10^7$	Rs.crores	7.55	27.35	10.77	45.67
15	Cost of coal	$O = K \times M / 10^7$	Rs.crores	391.88	1,393.49	496.22	2,281.59
16	<b>Total Fuel cost</b>	<b>P = (N + O)</b>	<b>Rs.crores</b>	<b>399.43</b>	<b>1,420.84</b>	<b>506.99</b>	<b>2,327.26</b>



**The Commission, thus, approves the fuel cost at Rs. 2,327.26 crores for gross generation of 14834 MU for the year 2005-06.**

2.7.5 The difference in fuel cost now approved by the Commission (Rs. 2,327.26 crores) as compared to cost as per annual statement of accounts (Rs. 2387.67 crores) is because of 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 2005-06, approved a cost of Rs. 2259.66 crores for power purchase of 10916 MU (gross). In Tariff Order for the year 2006-07, the Commission approved revised power purchase cost at Rs.1901.13 crores for power purchase of 9184 MU (gross) for the year 2005-06.

2.8.2 The actual gross power purchase for the year 2005-06 now furnished by the Board is 10881 MU including unscheduled interchange (UI) of (-) 61 MU. The net power purchase corresponding to 10881 MU gross power purchase is 10447 MU as discussed in para 2.5. The power purchase cost as per annual statement of accounts for 2005-06 is Rs. 2404.92 crores.

**The Commission approves the cost of power purchase at Rs. 2404.92 crores incurred for net power purchase of 10447 MU.**

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

2.9.1 **Incentive approved due to higher Thermal Generation:** As discussed in para 2.4.1, the Commission has approved incentive for higher thermal generation to the tune of 887 MU gross ( 808 MU net) and consequent less power purchase on this account. The station-wise increase in gross generation is 139 MU for GNDTP (2359 - 2220), 691 MU for GGSTP (9329 - 8638) and 57 MU for GHTP (3146 - 3089). The increase in fuel cost for different stations corresponding to this higher generation based on cost now approved by the Commission works out to Rs. 137.96 crores as given in Table 2.9.

Table 2.9: Increase in Fuel Cost due to higher Thermal Generation - 2005-06

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	2359	399.43	139	23.54
2	GGSTP	9329	1420.84	691	105.24
3	GHTP	3146	506.99	57	9.19
	<b>Total</b>	<b>14834</b>	<b>2327.26</b>	<b>887</b>	<b>137.96</b>

The decrease in power purchase on account of higher thermal generation is 808 MU (net). The pro-rata cost of 808 MU (net) on the basis of power purchase cost approved as per para 2.8 works out to Rs. 186.00 crores (i.e.  $2404.92 \times 808 / 10447$ ). Hence the net saving on account of higher thermal generation is Rs. 48.04 (  $186.00 - 137.96$ ) crores.

**The Commission, therefore, approves an amount of Rs. 48.04 crores as incentive on account of higher thermal generation.**

The effect of this is reflected at Sr. No. 13(i) of Table 2.13.

**2.9.2 Expenses disapproved due to higher T&D Losses:** As discussed in para 2.3, the Board has underachieved 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 as measured by the consequential additional power purchase 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 1417 MU (net). The pro-rata cost of this 1417 MU (net) on the basis of power purchase cost approved under para 2.8 works out to Rs. 326.20 ( $2404.92 \times 1417 / 10447$ ) crores.

**The Commission, thus, disapproves expenses to the extent of Rs. 326.20 crores on account of higher T&D losses.**

The effect of this is reflected at Sr. No. 13(ii) of Table 2.13.

## 2.10 Employee Cost

2.10.1 The Commission, in the Tariff Order for the year 2005-06, had approved employee cost of Rs.1473.63 crores for the year 2005-06 by allowing cumulative increase of 15.61% over the actual expenditure for the year 2002-03, where 15.61% was the growth in the All Commodities Whole Sale Price Index from March 2002 to January 2005 (the then available WPI). According to the Punjab State Electricity Regulatory Commission (Terms & Conditions for Determination of Tariff) Regulations, 2005, O&M expenses will be adjusted according to the annual variation in rate of WPI and the O&M expenses as approved by the Commission for the year 2005-06 will be taken as base O&M expenses for determination of O&M expenses for subsequent years. In the Tariff Order of 2006-07, the Commission had approved revised employee cost of Rs.1480.01 crores based on growth of 16.11% in WPI from March 2002 to March 2005.

2.10.2 In the data supplied by the Board in its letter of 18.5.07, the Board has revised the employee cost to Rs.1631.77 crores (net) for the year 2005-06 whereas the actual employee cost for the year, as per audited accounts of the Board is Rs. 1731.79 crores (gross) out of which a cost of Rs.104.43 crores has been capitalized. Thus, net employee cost for the year 2005-06 works out to Rs.1627.36 crores on actual basis. The Commission had already observed in its Tariff Order for the year 2005-06 and even earlier that the Board had not taken adequate measures to contain employee cost which position holds good even now. The Commission, therefore, does not accept the high employee cost as reported and retains the earlier methodology adopted in working out such cost by taking the actuals of 2002-03 into account. The increase in WPI for 2003-04, 2004-05 and 2005-06 is 4.78%, 5.34% and 3.90% respectively totaling to 14.02%. After allowing compounded increase in WPI from 2003-04 to 2005-06 over the actual employee cost for 2002-03, the employee cost allowable to the Board works out to Rs. 1461.78 crores.

**The Commission, therefore, approves the employee cost at Rs. 1461.78 crores for the year 2005-06.**

## 2.11 Repair and Maintenance Expenses

2.11.1 The Commission had approved R&M expenses of Rs. 265.00 crores in the Tariff Order of 2005-06 as claimed by the Board. In the ARR for the year 2006-07, the Board had

revised its estimates to Rs.250.00 crores. The Commission had, therefore, approved Rs. 250.00 crores as R & M expenses for the year 2005-06 in the Tariff Order for the year 2006-07.

2.11.2 The Board's accounts for the year 2005-06 have become available to the Commission now. The actual expenditure on R & M inclusive of operating expenses of Rs. 15.74 crores referred to in para 2.7.2, works out to Rs. 241.10 crores. Out of this, R&M expenses of Rs. 2.35 crores have been capitalized. The Commission, therefore, allows net R & M expenses of Rs. 238.75 crores for the year 2005-06 on actual basis.

**Accordingly, R&M expenses of Rs. 238.75 crores are approved for the year 2005-06.**

### **2.12 Administration and General Expenses**

2.12.1 The Commission had approved A&G expenses of Rs. 50.31 crores for the year 2005-06 by allowing increase of 5% over the revised expenditure of the previous year in the Tariff Order of 2005-06. In the subsequent Tariff Order of 2006-07, revised approval for administration and general expenses of Rs. 54.91 crores was allowed by the Commission by granting 5% increase in expenses over the actuals of previous year.

2.12.2 According to the accounts for 2005-06, net expenses of the Board on this account amounted to Rs. 58.01 crores. The Commission sees no reason to allow an increase beyond 5% over the approved expenditure for the year 2004-05 and therefore, allows Rs. 54.91 crores towards this expenditure.

**The Commission, therefore, approves A&G expenses of Rs. 54.91 crores for the year 2005-06.**

### **2.13 Depreciation**

2.13.1 The Commission had approved depreciation of Rs. 621.77 crores for 2005-06 in the Tariff Order for that year. In the Tariff Order of 2006-07, the depreciation was revised to Rs. 609.00 crores based on gross assets of Rs. 14001 crores as on April 1, 2005 as intimated by the Board. According to accounts for 2005-06 the depreciation and related

debits (net) are Rs. 583.86 crores. The Commission, therefore, approves net depreciation of Rs. 583.86 Crores for 2005-06 on actual basis.

**In view of the above, depreciation charges of Rs. 583.86 crores are allowed for 2005-06.**

## **2.14 Interest and Finance Charges**

2.14.1 The Commission had approved interest and finance charges of Rs.811.41 crores (net) in the Tariff Order of 2005-06 which was revised to Rs.869.06 crores in the Order of 2006-07 after disallowing Rs.100 crores interest related to diversion of capital funds for revenue purposes. As per annual statement of accounts for the year 2005-06, the net interest and finance charges are Rs. 952.63 crores excluding capitalization of interest of Rs. 99.84 crores. This amount includes interest of Rs. 62.28 crores on working capital of Rs. 895.54 crores against allowable working capital loan of Rs. 540.64 crores on normative basis. Therefore, allowable interest on working capital loan works out to Rs. 37.60 crores only against Rs. 62.28 crores. Thus, interest disallowable on account of excess working capital loan works out to Rs. 24.68 crores on proportionate basis. Besides, as decided in earlier Tariff Orders, the Commission retains its decision regarding disallowance of interest of Rs. 100 crores due to deficiencies in the Board's functioning leading to diversion of capital funds for revenue purposes by the Board. Thus, after disallowing interest of Rs. 124.68 crores, interest cost allowable to the Board works out to Rs. 827.95 crores for the year 2005-06.

**The Commission, therefore, approves Rs. 827.95 crores as net amount of interest and finance charges for the year 2005-06.**

## **2.15 Net Fixed Assets and Return**

2.15.1 In the Tariff Order of 2005-06, the Commission had approved a return of Rs. 205.57 crores, which was revised to Rs. 207.66 crores in the Tariff Order of 2006-07. According to the accounts of the Board for the year 2005-06, the gross block at the beginning of the year was Rs.14000.71 crores. The return @ 3% on the capital assets employed at the beginning of the year has been worked out in Table 2.10.

**Table 2.10: Reasonable Return – 2005-06**

Description	Rs. in crores
1	2
Gross block	14,000.71
Less: Accumulated depreciation	5,491.74
Net block	8,508.97
Less: Consumer contribution	1,586.61
Net fixed assets	6,922.36
<b>Reasonable return @3%</b>	<b>207.67</b>

2.15.2 A return of 3% on net fixed assets employed at the beginning of the year works out to Rs. 207.67 crores on actual basis, which is the same as allowed in the Tariff Order of 2006-07.

**Accordingly, the Commission retains its decision to allow return of Rs. 207.67 crores for the year 2005-06 as approved in the Tariff Order of 2006-07.**

### **2.16 Subsidy from Government of Punjab**

2.16.1 As per statement of accounts for the year 2005-06, total subsidy of Rs.1435.92 crores (Rs.1133.43 crores AP subsidy + Rs.252.49 crores Free tubewell supply + Rs.50 crores Scheduled Castes Domestic subsidy) has been paid by the Government of Punjab (GoP) to the Board.

2.16.2 The subsidy payable by GoP is now determined as given below:

- **AP Consumption:** The Commission has accepted AP consumption at 7317 MU on actual basis on which revenue @ 214 paise per unit works out to Rs. 1,565.84 crores. Of this, farmers have been billed for Rs. 203.41 crores and the balance of Rs. 1,366.51 crores inclusive of Rs. 4.08 crores (from Sep 1, 2005) representing meter rentals and service charges was payable by the GoP as AP subsidy against Rs. 1,385.92 crores already paid resulting in an excess payment of Rs. 19.41 crores to the Board on this account.
- **Scheduled Castes DS Consumers:** The Commission noted that as per decision of the State 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 Board

in its letter of June 18, 2007 has intimated that subsidy of Rs. 27.50 crores for Scheduled Castes DS consumers had become payable by the GoP as against Rs. 50.00 crores already paid. Thus, Board has received excess subsidy of Rs. 22.50 crores for Scheduled Castes DS consumers for the year 2005-06.

- **Past Subsidy Payable:** The Tribunal in its judgment dated May 26, 2006 has directed the Commission to re-determine total amount of subsidy payable by the State Government to the Board including cash and R.E. Subsidy, without any adjustment of earlier loans or interest, mode of its payment and quantum of subsidy which the State Government has failed to disburse to the Board. In compliance of these directions, the Commission has passed a speaking order separately. The amount of subsidy due and paid for the past years is worked out in Table 2.11.

**Table 2.11: Statement of Subsidy Payable – 2002-03 to 2005-06**

(Rs. in crores)

<b>(A) AP Subsidy</b>						
Year	Consumption finally approved in 'True up' exercise (in MUs)	Total Revenue Required	Revenue collected from consumers as per annual statement of accounts	Amount of subsidy payable by GoP	Amount of subsidy received as per annual statement of accounts	Subsidy (short) / excess
1	2	3	4	5	6	7
<b>AP</b>						
2002-03	5820	1,164.00	151.42	1,012.58	900.00	(112.58)
2003-04	5745	1,149.00	329.21	819.79	787.69	(32.10)
2004-05	6472	1,281.54	391.8	889.74	873.61	(16.13)
<b>Total</b>	<b>18037</b>	<b>3,594.54</b>	<b>872.43</b>	<b>2,722.11</b>	<b>2,561.30</b>	<b>(160.81)</b>
<b>2005-06</b>		<b>1,565.84</b>	<b>203.41</b>	<b>1,366.51</b>	<b>1,385.92</b>	<b>19.41</b>
AP	7317	1,565.84	203.41	1,362.43	1,385.92	19.41
Meter Rentals and Service Charges				4.08		
Interest Payable						(1.74)
<b>Total Payable by the Government</b>		<b>5,160.38</b>	<b>1,075.84</b>	<b>4,088.62</b>	<b>3,947.22</b>	<b>(143.14)</b>
<b>(B) Scheduled Castes DS Consumers</b>						
Year				Amount due	Amount paid	Excess Subsidy Received
1	2	3	4	5	6	7
<b>Scheduled Castes DS Consumers</b>						
2002-03				20.69	50.00	29.31
2003-04				8.11	50.00	41.89
2004-05				8.20	50.00	41.80
<b>Sub-total</b>				<b>37.00</b>	<b>150.00</b>	<b>113.00</b>
2005-06				27.50	50.00	22.50
<b>Total</b>				<b>64.50</b>	<b>200.00</b>	<b>135.50</b>
<b>SC Subsidy refundable by the Board</b>						<b>135.50</b>

Note: Amount of interest of Rs. 1.74 crores indicated in column 7 above was levied on the balance unpaid subsidy of Rs. 19.31 crores for the year 2003-04 in para 7.15.7 of the Tariff Order of 2004-05.

**Based on the above, there is short payment of subsidy of Rs. 7.64 (143.14 - 135.50) crores by the GoP in the years from 2002-03 to 2005-06. However, this does not have any effect on the ARR for the year 2005-06.**

### **2.17 Non-Tariff Income**

2.17.1 The Commission had approved non-tariff income of Rs. 340.00 crores in the Tariff Order of 2005-06 which was increased to Rs. 352.80 crores based on Board's revised estimates in the Order of 2006-07.

2.17.2 As per annual statement of accounts of 2005-06, other income of the Board is Rs. 199.24 crores besides non-tariff income of Rs. 170.81 crores, which is included in the sale of power. In addition, the subsidy available from GoP on account of meter rentals and service charges for AP amounting to Rs. 4.08 crores is also being added to non-tariff income for the year 2005-06. Thus, the total non-tariff income of the Board works out to Rs. 374.13 crores for the year 2005-06.

**The Commission accordingly approves non-tariff income of Rs. 374.13 crores on actual basis for the year 2005-06.**

### **2.18 Revenue from Sale of Power**

2.18.1 As per the annual accounts for 2005-06, revenue from sale of power is Rs. 6701.08 crores excluding GoP subsidy. This revenue includes non-tariff income of Rs. 170.81 crores on account of meter rent/service charges, recoveries from theft of power, wheeling charges and part of miscellaneous charges (Rs. 126.00 crores, Rs. 22.17 crores, Rs. 1.96 crores and Rs. 20.68 crores respectively), which have already been taken into account in non-tariff income. The net revenue excluding these charges from the revenue from sale of power works out to Rs. 6530.27 crores. After adding payable GoP subsidy of Rs. 1,362.43 crores (AP) and Rs. 27.50 crores (Scheduled Castes DS consumers) total revenue from sale of power amounts to Rs. 7920.20 crores.

**Therefore, the Commission approves the revenue from sale of power at Rs. 7920.20 crores for the year 2005-06.**



2.18.2 While truing up the accounts of 2005-06, excess or less subsidy than actually due from the GoP taken into account in computing revenue from sale of power in earlier years has resulted in under-recovery or excess recovery respectively through tariff from consumers. Such less or excess recovery is proposed to be corrected and adjusted against the Gap for the year 2005-06 in compliance of the orders of the Appellate Tribunal judgment dated May 26, 2006. Net effect of such adjustments works out to Rs. 13.96 crores as shown in Table 2.12.

**Table 2.12: Statement of Subsidy Payable – 2002-03 to 2005-06**

(Rs. in crores)

Year	Amount of subsidy payable by GoP as per Column 5 of Table 2.11	Amount considered by the Commission for the ARR under True-up for the year	Amount to be Adjusted against Gap for the year 2005-06
1	2	3	4 = 2 - 3
<b>(A). AP Subsidy</b>			
2002-03	1,012.58	900.00	112.58
2003-04	819.79	821.54	(1.75)
2004-05	889.74	873.61	16.13
<b>Total</b>	<b>2,722.11</b>	<b>2,595.15</b>	<b>126.96</b>
<b>2005-06</b>	<b>1,366.51</b>	<b>1,366.51</b>	-
AP Subsidy	1,362.43	1,362.43	-
Meter Rentals and Service Charges	4.08	4.08	-
<b>Total (A)</b>	<b>4,088.62</b>	<b>3,961.66</b>	<b>126.96</b>
<b>(B). Scheduled Castes DS consumers</b>			
2002-03	20.69	50.00	(29.31)
2003-04	8.11	50.00	(41.89)
2004-05	8.20	50.00	(41.80)
<b>Sub-total</b>	<b>37.00</b>	<b>150.00</b>	<b>(113.00)</b>
2005-06	27.50	27.50	-
<b>Total (B)</b>	<b>64.50</b>	<b>177.50</b>	<b>(113.00)</b>
<b>Net Amount Adjustable (A + B)</b>	<b>4,153.12</b>	<b>4,139.16</b>	<b>13.96</b>

Since the Board has already recovered Rs. 13.96 crores through tariff in respective years, the Commission decides to adjust this amount against the Gap for 2005-06.

### 2.19 Prior Period Charges

2.19.1 As per schedule-18 relating to prior period credits/charges annexed to the annual accounts for 2005-06, the net effect is an expenditure of Rs. 61.32 crores. This includes Rs. 8.66 crores being prior period charges of employee cost. The Board has failed to make available the details about the period to which this cost relates. Therefore, the Commission decides to disallow this cost assuming that it relates to the period for which employee cost remained capped. Accordingly, the balance amount of prior period charges works out to Rs. 52.66 (61.32 – 8.66) crores, which are being allowed.

**The Commission, therefore, approves net prior period expenses of Rs. 52.66 crores for the year 2005-06.**

### 2.20 Other Items of Expenditure

2.20.1 **Other Debits and Extra-ordinary Items:** As per Board's annual accounts of 2005-06 amount of other debits and extra-ordinary items is Rs. 4.44 crores. The Commission noted that these items relate to allowable expenses. Therefore, the Commission allows expenditure of Rs. 4.44 crores for 2005-06.

2.20.2 **Fringe Benefit Tax (FBT):** As per annual accounts for 2005-06 the amount of FBT is Rs. 4.40 crores. This expenditure is a statutory payment made by the Board, as such it is being allowed in the ARR.

**Accordingly, the Commission approves expenditure of Rs. 8.84 crores for the year 2005-06.**

### 2.21 True-Up ARR for 2005-06

2.21.1 In view of above analysis the 'Trued up' revenue requirement for the year 2005-06 is as per details given in Table 2.13.

Table 2.13: Revenue Requirement - 2005-06

(Rs. in crores)

Sr. No.	Item of Expense	Approved by Commission in T. O. for 2005-06	Approved by Commission in T. O. for 2006-07	Actuals as per Annual Accounts for 2005-06	Final approval by Commission
1	2	3	4	5	6
1	Cost of fuel	2176.19	2311.32	2387.67	2327.26
2	Cost of power purchase	2259.66	1901.13	2404.92	2404.92
3	Employee cost	1473.63	1480.01	1627.37	1461.78
4	R&M expenses	265.00	250.00	238.75	238.75
5	A&G Expenses	50.31	54.91	58.01	54.91
6	Depreciation	621.77	609.00	583.86	583.86
7	Interest charges	811.41	869.06	952.63	827.95
8	Return on NFA	205.57	207.66	207.66	207.67
9	Add: Prior period expenses (net)	-	-	61.32	52.66
10	Other Debits and Extraordinary items			4.44	4.44
11	Fringe Benefit Tax			4.40	4.40
12	<b>Total revenue requirement</b>	<b>7863.54</b>	<b>7683.09</b>	<b>8531.03</b>	<b>8168.60</b>
13	i) Add incentive for higher thermal generation	-	-	-	48.04
	ii) Less expenses disapproved due to higher T&D loss	-	-	-	326.20
14	<b>Revenue requirement (12-13)</b>	<b>7863.54</b>	<b>7683.09</b>	<b>8531.03</b>	<b>7890.44</b>
15	Less: non tariff income	340.00	352.80	370.05	374.13
16	Net revenue requirement (14-15)	7523.54	7330.29	8160.98	7516.31
17	Revenue from tariff	7023.47	7959.91	7966.19	7920.20
18	<b>Gap (16-17)</b>	<b>500.07</b>	<b>(629.62)</b>		<b>(403.89)</b>
19	Add concessions/Fuel Cost Adjustment	0.00	0.48		
20	Net gap	500.07	(629.14)		(403.89)
21	Gap for the year 2004-05	268.58	243.90		243.90
22	Amount equivalent to GoP Subsidy already recovered through Tariff				(13.96)
23	<b>Total gap (20+21+22)</b>	<b>768.65</b>	<b>(385.24)</b>		<b>(173.95)</b>
24	Energy sales (MU)	24686	25136	25464	25264

Thus, from the 'truing up' for the year 2005-06, it is noted that there is a surplus of Rs. 173.95 crores against surplus of Rs. 385.24 crores determined earlier by the Commission in the Tariff Order dated May 10, 2006. This surplus is being carried forward to the next year for adjustment.



## Chapter 3

# Review for the Year 2006-07

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### 3.1 Background

3.1.1 The Tariff Order of the Commission for 2006-07 contained its approvals on various issues concerning the ARR and Tariff Proposals of the Board for that year. These were based on estimates submitted by the Board for different items of cost to be incurred and revenues likely to be earned by the Board during the year. Now the Board has in its communications of 18.5.2007 and 12.6.2007 furnished revised estimates for the year 2006-07.

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 furnished by the Board. The Commission considers it appropriate and fair to re-visit the approvals granted by it earlier and to review these with reference to the revised estimates made available by the Board without altering the principles and the norms approved earlier. The issues involved are discussed in the following paragraphs.

### 3.2 Energy Demand (Sales)

3.2.1 The sales projected in the ARR for the year 2006-07, approval granted by the Commission in its Tariff Order for that year and the revised estimates now furnished by the Board are given in Table 3.1.

Table 3.1: Energy Sales – 2006-07

(MU)						
Sr. No.	Category	Projected by PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Revised Estimates by PSEB vide Letter dated 18.05.07	Revised Estimates by PSEB vide Letter dated 18.5.07, 14.6.07,22.06.07	Now approved by the Commission (MU)
1	2	3	4	5	6	7
1	Domestic	5,713	5,672	5,746	5,758	5,758
2	Non-Residential	1,616	1,587	1,639	1,639	1,639
3	Small Power	750	719	712	638	638
4	Medium Supply	1,532	1,482	1,531	1,653	1,653
5	Large Supply	7,337	7,766	8,006	7,998	7,998
6	Public Lighting	129	129	134	129	129
7	Bulk Supply and Railway traction	682	633	569	573	573
8	<b>Metered sales (within State)</b>	<b>17,759</b>	<b>17,988</b>	<b>18,337</b>	<b>18,388</b>	<b>18,388</b>
9	Agriculture	7,115	7,115	8,238	8,233	8,233
10	<b>Total sales within the State</b>	<b>24,874</b>	<b>25,103</b>	<b>26,575</b>	<b>26,621</b>	<b>26,621</b>
11	Common pool	302	302	300	300	300
12	Outside State sales	718	659	952	952	848
13	<b>Total (10+11+12)</b>	<b>25,894</b>	<b>26,064</b>	<b>27,827</b>	<b>27,873</b>	<b>27,769</b>

3.2.2 **Metered Sales:** The Board submitted its revised estimates in its letter dated June 22, 2007 furnishing data on metered sales on pre actual basis. These estimates contain the actuals for the year 2006-07, including 308 MU of energy assumed as theft. As the Board has not provided the allocation of theft for different consumer categories, the Commission has allocated it in proportion to the actual metered energy and included it in the metered sales reported by the Board.

A stakeholder, in a separate petition supplied the figures for outside state sales of the Board to the Commission as obtained by him under the provisions of RTI Act. These figures were at variance with those submitted by the Board to the Commission. It was decided by the Commission to accept the figures of outside state sales i.e. 977 MU as obtained by the petitioner under the RTI Act for a total amount of Rs. 346.92 crore. However, HP share of 76 MU in RSD and royalty (53 MU) in Shanan, which have also been shown as part of outside state sales in the information supplied to the petitioner, are free of cost and as such are required to be excluded from such outside state sales. Accordingly, the outside state sales have been netted of these units (76+53 MU) to

arrive at outside state sales at 848 MU. Further, an amount of Rs. 4.65 crores shown as cost of HP royalty in Shanan Power House has been deducted from the total outside state sales amount to arrive at the net outside state sale amount of Rs. 342.27 crores.

The sale to common pool consumers has been retained at the level estimated by the Board.

**The metered sales of 18,388 MU within the state, common pool sales of 300 MU and outside state sales of 848 MU are now approved by the Commission as per details shown in Table 3.1.**

3.2.3 **Agriculture Consumption:** The Commission in its Tariff Order for 2006-07 approved AP consumption for that year at 7115 MU after allowing reasonable increase over the approved consumption for the previous year. It was also observed then that AP consumption would be reviewed at the end of the year based on sample meter readings and other relevant factors.

The Board has now reported a revised AP consumption of 8233 MU (both metered and unmetered) for the year 2006-07 based on sample meter readings and metered sales. The increase has been explained to be on account of deficient rainfall in the khariff season, increased load due to regularization of consumption under the Voluntary Disclosure Scheme (VDS) and the increasing use of submersible pumps.

The increase in consumption now sought by the Board is considerable but the Commission notes that the VDS introduced by the Board during 2006-07 resulted in disclosure of an additional connected load of 548 MW. Considering an average norm of 1670 kwh / kw / year, this factor alone would increase the annual AP consumption by 915 (1670x548/1000) MU. The Board has, moreover, furnished consumption data for 2006-07 worked out on the basis of sample meter readings and total connected load, which is given in Table 3.2.

**Table 3.2: Monthly AP Consumption - 2006-07**

<b>Month</b>	<b>Consumption (MU)</b>
<b>1</b>	<b>2</b>
Apr-06	328
May-06	460
Jun-06	881
Jul-06	1,163
Aug-06	1,225
Sep-06	1,029
Oct-06	748
Nov-06	501
Dec-06	478
Jan-07	495
Feb-07	437
Mar-07	387
<b>Total Unmetered Sales</b>	<b>8,132</b>
<b>Metered Sales</b>	<b>101</b>
<b>Total Sales</b>	<b>8,233</b>

The Commission notes that the Board has worked out unmetered agricultural consumption on the basis of reading of sample meters and the total connected load, a methodology which has on the whole, found favour in a study undertaken by the PAU at the behest of the Commission. Moreover, the increase of AP consumption in 2006-07 is, by and large, explained by additional load having been declared in the VDS scheme launched by the Board in that year.

The Commission further notes that the Board has outsourced the work of meter readings of AP consumers covered under the sample study to a third party M/s KLG Systel Limited, Gurgaon which has started its work from October 2006. This is likely to ensure improved reporting of sample meter readings in the future.

**Accordingly, the Commission accepts the total figure of unmetered sales as 8132 MU in addition to another 101 MU of metered sales reported by the Board in its letter of 14.6.2007 thus making the total agricultural consumption in 2006-07 as 8233 MU.**



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

For the reasons discussed in Tariff Order for the year 2006-07, the Commission retains target T&D loss level at 20.75% for the year 2006-07.

### 3.4 Energy Requirement

3.4.1 The total energy requirement to meet the demand of the system would be the sum of estimated energy sales including common pool and outside state sales and T&D losses. The total requirement for the year 2006-07 projected in the ARR, approved by the Commission in its Tariff Order and revised estimates furnished by the Board in its letters dated 18.5.2007, 14.6.2007 & 22.6.07 and now approved by the Commission is given in Table 3.3.

Table 3.3: Energy requirement - 2006-07

(MU)

Sr. No.	Particulars	Projected by PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Revised Estimates by PSEB	Now approved by the Commission
1	2	3	4	5	6
1	Metered Sales within the State	17,759	17,988	18,388	18,388
2	Agriculture Consumption	7,115	7,115	8,233	8,233
<b>3</b>	<b>Total sales within State (1+2)</b>	<b>24,874</b>	<b>25,103</b>	<b>26,621</b>	<b>26,621</b>
4	Common pool sales	302	302	300	300
5	Outside state sales	718	659	952	848
<b>6</b>	<b>Total sales</b>	<b>25,894</b>	<b>26,064</b>	<b>27,873</b>	<b>27,769</b>
7	T&D Losses on item (3)				
(a)	Percentage	23.00%	20.75%	23.91%	20.75%
(b)	MU's	7,431	6,573	8,365	6,970
<b>8</b>	<b>Total energy input required</b>	<b>33,325</b>	<b>32,637</b>	<b>36,238</b>	<b>34,739</b>

3.4.2 The revised energy requirement for the year 2006-07 is determined as 34,739 MU, which has to be met from own generation of the Board (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 station-wise generation projected by the Board in the ARR of 2006-07, generation approved by the Commission in its Tariff Order for that year and

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revised estimates now supplied by the Board and approved by the Commission is given in Table 3.4.

**Table 3.4: Thermal Generation - 2006-07**

(MU)

Sr. No.	Station	Projected by PSEB In ARR for 06-07		Approved by the Commission T.O. 06-07		R.E. by PSEB vide Letter dtd 18.05.07		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	2220	1949 (12.20%)	2281	2030 (11.00%)	2275	2015 (11.40%)	2275	2025 (11.0%)
2	GGSTP	8650	7903 (8.64%)	8703	7963 (8.50%)	9621	8800 (8.54%)	9621	8803 (8.5%)
3	GHTP	3120	2828 (9.35%)	3138	2856 (9.00%)	3378	3076 (8.92%)	3378	3074 (9.0%)
	<b>Total</b>	<b>13990</b>	<b>12680</b>	<b>14122</b>	<b>12849</b>	<b>15274</b>	<b>13891</b>	<b>15274</b>	<b>13902</b>

Except in the case of GNDTP, gross generation from the other two plants is higher than the levels approved by the Commission. As GNDTP is undergoing renovation, the Commission accepts the revised numbers of Gross Generation intimated by the Board.

**Accordingly, the Commission approves gross thermal generation for the year 2006-07 at 15274 MU as projected by the Board.**

### **Auxiliary Consumption & Net Generation**

The Commission, in its Tariff Order for 2006-07 approved auxiliary consumption for GGSTP and GHTP at 8.50% and 9.00% respectively as per CERC norms. The Commission allowed auxiliary consumption for GNDTP 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 are still at variance with the approved levels but the Commission sees no justification for allowing any change as per revised estimates of the Board.

**The Commission, thus, retains the auxiliary consumption levels as approved in the Tariff Order for 2006-07. The net thermal generation on this basis works out to 13902 MU as shown in Table 3.4.**

3.5.2 **Hydel Generation:** The station-wise generation projected by the Board in the ARR for 2006-07, generation approved by the Commission in its Tariff Order and the revised estimates submitted by the Board and accepted by the Commission is given in Table 3.5.

Table 3.5: 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 by PSEB	Now Accepted by the Commission
1	2	3	4	5	6
1	Shanan	516	516	493	493
2	UBDC	400	400	383	383
3	RSD	1281	1281	1657	1657
4	MHP	879	879	1151	1151
5	ASHP	656	656	681	681
6	Micro Hydel	8	8	9	9
7	Total Own Hydro				
a)	Gross	3740	3740	4374	4374
	<i>Aux. Consumption</i>	12	8	50	14
	<i>Transformation losses</i>	55	19		22
b)	Net	3673	3654	4324	4209
		Note 1	Note 2	Note 3	Note 4
8	PSEB's Share from BBMB				
a)	Gross	4112	4112	4001	4001
	<i>Add: Common Pool share</i>	302	302	300	300
	<i>Less: External losses</i>	166	166	153	139
b)	Net	4248	4248	4148	4162
9	<b>Total hydro (Net)</b>	<b>7921</b>	<b>7902</b>	<b>8472</b>	<b>8371</b>

## Notes

1. Net of auxiliary consumption (12 MU) and transformation losses (55 MU). In the ARR of 2006-07, net generation has been indicated as 3672 MU, which has been corrected to 3673 MU.
2. Net of HP share (free) in RSD @ 4.6% (59 MU), 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% for RSD (having static exciters) and for others @ 0.2% (14 MU), and transformation losses @ 0.5% (22 MU), and HP Royalty in Shanan (53 MU).
5. The Commission's has accepted the net availability from BBMB for 2006-07 after netting off transmission losses @ 3.47% (139 MU) on 4001 MU from gross availability of 4301 (4001 +300) MU from BBMB.

The revised estimates submitted by the Board, which are largely based on actuals, are accepted by the Commission.

**The Commission, thus, approves revised hydel generation for the year 2006-07 at 4209 MU (net) from own hydel stations and 4162 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 12724 MU (net) in its ARR for 2006-07. The Commission in its Tariff Order for that year approved power purchase at 11886 MU (net).

3.6.2 The Board has now given revised estimates of power purchase for 2006-07 at 13816 MU (net). The approved total energy requirement of the State during 2006-07 including common pool and outside state sales and T&D losses is determined as 34,739 MU as discussed in para 3.4. The energy available from own generating stations of the Board including its share from BBMB is 22273 (13902+8371) MU as approved in para 3.5. The balance energy requirement works out to 12466 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 12466 MU (net) for the year 2006-07.**

### 3.7 Energy Balance

3.7.1 Details of energy requirement and energy availability projected in the ARR for 2006-07, approved by the Commission in its Tariff Order for that year, revised estimates supplied by the Board and now approved by the Commission are given in Table 3.6.

Table 3.6: Energy Balance - 2006-07

(MU)

Sr. No.	Particulars	As per PSEB in ARR 06-07	Approved by the Commission in T.O. 06-07	Revised Estimates by PSEB	Now approved by the Commission
1	2	3	4	5	6
<b>A) Energy Requirement</b>					
1	Metered Sales	17759	17988	18388	18388
2	Sales to Agriculture	7115	7115	8233	8233
3	Total Sales within the State	24874	25103	26621	26621
4	Loss percentage	23.00%	20.75%	23.91%	20.75%
5	T&D losses	7431	6573	8365	6970
6	Sales to Common pool consumers	302	302	300	300
7	Outside State Sales	718	659	952	848
8	<b>Total requirement</b>	<b>33325</b>	<b>32637</b>	<b>36238</b>	<b>34739</b>
<b>B) Energy Available</b>					
9	Own generation (Ex-bus)				
10	Thermal	12680	12849	13891	13902
11	Hydro	3673	3654	4324	4209
12	Share from BBMB (incl.share of common pool consumers)	4248 (common pool = 302)	4248 (common pool = 302)	4148 (common pool = 300)	4162 (common pool = 300)
13	Purchase net	12724	11886	13875	12466
14	<b>Total Available</b>	<b>33325</b>	<b>32637</b>	<b>36238</b>	<b>34739</b>

### 3.8 Fuel Cost

3.8.1 The Commission in its Tariff Order of 2006-07 approved fuel cost at Rs. 2258.15 crores for a gross thermal generation of 14122 MU. The Board has given revised estimates of fuel cost at Rs. 2531.57 crores for gross thermal generation of 15274 MU based on calorific value and price of coal and oil for the year 2006-07 as given in Table 3.7.

Table 3.7: 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	3923.00	9544.00	21139.67	2297.74	2.55%	2239.15
2	GGSTP	3823.88	10000.00	19241.00	2327.20	2.00%	2280.66
3	GHTP	4209.83	9400.00	17578.60	2638.90	2.00%	2586.12

The Commission notes that the above calorific values of coal adopted by the Board vary considerably from those validated by the Commission. Moreover, the Commission had in Dec, 2005 published its Determination of Tariff Regulations, which clearly enjoin that CERC norms would be applicable in determining fuel cost. Regulation 22 of the CERC Regulations for Determining Terms and Conditions of Electricity Tariff provides that the quantum of fuel is to be calculated on the GCV of fuel “as fired”, whereas the Board seems to have been adopting “net calorific value” of coal while submitting data in this respect to the Commission. The principles for determining fuel cost had been published by the Commission in December, 2005 and it was incumbent upon the Board to supply data accordingly. The Commission is of the view that GCV of coal “as fired” must be taken into reckoning as it is imperative that the fuel costs are worked out strictly as per the principles enunciated in the Regulations. However, the Commission while inviting objections from the public in the suo motu determination of tariff had inadvertently used GCV of coal “as received” while working out fuel cost of GNDTP for 2006-07. This error has now been corrected and approved figures of calorific value & prices of coal & oil are given in Table 3.8.

Table 3.8: 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	4147.11	9544.00	21139.67	2308.30	2.76%	2244.59
2	GGSTP	4043.71	10000.00	19241.00	2369.38	2.12%	2319.14
3	GHTP	4421.73	9400.00	17578.60	2511.65	1.68%	2469.45

3.8.2 The Commission has now approved revised gross thermal generation of 15274 MU (2275 MU for GNDTP, 9621 MU for GGSTP and 3378 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 for 2006-07 and considering price and calorific value of coal and oil as validated and accepted by the Commission and detailed in Table 3.9.

**Table 3.9: 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	2275	9621	3378	15274
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	9544	10000	9400	
5	Calorific value of coal	E	k.cal / kg	4147.11	4043.71	4421.73	
6	Overall heat	F = (A x B)	G.cal	6825000	24052500	8445000	
7	Heat from oil	G = (A x C x D)/1000	G.cal	75994	192420	63506	
8	Heat from coal	H = (F-G)	G.cal	6749006	23860080	8381494	
9	Oil Consumption	I=(G x 1000)/D	KL	7963	19242	6756	
10	Transit loss of coal	J	(%)	2.0	2.0	2.0	
11	Consumption of Coal including transit loss.	K=(H x 1000/E) /(1-J/100)	MT	1660612	6020961	1934208	
12	Cost of oil per KL	L	Rs. / KL	21139.67	19241.00	17578.60	
13	Cost of coal per MT	M	Rs. / MT	2244.59	2319.14	2469.45	
14	Total cost of oil	N=L x I / 10 <sup>7</sup>	Rs.crores	16.83	37.02	11.88	65.73
15	Cost of coal	O=K x M/10 <sup>7</sup>	Rs.crores	372.74	1396.35	477.64	2246.73
16	<b>Total Fuel cost</b>	<b>P=N+O</b>	<b>Rs.crores</b>	<b>389.57</b>	<b>1433.37</b>	<b>489.52</b>	<b>2312.46</b>

**The Commission, therefore, approves the revised fuel cost at Rs. 2312.46 crores for the now approved generation of 15274 MU.**

### 3.9 Power Purchase Cost

3.9.1 The Commission in its Tariff Order for 2006-07 approved a cost of Rs. 2813.34 crores for purchase of 12350 MU (gross). The Board has now given revised estimates of Rs. 4387.15 crores for purchase of 14492 MU gross in the year 2006-07.

3.9.2 As discussed in para 3.6, the requirement of 12466 MU (net) has to be met through purchases from central generating stations and other sources. The transmission loss external to the PSEB system has to be added to arrive at the quantum of gross energy

to be so obtained. The Board has now stated that external losses on power purchase in 2006-07 are estimated to be 4.67%. The Commission decides to allow the external losses @ 4.0% which was actually incurred by the Board during the year 2005-06. After adding 4 % losses, the gross energy required to be purchased works out to 12985 MU (12466 MU + external losses 519 MU).

3.9.3 The Board has intimated an actual power purchase of 14386 MU during the year 2006-07 at a total cost of Rs. 4311.40 crores. The Commission has observed that out of the total of 15022.74 MU traded in the country during the year 2006-07, 3399.24 MU (22.63% of total) were purchased by the Board at an average per unit cost of Rs. 5.05. The Commission has also observed that the Board has purchased the highest quantity of the traded power in any particular year during 2006-07.

3.9.4 So far, the Commission has accepted the views that the cost of power purchases including purchases under UI is not entirely within the control of the Board. Accordingly, the Commission had not imposed any penalty for power purchased by the Board. In taking this view, the Commission was guided by the fact that the Board had, in the past, by and large, confined power purchases as per requirements determined in the Tariff Orders. Moreover, the manner in which traded power was purchased left limited choice with the Board as to the cost of that power. The Commission, however, notes that the traded power purchases in the year 2006-07 have registered a steep increase and are 1642 MU more than what had been approved in the Tariff Order. The average cost at which traded power has been purchased has also increased by more than Rs. 1.50 per unit as against cost estimated in the Tariff Order. Clearly, purchases at this scale may prove to be unsustainable and a balanced power purchase policy would need to be adopted by the Board. This aspect will be further dealt with in the next chapter. So far as power purchases in the year 2006-07 are concerned, the Commission following the past practice takes into account the fact that 14386 MU of power has actually been purchased by the Board. Allowing for a normative T&D loss of 20.75% (as against actual figure of 23.91%), the pro-rata amount works out to Rs. 3891.53 (4311.40 x 12985 / 14386) crores for power purchase of 12985 MU.

**The Commission, therefore, approves the revised cost of Rs. 3891.53 crores for the now determined power purchase of 12985 MU gross.**



**3.10 Employee Cost**

- 3.10.1 In the ARR for 2006-07, the Board had claimed net employee cost of Rs. 1803 crores against which the Commission had approved employee cost of Rs. 1559.04 crores for the year 2006-07. As per revised data supplied by the Board in its letter dated May 18, 2007 the Board has revised employee cost in 2006-07 to Rs. 1786.79 crores after capitalizing a sum of Rs.110 crores on this account for the year 2006-07. This amount includes Rs. 4.71 crores on account of FBT, effect of which has been given in para 3.17. Apart from this, the Board has also included an amount of Rs. 3.24 crores on account of prior period expenses. In the absence of details about the period to which this prior period expenditure relates, it cannot be allowed.
- 3.10.2 The Commission has consistently observed that the employee cost of the Board was one of the highest in the country and had recommended that the Board needs to take effective steps to contain the same. This issue has already been dealt with in detail in the Tariff Orders from 2002-03 to 2006-07. The Commission is thus unable to accept the actual employee cost reported by the Board and is further of the view that it would be more appropriate to determine such cost as per the Regulations.
- 3.10.3 The Commission has approved employee cost of Rs. 1,461.78 crores in 2005-06 after allowing cumulative increase of 14.69% in the Wholesale Price Index from March 2003 to March 2006. According to Regulation 28(4)(a) of the PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005, 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. Regulation 28(4)(b) further provides that these will be adjusted according to the annual variation in the rate of WPI to determine O&M expenses for subsequent years.
- 3.10.4 At the time of finalizing the Tariff Order for the year 2006-07, increase in WPI for the year was not available and the Commission had allowed increase of 5.34% in the employee cost for 2006-07, which was equivalent to the increase in WPI for the year 2004-05. Actually WPI for the year 2006-07 has increased by 6.61% (13 points). Accordingly, employee cost allowable for 2006-07 works out to Rs. 1558.40 crores after taking into account an increase of 6.61% over and above the cost of Rs. 1,461.78 crores for 2005-06.

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

### **3.11 Repair and Maintenance Expenses**

3.11.1 In the ARR for 2006-07, the Board had projected R&M expenses at Rs. 290 crores against which the Commission had approved R & M expenses of Rs. 263.35 crores. Now, as per revised data supplied by the Board in its letter dated May 18, 2007 for 2006-07 the R&M expenses estimates are revised to Rs. 260.55 crores after capitalization of Rs. 2.57 crores.

3.11.2 The Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2005 provide for allowing annual increase based on increase in WPI over the O&M expenses approved by the Commission for the year 2005-06. The increase in WPI from April 1, 2006 to March 31, 2007 is 6.61%, which is being allowed to determine the R&M expenses for 2006-07. As such, the R&M expenses for 2006-07 work out to Rs. 254.53 crores against Rs. 238.75 crores approved for the year 2005-06.

**The Commission, as such, approves R&M expenses at Rs. 254.53 crores for the year 2006-07.**

### **3.12 Administration and General Expenses**

3.12.1 The Commission, in the Tariff Order for 2006-07 had approved A&G expenses of Rs. 57.84 crores for 2006-07 by allowing increase of 5.34% over the approved A&G expenses of Rs. 54.91 crores for 2005-06. This increase of 5.34% allowed was the increase in WPI for the year 2004-05 since the increase in WPI for the year 2005-06 was not available at the time of finalization of the Tariff Order.

3.12.2 The growth of 6.61% (13 points) in WPI for the period from April 2006 to March 2007 as mentioned in Para 3.10 above has become available now. Therefore, keeping in view the provisions contained in the PSERC (Terms & Conditions for Determination of Tariff) Regulations, 2005, the revised A&G expenses allowable for 2006-07 work out to Rs.

58.54 crores by allowing an increase of 6.61% on the approved A&G expenses of Rs. 54.91 crores for 2005-06 against the Board's claim of Rs. 60.60 crores.

**The Commission, therefore, approves administration and general expenses of Rs. 58.54 crores for 2006-07.**

### 3.13 Depreciation

3.13.1 In the ARR for 2006-07, the Board had projected these charges at Rs. 649 crores, which were approved by the Commission in its Tariff Order. According to the data for 2006-07 now supplied by the Board, it has revised depreciation charges to Rs. 626.68 crores as per details given in Table 3.10.

**Table 3.10: Depreciation - 2006-07**

Sr.No.	Item	(Rs. in crores)			(Rs. in crores)		
		Assets as on April 1, 2005	Amount of Depreciation for 2005-06	% Rate	Assets as on April 1, 2006	Amount of Depreciation for 2006-07	% Rate
1	2	3	4	5	6	7	8
1	Thermal	2,922.00	142.88	4.89%	3,114.43	152.30	4.89%
2	Hydro	5,657.00	139.02	2.46%	5,669.15	139.46	2.46%
3	Internal	3.00	0.00	0.00%	2.68	0.00	0.00%
4	Transmission	1,627.00	85.89	5.28%	1,731.10	91.40	5.28%
5	Distribution	3,655.00	214.24	5.86%	4,124.72	241.71	5.86%
6	Others	137.00	1.83	1.34%	136.74	1.83	1.34%
	<b>Total</b>	<b>14,001.00</b>	<b>583.86</b>		<b>14,778.82</b>	<b>626.70</b>	

3.13.2 It is evident that the percentage of depreciation charges for 2006-07 is the same as approved by the Commission for 2005-06. On that basis, the depreciation for 2006-07 works out to Rs. 626.70 crores as claimed by the Board.

**The Commission, therefore, approves depreciation charges of Rs. 626.70 crores for 2006-07.**

### 3.14 Interest and Finance Charges

3.14.1 The Commission had approved net interest and finance charges of Rs. 858.69 crores in the Tariff Order of 2006-07 after deducting Rs. 100 crores towards diversion of funds.

3.14.2 As per data now supplied, the Board has indicated net interest and finance charges of Rs. 956.70 crores after capitalization of interest charges of Rs. 129.20 crores for 2006-07. This includes finance charges of Rs. 18.00 crores against Rs. 12.83 crores earlier approved in the Tariff Order for the year 2006-07.

3.14.3 **Investment Plan:** As per latest data supplied by the Board, an Investment Plan of Rs. 2363 crores is proposed against the Commission's approved investment of Rs. 1500 crores in the Tariff Order of 2006-07. Actual capital expenditure in 2006-07 (upto December, 2006) is Rs. 1212.30 crores. This level of spending indicates that the revised estimates of Rs. 2363 crores of the Board are highly ambitious and unlikely to be achieved. Accordingly, the Commission retains the level of investment at Rs. 1500 crores as already approved.

3.14.4 **Working Capital:** The Board has in the revised estimates projected a working capital loan of Rs. 1168.50 crores on which the interest liability has been shown as Rs. 133.74 crores. It is evident that these estimates have not been prepared in conformity with the PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005, whereby working capital of an integrated utility is to be allowed on normative basis as brought out in Table 3.11.

**Table 3.11: Working Capital Requirement - 2006-07**

(Rs. in crores)

Particulars	Revised Estimates by PSEB	Approved by Commission for FY 2006-07
1	2	3
One month fuel cost	422.00	192.71
One month power purchase	366.00	324.29
One month cash requirement (employee cost and A&G expenses)	154.00	134.75
One month cost of R &M	226.50	21.21
<b>Total requirement</b>	<b>1168.50</b>	<b>672.96</b>

As against the revised estimates of the Board brought out in column 2 of Table 3.11, the Commission has approved each item of cost based on the costs worked out in this chapter. Accordingly, the Commission approves an interest of Rs. 77.02 crores on working capital loan of Rs. 672.96 crores on proportionate basis.

**3.14.5 Finance Charges:** As per revised data supplied by the Board, finance charges have been estimated at Rs. 18.00 crores for fresh borrowings of Rs. 2312.09 crores in 2006-07 against Rs. 12.83 crores allowed in the Tariff Order for 2006-07. These charges amount to 0.78% of the proposed borrowings. The Commission notes, however, that the approved investment is Rs. 1280 crores (Rs. 1500 crores minus Rs. 220 crores as consumer contribution) in 2006-07. Assuming that the finance costs are the same as projected by the Board these charges would work out to Rs. 9.97 crores on proportionate basis, which is accepted and approved.

**3.14.6 Interest on Government Loan:** As per observations in the Commission's Order passed separately in compliance of the Tribunal judgment, the average rate of interest on State Government Loan works out to be 12.22% per annum, which is in line with the prevailing rate of interest.

With the conversion of Rs. 140 crores of State Government loans into equity and further adjustment of Rs. 1322.62 crores of RSDP capital expenditure of the Irrigation Branch from Government loans of Rs. 4537.53 crores, the balance Government loans work out to Rs. 3074.91 crores and the interest thereon works out to Rs. 375.91 crores.

As per orders of the Commission passed separately in compliance of the directions contained in the Tribunal judgment, the Commission has determined cumulative diversion of capital funds of Rs. 3828.23 crores (based on accounts for the year 2005-06 and to be firmed up on availability of accounts for 2006-07) for revenue purposes in 2006-07. Out of this, Rs. 637.35 crores relating to RBI Bonds issued on behalf of GoP on account of Board's liabilities will not have any effect on interest cost as the debt servicing of the same is being done by GoP. The interest cost on the balance diverted funds of Rs. 3190.88 crores works out to Rs. 389.92 crores @ 12.22% per annum which is the average interest rate on Government loans to the Board. The rate of 12.22% is being applied since the amount of diversion cannot be related to any particular loan or investment fund.

The Commission observes that the diversion of funds by the Board might have been necessitated either on account of inefficiencies in the functioning or because tariff was not being raised to the requisite level. In addition, AP consumers were allowed free electricity supply from 14.2.1997 to 31.3.2002 without any upfront compensation being

paid by the State Government to the Board. In these circumstances, the Commission decides that a substantial portion of the cost of diversion needs to be borne by the State Government. The Commission has concluded that it will be fair and just if interest to the extent of Rs. 289.92 crores is passed on to the State Government, which exercises pervasive powers over the utility and also is the 'de-jure' owner of Board's assets and liabilities. The balance Rs.100 crores will continue to be disallowed from the interest cost of the Board, as earlier decided, on account of deficiencies in the Board's functioning.

Keeping the above in view, the Commission revises interest cost on State Government loans to Rs. 85.99 crores for 2006-07 after adjustment of interest of Rs. 289.92 crores disallowed for diversion of capital funds for revenue purposes by the Board. However, as total interest cost of Rs. 375.91 crores has already been paid by the Board to GoP, the amount of Rs. 289.92 crores paid in excess needs to be recovered from GoP. Therefore, this amount of Rs. 289.92 crores has been added to payable amount of GoP in para 3.15.

**3.14.7 Interest on Diversion of Funds:** In the light of the above discussion and for the reasons detailed in the Tariff Orders of 2003-04 to 2006-07, the Commission retains its decision to disallow interest cost of Rs.100 crores against interest cost of the Board.

**3.14.8 Capitalization of Interest:** As already decided in earlier Tariff Orders, the Commission allows capitalization of interest excluding interest charges on working capital in the ratio of net works in progress to total expenditure. Accordingly, the Commission approves capitalization of interest of Rs. 48.13 crores.

In the light of the above, the interest and finance charges for 2006-07 are revised as per Table 3.12.

Table 3.12: Interest and Finance Charges - 2006-07

(Rs. in crores)						
Sr. No.	Particulars	Loans o/s as on 31.3.06	Receipt of loans	Repayment of loans	Loans o/s as on 31.3.07	Amount of interest
1	2	3	4	5	6	7
1	As per data furnished by PSEB (other than WCL & Govt. loans)	4269.41	2312.09	660.82	5920.68	446.55
2	Approved by Commission (other than WCL & Govt. loans)	4269.41	1280.00	660.82	4888.59	401.32
3	Government loans	3074.91	0	0	3074.91	375.91
4	Interest on GPF					110.00
5	<b>Total (2+3+4)</b>	<b>7344.32</b>	<b>1280.00</b>	<b>660.82</b>	<b>7963.50</b>	<b>887.23</b>
6	<b>Less: Amount Disallowed on a/c of Diversion to:</b>					<b>389.92</b>
a	<b>Board - Rs. 100 crores</b>					
b	<b>GoP - Rs. 289.92 crores</b>					
7	<b>Total (5-6)</b>					<b>497.31</b>
8	Interest on working capital					77.02
9	Lease Rental					1.69
10	<b>Total interest (7+8+9)</b>					<b>576.02</b>
11	Add finance charges					9.97
12	<b>Grand total (10+11)</b>					<b>585.99</b>
13	Less capitalization					48.13
14	<b>Net interest &amp; finance charges (12-13)</b>					<b>537.86</b>

Receipt of loan of Rs.1280 crores noted in column 4 against serial no. 2 is equal to the approved investment of Rs.1500 crores minus consumer contribution of Rs.220 crores for 2006-07 as provided by the Board.

3.14.9 Net interest and finance charges work out to Rs. 537.86 crores for 2006-07.

**Therefore, the Commission approves interest and finance charges of Rs. 537.86 crores for the year 2006-07.**

### 3.15 Subsidy and other amounts payable by Government of Punjab

3.15.1 Total subsidy payable by the Government of Punjab includes the following:

- **AP Consumption:** The Commission has revised AP consumption to 8233 MU for the year 2006-07. Revenue from Agriculture Sector at the existing tariff @ 214 paise per unit would now work out to Rs. 1,761.86 crores.

- **Meter Rentals and Service Charges:** An additional subsidy of Rs. 7.00 crores on account of meter rentals and service charges in respect of AP consumers is also payable by the Govt. of Punjab.
- **Scheduled Castes DS and Non-SC BPL:** The Govt. of Punjab had decided to raise the limit of free supply of power to Scheduled Castes DS consumers from 50 units with connected load of 300 watts to 200 units with connected 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 State Govt. in the case of Scheduled Castes DS consumers with effect from October 2, 2006. Total amount of subsidy payable by the Govt. for Scheduled Castes DS Consumers has been assessed by the Board at Rs. 76.93 crores for the year 2006-07.

In addition to this, 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 payable by the Govt. on this account has been assessed by the Board at Rs. 0.02 crores.

The total amount payable by GoP is shown in Table 3.13.



Table 3.13: Subsidy and Other Amounts Payable by GoP - 2006-07

( Rs. in crores)						
Particulars	Consumption finally approved in 'Review' exercise (in MUs)	Total Revenue Required	Revenue collected from consumers	Amount of subsidy payable by GoP	Amount of subsidy received as per information provided by the Board	Total Amount payable by GoP
<b>A. Agricultural Consumption</b>						
AP Consumption	8233	1,761.86		1,761.86		
Meter Rentals and Service Charges		7.00		7.00		
<b>Sub Total (A)</b>		<b>1,768.86</b>	-	<b>1,768.86</b>	-	
<b>B. Domestic Subsidy</b>						
Scheduled Castes DS		76.93		76.93		
Non-SC BPL Consumers upto 1000 watts w.e.f Dec. 1, 2006		0.02		0.02		
<b>Sub Total (B)</b>		<b>76.95</b>	-	<b>76.95</b>		
<b>Total Subsidy (A+B)</b>		<b>1,845.81</b>	-	<b>1,845.81</b>	<b>1,423.82</b>	<b>421.99</b>
Add: Interest adjusted for diversion of funds						289.92
Add: Subsidy short received upto 2005-06 (as per True-Up Chapter)						7.64
<b>Total Amount Payable by the Government</b>						<b>719.55</b>

- Accordingly, total subsidy for AP sector, Scheduled Castes DS and Non SC-BPL DS consumers would be Rs. 1,845.81 ( 1,768.86 +76.95) crores for the year 2006-07. Against this, the State Govt. has paid subsidy of Rs. 1,423.82 crores leaving a balance amount of Rs. 421.99 crores still payable for the year 2006-07.
- Adding the amount of subsidy of Rs. 7.64 crores payable upto the year 2005-06, as discussed in para 2.16.2, consolidated subsidy payable by the GoP upto the year 2006-07 works to Rs 429.63 crores.
- Besides the subsidy indicated above, an amount of interest of Rs 289.92 crores on account of diversion of capital funds for revenue purposes is to be adjusted against interest on GoP loans as per para 3.14.6. However, this interest already stands paid by the Board to GoP. This amount is being added to the subsidy payable by GoP, which totals at Rs. 719.55 crores at the end of year 2006-07.

**The Commission, therefore, determines total amount payable by GoP at Rs. 719.55 crores upto the year 2006-07. However, this does not have any effect on the ARR for the year 2006-07.**

### **3.16 Return on Equity**

3.16.1 Regulation 25 of the Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2005 provides that Return on Equity will be computed on the paid up equity capital determined 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. Keeping this in view, Return on Equity is admissible @14% p.a. on equity capital as on 1<sup>st</sup> April, 2006.

3.16.2 The amount of loans and equity in the Board is Rs. 7344.32 crores and Rs. 2946.11 crores respectively as on April 1, 2006. A return @ 14% on equity of Rs. 2946.11 crores amounts to Rs. 412.46 crores to which the Board is entitled as was earlier determined.

**The Commission, therefore, approves return on equity of Rs. 412.46 crores for the year 2006-07.**

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

3.17.1 No liability on account of FBT was claimed by the Board in the ARR of 2006-07. Now, the Board has estimated statutory liability of FBT to the tune of Rs. 4.71 crores. However, the Commission allows FBT amounting to Rs. 4.40 crores at the level of actual payment for previous year as given in the Board's annual accounts for the year 2005-06.

**Accordingly, the Commission approves FBT expenses of Rs. 4.40 crores for 2006-07.**

### **3.18 Non-Tariff Income**

3.18.1 In the Tariff Order of 2006-07, the Commission had approved non-tariff income of Rs. 320.00 crores against Board's estimates of Rs.360.00 crores.

3.18.2 Now, as per data supplied by the Board, the non-tariff income for the year has been revised to Rs. 348.97 crores. In addition, the subsidy receivable from GoP on account of meter rentals and service charges for AP amounting to Rs. 7.00 crores is also to be added to non-tariff income for the year 2006-07.

**The Commission, therefore, approves Rs. 355.97 crores as Non-Tariff Income of the Board for the year 2006-07.**

### 3.19 Revenue from Existing Tariff

3.19.1 The Board has revised the estimates of revenue at existing tariff as Rs. 8616.27 crores for the year 2006-07. However, the Commission has assessed revenue from existing tariff at Rs. 8790.39 crores as given in Table 3.14.

**Table 3.14: Revenue from Existing Tariff - 2006-07**

Sr. No.	Category of consumers	As demanded by PSEB			As approved by Commission		
		Energy sales (MU)	Tariff rates (paise/unit)	Revenue (Rs. in crores)	Energy sales (MU)	Tariff rates (paise/unit)	Revenue (Rs. in crores)
1	2	3	4	5	6	7	8
1	Domestic						
a)	Up to 100 units	3550	221	784.30	3505	221	774.61
b)	101-300 units	1488	368	547.70	1493	368	549.42
c)	Above 300 units	708	389	275.40	760	389	295.64
	Total (a+b+c)	5746		1607.40	5758		1619.67
2	NRS	1639	423	693.10	1639	423	693.30
3	Public lighting	134	423	56.50	129	423	54.57
4	Industrial Consumers						
a)	SP	712	337	239.90	638	337	215.01
b)	MS	1531	372	569.40	1653	372	614.92
c)	LS	8006	372	3085.00	7998	372	2975.26
	Total (a+b+c)	10249		3894.30	10289		3805.19
5	Bulk Supply & Railway Traction	570		225.10	573	396	226.91
6	Common pool	302		73.07	300		73.07
7	Outside state	952		196.90	848		342.27
8	<b>Total (1 to 7)</b>	<b>19592</b>		<b>6746.37</b>	<b>19536</b>	-	<b>6814.98</b>
9	AP	8238	214	1763.00	8233	214	1761.86
10	<b>Total (8+9)</b>	<b>27830</b>		<b>8509.37</b>	<b>27769</b>	-	<b>8576.84</b>
11	Add: PLEC, MMC and Other charges			106.90			213.55
12	<b>Grand Total</b>	<b>27830</b>		<b>8616.27</b>	<b>27769</b>	-	<b>8790.39</b>

The Tariff for Bulk Supply and Railway Traction noted in column 7 against serial no. 5, has been worked out on weighted average of sales and tariffs of these categories.

**The Commission, therefore, approves the revenue from existing tariff at Rs. 8790.39 crores for the year 2006-07.**

## Chapter 3

### 3.20 Revenue Requirement

3.20.1 The summary of the review for 2006-07 as analyzed in the preceding paragraphs is given in Table 3.15.

Table 3.15: Revenue Requirement - 2006-07

(Rs. in crores)					
Sr. No.	Item of Expense	As per PSEB in ARR 06-07	Approved by Commission in T. O. for 06-07	Revised estimates by PSEB	Approved by the Commission in TO 2007-08
1	2	3	4	5	6
1	Cost of fuel	2316.00	2258.15	2531.57	2312.46
2	Cost of power purchase	3256.00	2813.34	4311.40	3891.53
3	Employee cost	1803.00	1559.04	1786.79	1558.40
4	R&M expenses	290.00	263.35	260.55	254.53
5	Admin & General Exp	58.00	57.84	60.60	58.54
6	Depreciation	649.00	649.00	626.68	626.70
7	Interest charges	1036.00	858.69	956.70	537.86
8	Return on Equity	412.00	412.46	412.50	412.46
9	Fringe Benefit Tax	0.00	0.00	4.71	4.40
10	<b>Total revenue requirement</b>	<b>9820.00</b>	<b>8871.87</b>	<b>10951.50</b>	<b>9656.88</b>
11	Less: non tariff income	360.00	320.00	348.97	355.97
12	<b>Net revenue requirement (10-11)</b>	<b>9460.00</b>	<b>8551.87</b>	<b>10602.53</b>	<b>9300.91</b>
13	Revenue from tariff	8124.00	8270.82	8616.30	8790.39
14	Gap (12-13)	1336.00	281.05	1986.23	510.52
15	Fuel Cost Adjustment	0.00	0.00	0.00	0.00
16	<b>Net Gap (14+15)</b>	<b>1336.00</b>	<b>281.05</b>	<b>1986.23</b>	<b>510.52</b>
17	Gap for the year 2005-06	1059.00	(385.24)		(173.95)
18	<b>Total gap (16+17)</b>	<b>2395.00</b>	<b>(104.19)</b>	<b>1986.23</b>	<b>336.57</b>

The review for the year 2006-07 indicates that there is a deficit of Rs. 510.52 crores. The net deficit for the year 2006-07 after adjusting a surplus of Rs. 173.95 crores for the year 2005-06 works out to Rs. 336.57 crores against surplus of Rs. 104.19 crores determined earlier by the Commission in the Tariff Order dated May 10, 2006. This deficit of Rs. 336.57 crores is being carried forward to the next year for adjustment.

Apart from this, an amount of Rs. 719.55 crores has been determined payable by GoP to the Board on account of subsidy and interest payable on diversion of capital funds.

## Chapter 4

# Annual Revenue Requirement for 2007-08

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### 4.1 Energy Demand (Sales)

4.1.1 **Metered Energy Sales:** The Board has projected energy sales to metered categories for the first nine months of 2007-08 on the basis of month-wise Compounded Annual Growth Rate of the three years (2003-04 to 2006-07) while the projection for last 3 months of 2007-08 has been made as per the CAGR of the three years from 2002-03 to 2005-06. Details of the Board's projection are in Table 4.1.

**Table 4.1: Energy Sales to Metered Categories as per Board - 2007-08**  
(MU)

<b>Metered Energy Sales (MU)</b>	<b>FY 2005-06 (Actual)</b>	<b>FY 2006-07 (RE)</b>	<b>FY 2007-08 (Proj)</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Domestic	5,371	5,758	5,897
Non-Residential	1,466	1,639	1,774
Small Power	697	638	712
Medium Supply	1,467	1,653	1,560
Large Supply	7,473	7,998	8,522
Public Lighting	123	129	145
Bulk Supply	556	573	603
<b>Total Sales</b>	<b>17,153</b>	<b>18,388</b>	<b>19,213</b>

As per information furnished in letter dated 12<sup>th</sup> June 2007 for 2007-08, the Board has projected aggregate metered sales at 20465 MU in 2007-08 of which metered sales within the State are 19213 MU.

The Commission has estimated category-wise sales within the State for 2007-08 by applying 3 years CAGR (2002-03 to 2005-06), on sales for the year 2006-07 now approved in Chapter-3. The actual sales for the years 2002-03 and 2005-06, 3 year CAGR for 2002-03 to 2005-06 as calculated by the Commission, sales now approved for 2006-07 and estimated sales in 2007-08 for different metered categories within the state are given in Table 4.2.

Table 4.2: 3-Year CAGR &amp; Estimated Metered Sales within the State – 2007-08

(MU)

Sr. No.	Category	2002-03 (Actuals)	2005-06 (Actuals)	3 year CAGR (2002-03 to 2005-06)	Sales now approved for 2006-07	Estimated sales for 2007-08
1	2	3	4	5	6	7
1	Domestic	4913	5354	2.91%	5758	5926
2	Non-Residential	1204	1461	6.66%	1639	1748
3	Small Power	642	695	2.68%	638	655
4	Medium Supply	1474	1462	-0.27%	1653	1649
5	Large Supply	6405	7450	5.17%	7998	8412
6	Public Lighting	89	122	11.09%	129	143
7	Bulk Supply & Rly. Traction	418	555	9.91%	573	630
8	<b>Total Sales within State</b>	<b>15145</b>	<b>17099</b>		<b>18388</b>	<b>19163</b>

Based on the above, the Commission has proposed the estimated metered energy sales within the State at 19163 MU for the year 2007-08. The Commission has adopted the sales to common pool at 300 MU as projected by the Board. The Board has indicated outside state sales at 952 MU. The Board has also intimated that HP royalty in Shanan (53 MU) and HP's share of 4.6% from RSD (72 MU) have been included in outside state sales. After excluding free HP share (72 MU) in RSD and HP Royalty in Shanan (53 MU), projected outside State sales come to 827 MU which the Commission approves.

The total estimated metered sales for the year 2007-08 projected by the Board and as approved by the Commission are given in Table 4.3.

Table 4.3: Metered Sales - 2007-08

(MU)

Sr. No.	Metered Category	Projected by Board	Approved by the Commission
1	2	3	4
1	Domestic	5897	5926
2	Non-Residential	1774	1748
3	Small Power	712	655
4	Medium Supply	1560	1649
5	Large Supply	8522	8412
6	Public Lighting	145	143
7	Bulk Supply & Rly. Traction	603	630
8	<b>Total within State</b>	<b>19213</b>	<b>19163</b>
9	Common pool	300	300
10	Outside State sales	952	827
11	<b>Total Sales (8+9+10)</b>	<b>20465</b>	<b>20290</b>

The Commission, thus, approves the metered sales at 20290 MU against 20465 MU projected by the Board for the year 2007-08.

4.1.2 **Agriculture Consumption:** The Board has projected AP consumption of 8939 MU in 2007-08. It has further informed that;

- a. Projections for 2007-08 have been based on the compounded annual growth rate of 3 years (2003-04 to 2006-07).
- b. Agricultural consumption is being assessed on the basis of actual consumption of more than 53391 tubewell connections as measured by the sample meters installed on a representative basis. The size of the sample is nearly 6% as against 2% metering directed by the Commission.
- c. The Board has attributed increase in AP consumption to factors such as deficient rainfall, increased load on account of VDS introduced in 2006-07 and increasing use of submersible pumps. The Board has also referred to the result of a sample study conducted by it on 465 AP Feeders in West Zone, which indicated 8 to 10% higher consumption than that computed on the basis of sample meters. The Board has also pointed out some limitations of the sample metering methodology as under:
  - i. Consumption is computed on the basis of declared load and not the actual connected load.
  - ii. Reliability and non-functioning of meters effects projections of AP consumption.
  - iii. Metered consumers have a tendency to consume less than unmetered consumers.

The Commission notes that the consumption study referred to by the Board has been undertaken on the basis of readings from meters installed on 11 KV feeders and the accuracy of these results has to be validated after a more thorough technical appraisal. It is also true that the methodology of computing AP consumption on the basis of sample meter readings and connected load does admit of further refinement. Some steps, which the Board needs to take in this direction, are:

- making the sample more representative of the proportion of submersible to conventional mono-block pumps;
- more accurately capturing agro-climatic and hydrological factors and other local variations 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;
- effecting monthly reporting of consumption to the Commission by the Board.

The results of AP consumption can then be cross checked with data emanating from other sample studies such as the one conducted by the Board to arrive at a more meaningful conclusion.

The Commission has approved revised AP consumption of 8233 MU in 2006-07. Assuming a normative growth of 5%, estimated AP consumption for 2007-08 works out to 8645 MU, which is approved. In doing so, the Commission does not accept increased consumption on the basis of CAGR since consumption in the years 2005-06 and 2006-07 went up substantially on account of VDS during the last quarter of 2004-05 and during the year 2006-07, which may not accurately reflect real annual growth in demand.

**The Commission, thus, approves agriculture consumption for the year 2007-08 at 8645 MU as against 8939 MU projected by the Board.**

4.1.3 **Total Energy Demand (Sales):** The category-wise sales projected by the Board and as approved by the Commission are given in Table 4.4.

**Table 4.4: Total Energy Sales for 2007-08**

(MU)

Sr. No.	Category	Projected by PSEB	Approved by the Commission
1	2	3	4
1	Total metered sales within the state	19213	19163
2	Agriculture	8939	8645
<b>3</b>	<b>Total sales within the state (1+2)</b>	<b>28152</b>	<b>27808</b>
4	Sales to common pool	300	300
5	Outside state sales	952	827
<b>6</b>	<b>Total Sales (3+4+5)</b>	<b>29404</b>	<b>28935</b>

**The Commission, thus, approves total energy sales to different categories of consumers at 28935 MU including common pool and outside state sales against 29404 MU projected by the Board.**



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

4.2.1 The Board has projected T&D losses at 22% for the year 2007-08 presuming AP consumption of 8939 MU. This represents a reduction of 1.91% from a loss of 23.91% estimated for the year 2006-07. The Board has also referred in this connection to the findings of a sample study where both AP consumption and loss levels based on actual meter readings of predominantly AP feeders are significantly higher than what the Commission proposes to take into account. The Board further proposes to reduce T&D losses to 14-15% over the next 5 years through measures such as substantial investment in HVDS/LT less systems and introduction of IT systems.

4.2.2 The issue of T&D losses has been extensively discussed by the Commission in its previous Tariff Orders. Having determined these losses to be 27.52% in 2001-02, the Commission laid down a programme of phased reduction for the next 6 years which, if achieved, would have brought these losses down to 19.50% in 2007-08. It is a matter of serious concern that the Board has been unable to meet these targets and losses in the year 2006-07 stood at 23.91%, which are now proposed to be reduced to 22.00%. The Commission accepts that there can only be a gradual reduction of such losses after substantial investments to improve the transmission and distribution system in addition to comprehensively drawing up base line data, introduction of energy audit at all levels and enforcing accountability where loss exceeds the prescribed limits. The Board has on each occasion in the past referred to its intention to initiate a series of measures that would bring down technical and commercial losses but the fact remains that no such plan has been unveiled in its entirety and the position holds good even as of now. In these circumstances, the Commission is unable to deviate from the trajectory earlier fixed. It notes, however, that 2007-08 is the 6<sup>th</sup> and last year for which the reduction trajectory had earlier been prescribed. As a result, the Commission would undertake detailed discussions with the Board on the specific initiatives it wishes to launch upon as well as its proposed investment programme and thereafter determine the subsequent path that needs to be prescribed to bring T&D losses to normative levels. In this background, the Commission has no choice but to retain the T&D loss level at 19.50% as earlier prescribed.

**4.3 Energy Requirement**

4.3.1 The total energy requirement to meet the demand of the system would be 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 estimated energy requirement projected by the Board and as approved by the Commission for the year 2007-08 are given in Table 4.5.

**Table 4.5: Energy Requirement - 2007-08**

(MU)			
Sr. No.	Particulars	As projected by the Board for FY 07-08	As approved by the Commission
1	2	3	4
1	Metered Sales within State	19213	19163
2	Agriculture consumption	8939	8645
<b>3</b>	<b>Total sales within state (1+2)</b>	<b>28152</b>	<b>27808</b>
4	Common pool sales	300	300
5	Outside state sales	952	827
<b>6</b>	<b>Total sales</b>	<b>29404</b>	<b>28935</b>
7	T&D losses on item (3)	7940	6736
		22%	19.5%
<b>8</b>	<b>Total energy input required (6+7)</b>	<b>37344</b>	<b>35671</b>

4.3.2 The overall energy requirement as projected by the Board is higher than the Commission’s assessment by 1673 MU mainly on account of the difference in T&D losses allowed by the Commission and those projected by the Board. The energy requirement thus works out to 35671 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.

**4.4 PSEB’s Own Generation**

4.4.1 **Thermal Generation:** The Board has projected generation for the year 2007-08 at 2540 MU, 9200 MU and 4500 MU for GNDTP, GGSTP and GHTP respectively, stating also that the gross generation in 2007-08 of all the three Thermal Plants is as per the targets given by the Central Electricity Authority.

The Commission has assessed Availability and Generation based on the average of the three years (2003-04 to 2005-06) to arrive at an estimate for the year 2007-08. The

actual availability and generation of the thermal plants for the years 2003-04, 2004-05 and 2005-06 are as given in Table 4.6.

**Table 4.6: Actual Availability and Generation – 2003-04 to 2005-06**

Sr. No.	Station	FY 2003-04	FY 2004-05	FY 2005-06	Average of the 3 years
1	GNDTP				
	Generation (MU)	2551	1992	2359	2301
	Availability (%)	84.07	62.66	68.00	71.58
2	GGSTP				
	Generation (MU)	8304	9082	9329	8905
	Availability (%)	87.74	88.95	89.00	88.56
3	GHTP				
	Generation (MU)	3380	3309	3146	3278
	Availability (%)	96.64	92.65	88.00	92.43

### Maintenance Schedule

- The Board has submitted that units installed at GNDTP are over 25 years old and it is necessary to renovate and overhaul them to bring sustained improvement in operational efficiency. The combined outage of the 4 generating units of 110 MW each would be 203 machine days (4872 machine hours) during the year 2007-08;
- The generating units 1, 2, 3, 4, 5 & 6 at GGSTP, Ropar are proposed to be taken out for mini shut down/ capital maintenance/ annual overhaul for a total period of 119 machine days (2856 machine hours) during the year 2007-08; and
- The unit 1 & 2 at GHTP, Lehra Mohabbat are also to be taken out for annual maintenance/capital maintenance for 65 machine days (1560 machine hours) during the year 2007-08.

The availability of the three plants of GNDTP, GGSTP and GHTP, based on the maintenance schedules, as provided by the Board for the year 2007-08, is calculated as 86.13%, 94.58% and 91.12% respectively.

Considering the availability computed above, the three years average (i.e. 2003-04, 2004-05 and 2005-06) of duration of availability and generation for each of the stations, the gross generation from each of the existing three plants has been computed for 2007-08 as given in Table 4.7.

**Table 4.7: Availability, Gross Generation and PLF of Existing Thermal Plants - 2007-08**

Sr. No.	Station	Three year average availability	Three year average generation (MU)	Assessed by the Commission for 07-08		
				Availability as per mtc. Schedules for 2007-08	Generation (MU) (4x5) / 3	PLF (Calculated)
1	2	3	4	5	6	7
1	GNDTP	71.58%	2301.00	86.13%	2769	71.84%
2	GGSTP	88.56%	8905.00	94.58%	9510	86.16%
3	GHTP	92.43%	3278.00	91.12%	3232	87.85%

The Board has further informed in its letter dated 6.6.2007 that Unit no 3 of GHTP Stage II is expected to be synchronized shortly and Unit no 4 by 31.3.2008 and the Generation from Unit no.3 during the year of 2007-08 is expected to be 310 MU.

The gross generation from the thermal plants during the year 2007-08 will therefore be as given in Table 4.8.

**Table 4.8: Gross Thermal Generation - 2007-08**

(MU)

Sr.No.	Station	Approved Generation
1	GNDTP	2769
2	GGSTP	9510
3	GHTP	3542
4	<b>Total</b>	<b>15821</b>

**The Commission assesses the total gross Thermal generation of 15821 MU as stated in Table 4.8.**

**CERC Norms**

CERC in its notification No.L-7/25(5)/2003-CERC dated 26.3.2004 has made Regulations for Determining Terms and Conditions for Electricity Tariff for the five year period beginning April 1, 2004 wherein it has also laid down norms of operation for thermal plants. The Commission had decided to follow CERC norms wherever specified which is reflected in the Tariff Orders for 2005-06 and 2006-07. As CERC has not specified any norms for 110 MW units (GNDTP), the Commission has adopted those specified for the Tanda station of NTPC, which like GNDTP, has 4 units of 110 MW each.

### 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. The Commission notes that the norms of Tanda have been revised after completion of Repair & Maintenance of its units. In the case of GNDTP however, tests to establish satisfactory completion are still underway. Accordingly, the Commission proposes to continue with the norms as specified in the Tariff Order of 2006-07 during 2007-08 as well. Auxiliary consumption for the year 2007-08 has thus been determined at 11.00%, 8.50% and 9.00% for GNDTP, 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 the year 2007-08 is given in Table 4.9.

**Table 4.9: Generation and Auxiliary Consumption for Thermal Plants – 2007-08**

(MU)

Sr. No.	Station	Projected by PSEB			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	2540	292 11.50%	2248	2769	305 11.00%	2464
2	GGSTP	9200	782 8.50%	8418	9510	808 8.50%	8702
3	GHTP	4500	405 9.00%	4095	3542	319 9.00%	3223
	<b>Total</b>	<b>16240</b>	<b>1479</b>	<b>14761</b>	<b>15821</b>	<b>1432</b>	<b>14389</b>

**Net thermal generation approved by the Commission is 14389 MU against 14761 MU projected by the Board for the year 2007-08.**

4.4.2 **Hydel Generation:** The Board has estimated hydel generation from its own stations for the year 2007-08 based on the average of the actual generation for three years (2003-04 to 2005-06) in line with the approach adopted by the Commission in its earlier Tariff Orders. The projected generation by the Board and generation approved by the Commission on the basis of three-year average are given in Table 4.10.

Table 4.10: Own Hydel Generation – 2007-08

(MU)

Sr. No.	Station	Generation projected by the Board for 07-08	Actual Generation			Generation estimated by the Commission (Based on 3 year average)
			03-04	04-05	05-06	
1	2	3	4	5	6	7
1	Shanan	529	564	515	509	529
2	UBDC	446	427	380	531	446
3	RSD	1568	1548	1144	2013	1568
4	MHP	1026	1029	812	1238	1026
5	ASHP	657	829	388	708	642
6	Micro Hydel	7	10	4	6	7
	<b>Total own generation (Gross)</b>	<b>4233</b>	<b>4407</b>	<b>3243</b>	<b>5005</b>	<b>4218</b>

The Commission approves the estimated generation of 4218 MU from the Board's own hydel stations. The Commission also approves PSEB share and common pool share from BBMB as projected by the Board and depicted in Table 4.11. The hydel generation projected by the Board from its own hydel stations as well as common pool share from BBMB and generation approved by the Commission is given in Table 4.11. The Commission has worked out net hydel generation by deducting the share of HP in RSD project at 4.6% of the Gross generation and 53 MU from Shanan project as HP royalty.

Table 4.11: Total Hydel Generation - 2007-08

(MU)

Sr. No.	Station	Projected by the Board for 07-08	Approved by the Commission
1	2	3	4
1	Shanan	529	529
2	UBDC	446	446
3	RSD	1568	1568
4	MHP	1026	1026
5	ASHP	657	642
6	Micro Hydel	7	7
7	Total own generation (Gross)	4233	4218
8	Total own generation (Net)	4203	4059
9	BBMB		
i)	PSEB (Gross)	4204	4204
ii)	Common Pool share (Gross)	300	300
iii)	External Losses on BBMB	161	146
iv)	Availability (Net)	4343	4358
10	<b>Total Availability (Net)</b>	<b>8546</b>	<b>8417</b>

## Notes

- Board's Projection for own generation (Net) is net of Auxiliary losses and Transformation losses (30 MU).
- Commission's Assessment of own generation (Net) is net of HP share (free) in RSD @ 4.6% (72 MU), Net of HP share in Shanan (53 MU), auxiliary consumption @ 0.5% for RSD (having static exciters) and for others @ 0.2% (13 MU), and transformation losses @ 0.5% (21 MU) as per CERC Norms.
- BBMB share is net of external losses based on the actual level of losses in 2005-06 @ 3.47%.

The Commission, thus, assesses net hydel generation of 8417 MU for the year 2007-08.

- 4.4.3 **Total Availability 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 - 2007-08

Sr. No.	Station	Energy available (ex-bus) (MU)
1	2	3
1	Thermal Stations	14389
2	Hydel Stations (Own)	4059
3	Share from BBMB (including 300 MU share of common pool consumers)	4358
4	<b>Total own Availability</b>	<b>22806</b>

The total energy available (ex-bus) from own generating stations of the Board including share from BBMB approved by the Commission is thus 22806 MU.

#### 4.5 Purchase of Power

- 4.5.1 The total energy required (input to the system) to meet the demand of the State during 2007-08 including common pool and outside state sales is 35671 MU as discussed in para 4.3. The energy available from own generating stations of the Board including its share from BBMB is 22806 MU as approved in para 4.4.

- 4.5.2 The balance requirement of 12865 MU (net) has to be met through purchases from central generating stations and other sources. This is against requirement of 14037 MU (net) projected by the Board for the year 2007-08.

#### 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 - 2007-08

(MU)

Sr. No.	Particulars	Projected by the Board	Approved by the Commission
1	2	3	4
<b>A Energy Requirement</b>			
1	Metered Sales within state.	19213	19163
2	Sales to Agriculture.	8939	8645
3	Total sales within state.	28152	27808
4	T&D Losses	7940	6736
5	Common pool	300	300
6	Outside state sales	952	827
7	<b>Total Requirement</b>	<b>37344</b>	<b>35671</b>
<b>B Energy Availability</b>			
1	Own generation (ex-bus)		
a)	Thermal	14761	14389
b)	Hydro	4203	4059
2	Share from BBMB (including share of common pool consumers=300)	4343	4358
3	Purchase (Net)	14037	12865
4	<b>Total Availability</b>	<b>37344</b>	<b>35671</b>

## 4.7 Fuel Cost

4.7.1 **Fuel Cost Projected by the Board:** The Board has projected a fuel cost of Rs. 2921.70 crores for a total generation of 16240 MU during the year 2007-08 based on various operational parameters and fuel prices as detailed in Table 4.14.

Table 4.14: Fuel Parameters projected by the Board - 2007-08

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	66.81%	3,000.00	3.50%	2,481.60	3,930.00	25,983.30	2.00	10000
2	GGSTP	83.12%	2,666.67	2.00%	2,513.40	3,850.00	20,426.50	2.00	10340
3	GHTP	84.10%	2,500.00	2.00%	2,850.00	4,065.00	23,309.30	2.00	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 and GNDTP has been taken as 2500 Kcal/kWh and 3000 Kcal / kWh respectively as per CERC norms for similar aged



plants, for 2006-07 & 2007-08. However, the Station Heat Rate for GGSTP has been assumed at 2666.67 Kcal/kWh after considering the fact that two of the six units at GGSTP are more than 22 years old. The SHR for GGSTP has been calculated by considering a SHR of 3000 Kcal/kWh for the older units and 2500 Kcal/kWh for the other units.

- The price of coal for 2007-08 has been estimated with an increase of 8% over the prices of coal for 2006-07. This is primarily due to the expected increase in the price of coal and the Royalty charges.

#### 4.7.3 Fuel Cost approved by the Commission

##### Gross Generation

The gross generation of thermal plants for the year 2007-08 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 at 3000 kcal/kWh i.e. at par with Tanda Thermal Station of NTPC as has been followed in the case of auxiliary consumption. In the case of GNDTP, although CERC has revised the parameters for NTPC Tanda station, the Commission has decided not to apply the revised norms in this tariff order since the Board has indicated that the units are yet to be tested before these can be considered as fully revamped. Considering the above

scenario, the Commission allows the higher norm for GNDTP as allowed earlier by CERC for Tanda for 2007-08.

### Coal Transit Loss

The Commission after a detailed deliberation has permitted a Transit Loss of 2% for all power plants in its Tariff Order for 2006-07. The same is continued for all the three Thermal Stations during the year 2007-08.

### Price and Calorific Value of Coal

The Board has sought an increase of 8% over the prices of coal for 2006-07 for the year 2007-08. This is primarily because of the expected increase in the price of coal and the royalty charges. The price of coal for GNDTP, GGSTP and GHTP has been projected as Rs 2481.60/Tonne, Rs 2513.4/Tonne and Rs 2850 /Tonne respectively for the year 2007-08. Fuel cost being a major item of expense, the actual calorific value, price and transit loss of coal for the year 2006-07 were verified and the results are given in Table 4.16.

**Table 4.16: Actual Calorific Value, Price and Transit Loss of Coal - 2006-07**

Sr.No	Station	Calorific value of coal (kcal/kg)	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
1	GNDTP	4147.11	2308.30	2.76%	2244.59
2	GGSTP	4043.71	2369.37	2.12%	2319.14
3	GHTP	4421.73	2511.65	1.68%	2469.45

Considering that any variation in prices would be recoverable by the Board as Fuel Cost Adjustment (FCA), the Commission feels no need to permit an increase in prices over those taken into account in the year 2006-07. In working out cost of Coal for the year 2007-08, the Commission has, therefore, considered the price and calorific value of Coal as validated for the year 2006-07.

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

The Specific Oil Consumption of GHTP, GGSTP and GNDTP plants are estimated by the Board at the normative 2 ml/kWh for the ensuing year. However, in its comments on

the ARR and the tariff determination exercise carried out suo motu by the Commission, the Board has requested for specific oil consumption for Unit No. 3 of GHTP at 4 ml/kwh instead of 2 ml/kwh for its initial phase of operation.

The Commission has adopted CERC norms for oil consumption as in the case of other performance parameters for thermal plants. The Commission, thus, approves oil consumption of 2.0 ml/kWh for GGSTP and GHTP for the year 2007-08. In the case of GNDTP, the Commission allows oil consumption at 3.5 ml/kWh at par with Tanda station of NTPC. The Commission has adopted calorific value of oil and oil price as has been validated for the year 2006-07.

The Commission also notes that the initial expenditure incurred during operationalization of the new unit, prior to commercial operation is booked to capital head of the project and is not considered in computation of fuel cost.

Based on the above, the fuel cost assessed for the year 2007-08 is as given in Table 4.17.

**Table 4.17: Fuel cost (Coal and Oil) - 2007-08**

Sr. No.	Item	Derivation	Unit	Approved for 2007-08				
				GNDTP	GGSTP	GHTP - Unit I & II	GHTP-Unit III	Total
1	2	3	4	5	6	7	8	9
1	Generation	A	MU	2769	9510	3232	310	15821
2	Heat Rate	B	k.cal/kWh Generate d	3000	2500	2500	2500	
3	Specific oil consumption	C	Milli litre/kwh	3.50	2.00	2.00	2.00	
4	Calorific value of oil	D	k.cal/litre	9544	10000	9400	9400	
5	Calorific value of coal	E	k.cal/kg	4,147.11	4,043.71	4,421.73	4,421.73	
6	Overall heat	$F = (A \times B)$	G.cal	8307000	23775000	8080000	775000	
7	Heat from oil	$G = (A \times C \times D) / 1000$	G.cal	92496	190200	60762	5828	
8	Heat from coal	$H = (F - G)$	G.cal	8,214,504	23,584,800	8,019,238	769,172	
9	Oil Consumption	$I = (G \times 1000) / D$	KL	9692	19020	6464	620	
10	Transit loss of coal	J	(%)	2.0	2.0	2.0	2.0	
11	Consumption of Coal including transit loss.	$K = (H \times 1000 / E) / (1 - J/100)$	MT	2021202	5951496	1850610	177503	
12	Cost of oil per KL	L	Rs./KL	21140	19241	17579	17579	
13	Cost of Coal per MT	M	Rs./MT	2,244.59	2,319.14	2,469.45	2,469.45	
14	Total cost of oil	$N = L \times I / 10^7$	Rs.crores	20.49	36.60	11.36	1.09	69.54
15	Cost of Coal	$O = K \times M / 10^7$	Rs.crores	453.68	1,380.24	457.00	43.83	2,334.74
16	<b>Total Fuel cost</b>	<b>P = N + O</b>	<b>Rs.crores</b>	<b>474.16</b>	<b>1,416.83</b>	<b>468.36</b>	<b>44.92</b>	<b>2,404.28</b>

Based on the generation and operational parameters, approved by the Commission above, cost of fuel for the year 2007-08 works out to Rs. 2,404.28 crores for thermal generation of 15821 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 prior approval of the Commission.

## **4.8 Power Purchase**

**4.8.1 Projection by the Board:** The Board has projected a cost of Rs. 4134 Crores for purchase of 14726 MU (gross) in 2007-08. In doing so, the Board has taken the following into account: -

- The Board has made an assessment of the availability from the existing stations of NTPC & NHPC considering average of allocated and unallocated share received by PSEB during 2003-04 to 2006-07.
- The energy availability from Narora Atomic Power Plant (NAPP) for 2007-08 has been worked out on the basis of the last 4 years average, which is assessed at 252 MU. The availability for Rajasthan Atomic Power Plant (RAPP) is as per the Commission's approved figures for the previous year.
- Power Purchase from new stations (Rihand – II, Chamera – II, Dulhasti, Nathpa Jhakri and Dhauli Ganga) has been taken as per actual purchases made from these stations in 2006-07 and on the basis of estimates for 2005-06 approved by the Commission.
- Power has been available from Tehri from July 2006 and 50 MU were available to the Board for the period July 06 to Jan 07. The revised estimate for 2006-07 has been taken at 69 MU. The projections for 2007-08 have been made as per arrangements with the station for 2007-08 and have been estimated at 330 MU.

**4.8.2 Requirement of Energy through Purchase:** As discussed in para 4.5, the requirement of 12865 MU (net) has to be met through purchases from central generating stations and other sources. The transmission loss external to the PSEB 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 had worked out external transmission losses on power purchases in 2006-07 in the following manner:

- (a) Losses for trading were estimated at 7.62% as against 6.78% in 2005-06.
- (b) Losses in power purchased from other generating stations was projected at 3.83% as against 3.47% in 2005-06.

External losses for 2007-08 have been considered at the same level as determined in the previous year.

The Commission has, however, considered external losses at a weighted average of 4% based on actual losses achieved in the year 2005-06. The gross energy to be purchased, thus, works out to 13401 MU (12865MU + loss of 536 MU) instead of 14726 MU projected by the Board.

**4.8.4 Entitlement from Central Generating Stations:** For estimation of energy entitlement of PSEB 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 organization and plant wise energy available is provided in the, Table 4.18, Table 4.19 and Table 4.20.

Table 4.18: PSEB's Entitlement from NTPC stations - 2007-08

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(L/F)	NA	NA	NA	31	7.42%
3	Auraiya(G/F)	663	12.52%	83	444	13.25%
4	Auraiya(L/F)	NA	NA	NA	67	7.63%
5	Dadri(G/F)	830	15.90%	132	689	16.45%
6	Dadri(L/F)	NA	NA	NA	96	8.68%
7	Singrauli	2000	10.00%	200	1562	11.07%
8	Rihand - I	1000	11.00%	110	843	12.10%
9	Rihand - II	1000	10.20%	102	NA	NA
10	Unchahar-I	420	8.57%	36	282	8.85%
11	Unchahar-II	420	14.28%	60	474	15.30%
12	Unchahar-III	210	8.10%	17	NA	NA
13	Kahelgaon	840	12.27%	103	NA	NA
14	Farakka	1600	4.18%	67	NA	NA

Note: For the Plants Rihand-II, Unchahar-III, Kahelgaon, Farakka, 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 2007-08.

Table 4.19: PSEB's Entitlement from NHPC stations - 2007-08

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	NA	NA
8	Dhaul Ganga	280	10.00%	28	78	11.20%

Note: For the Dulhasti plant, 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 2007-08.

Table 4.20: PSEB's Entitlement from NPC Stations-07-08

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%

#### 4.8.5 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 April 1, 2004.

##### NTPC Stations

###### *Fixed Cost*

As per CERC's prevalent mechanism, 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. The annual fixed charges in case of NTPC stations have been considered as per NTPC bills for March, 2007, except for the Auraiya Plant, for which bills of January 2007 have been considered. For Rihand-II, Unchahar-III, Kahelgaon and Farakka Plants, the cost has been considered as per the Board's projection for the year 2007-08.

###### *Variable Cost*

The Commission has assessed variable cost for 2007-08 as per NTPC bills for March, 2007 for different central generating stations. However for NTPC's Auraiya Plant, in the absence of a bill for the month of March, 2007, that for the month of January 2007 has been taken into account. For Rihand-II, Unchahar-III, Kahelgaon and Farakka Plants, the cost considered is as per the Board's projection for the year 2007-08.

###### *Incentive and Other Charges*

The incentive and other charges are provisionally approved as projected by the Board for the year 2007-08.

### **NHPC Stations**

The actual rate for primary energy in respect of purchases from NHPC stations is considered as per March, 2007 bills. However for the Dulhasti plant, the Commission has considered power purchase cost as per the Board's projection. Incentive and other charges including income tax, foreign exchange rate variations, etc. are considered as projected by the Board.

### **NPC Stations**

The power purchase cost for NAPP and RAPP stations has been considered by the Commission as per the projection of the Board since the bills of NPC stations were not available. The other charges are also as per the estimates of the Board.

### **(b) Power Purchase Tariff for New Stations**

The power purchase and its cost for the new stations of Bhilangana, RAPP 5-6, Sewa-II, North Karanpura, Barh, alongwith Cogeneration stations including Jalkheri are provisionally approved as per the Board's figures.

### **(c) Power Purchase Rates for Banking from Other States**

The power purchase and cost of Banking of power obtained from HPSEB, J&K, UPCL and Rajasthan have been provisionally approved as per the Board's projection.

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

The power purchase and its cost from Tehri and NJPC have been provisionally approved as per the Board's projection.

### **(e) Power Purchase from Traders**

The Commission notes that it has approved the purchase of 1256 MU from traders in the year 2007-08 with the Board projecting an average cost of Rs. 5.34 per kwh in respect of such purchases. The Commission observes that the outside purchase of power by the Board is largely from central generating stations or other sources under long term power purchase agreements while a smaller portion is obtained from traders and on unscheduled inter change (UI) basis. While power purchases in the former category are by and large reasonably priced and sourcing such power is advantageous to the Board, the same is not true in the case of power purchased from trading entities/UI. An analysis of outside power purchases effected by the Board over the last few years reveals that the Board has purchased traded and UI power within the limits fixed by the Commission



in Tariff Order for the relevant year. It is only in 2006-07 when a very large quantity of 2036 MU has been purchased over and above the quantity determined. It is relevant, at the same time, to note that the rate of traded and UI power which was as low as 70 paisa per unit in the year 2002-03 rose to 498 paisa per unit in 2006-07. Additional power purchased at high cost and supplied in increasing quantities to any category is a commercially ruinous and unsustainable arrangement in the long run. It is also relevant to observe that outside State power purchase, specially UI/traded power, was kept within limitations in the past by enforcing a measure of discipline on the consumption side. Till such time generation capacity is enhanced within the State or more economical power can be sourced from outside, the Board would be well advised to consider resorting to demand management practices with a view to retain the commercial viability of its operations. The Commission has been projecting increase in demand on a yearly basis by applying nationally accepted methods and estimating growth in agricultural power consumption largely on the basis of data made available by the Board. This methodology, has in the past, proved reasonably accurate with power purchases in the period 2003-04 to 2005-06 remaining well within the limits determined in each Tariff Order. For this reason, the Commission had not in the past imposed any penalty either for excess consumption or for purchase of power in excess of rates earlier approved. However, this policy has to be seriously reconsidered specially in view of the fact that the Board continues to buy power from traders at an abnormally high rate in the current year, the effect of which will be borne by all consumers across the board. In these circumstances, the Commission expects the Board to purchase power in a judicious and economic manner and also resort to demand management practices, if necessary, to maintain commercial viability.

**(f) Transmission Charges**

The Board has projected transmission charges payable to PGCIL as Rs.175.53 Crores for the year 2007-08 which the Commission approves.

Based on the above, the cost of power purchase for the year 2007-08 works out to Rs. 3410.01 Crores as detailed in Table 4.21.

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Table 4.21: Power Purchase Cost 2007-08

Sr. No.	Source	Purchase (MU)	AFC (Rs. Crore)	PSEB share	VC (Ps/ Unit)	FC (Rs. Crores)	VC (Rs.crore)	Others (Rs.crore)	Total (Rs.crore)
1	2	3	4	5	6	9	8	9	10
<b>I</b>	<b>NTPC</b>								
1	Anta (G/F)	298	76.01	12.82%	140.75	9.74	41.94	7.95	59.63
2	Anta (L/F)	31	0.00	7.42%	685.20	0.00	21.24	0.00	21.24
3	Auraiya(G/F)	444	112.89	13.25%	160.70	14.96	71.35	14.72	101.03
4	Auraiya(L/F)	67	0.00	7.63%	632.98	0.00	42.41	0.00	42.41
5	Dadri (G/F)	689	190.26	16.45%	164.14	31.30	113.09	26.77	171.16
6	Dadri (L/F)	96	0.00	8.68%	683.94	0.00	65.66	0.00	65.66
7	Singrauli	1562	339.46	11.07%	83.89	37.58	131.04	17.13	185.75
8	Rihand - I	843	332.83	12.10%	94.62	40.27	79.76	23.57	143.60
9	Rihand - II	864	428.36	11.31%	97.87	48.45	84.56	3.57	136.58
10	Unchahar-I	282	138.25	8.85%	128.60	12.24	36.27	5.53	54.04
11	Unchahar-II	474	177.24	15.30%	127.56	27.12	60.46	1.25	88.83
12	Unchahar-III	198	122.14	15.35%	136.15	18.75	26.96	0.00	45.71
13	Kahelgaon	788	307.66	4.13%	139.72	12.71	110.10	0.00	122.81
14	Farakka	177	503.73	0.00%	127.58	0.00	22.58	0.05	22.63
	<b>subtotal</b>	<b>6813</b>				<b>253.12</b>	<b>907.42</b>	<b>100.54</b>	<b>1261.08</b>
<b>II</b>	<b>NHPC</b>								
15	Salal	911	169.97	26.61%	63.31	0.00	57.68	7.93	65.61
16	Bairasuil	330	49.29	46.48%	81.40	0.00	26.86	2.13	28.99
17	Tanakpur	74	47.69	15.75%	81.40	1.49	6.02	1.05	8.56
18	Chamera-I	227	193.67	10.14%	81.40	1.16	18.48	4.12	23.76
19	Chamera-II	245	333.55	17.69%	81.40	39.06	19.94	5.20	64.20
20	Uri	348	469.32	13.75%	81.40	36.20	28.33	10.00	74.53
21	Dulhasti	99	0.00	0.00%	371.00	0.00	36.73	0.00	36.73
22	Dhauri Ganga	78	180.55	11.20%	81.40	13.87	6.35	0.96	21.18
	<b>subtotal</b>	<b>2312</b>				<b>91.79</b>	<b>200.39</b>	<b>31.39</b>	<b>323.56</b>
<b>III</b>	<b>NPC</b>								
23	NAPP	221	0.00	12.75%	189.19	0.00	41.81	0.00	41.81
24	RAPP-3	257	0.00	21.37%	287.09	0.00	73.78	0.00	73.78
25	RAPP-4	270	0.00	21.12%	286.86	0.00	77.45	0.00	77.45
	<b>subtotal</b>	<b>748</b>				<b>0.00</b>	<b>193.04</b>	<b>0.00</b>	<b>193.04</b>
<b>IV</b>	<b>Other Sources</b>								
26	Bhilangna	83	0.00	100.00%	249.00	0.00	20.67	0.00	20.67
27	RAPP 5-6	52	0.00	10.20%	304.32	0.00	15.82	0.00	15.82
28	Sewa-II	16	0.00	13.30%	328.00	0.00	5.25	0.00	5.25
29	North Karanpura	67	0.00	7.93%	203.52	0.00	13.64	0.00	13.64
30	Barh	88	0.00	8.90%	203.52	0.00	17.91	0.00	17.91
31	Co-gen. Incl Jalkheri	273	0.00	100.00%	392.93	0.00	107.27	0.00	107.27
32	<b>Banking</b>								
a)	HPSEB	190	0.00	0.00%	247.91	0.00	47.10	0.00	47.10
b)	J&K	196	0.00	0.00%	477.00	0.00	93.49	0.00	93.49
c)	UPCL	171	0.00	0.00%	345.54	0.00	59.09	0.00	59.09
d)	Rajasthan	111	0.00	0.00%	450.50	0.00	50.01	0.00	50.01
33	NJPC	695	1414.83	10.13%	282.83	0.00	196.57	9.25	205.82
34	Tehri	330	0.00	7.70%	328.00	0.00	108.24	0.00	108.24
35	Traders	1256	0.00	0.00%	534.34	0.00	671.13	41.36	712.49
	<b>subtotal</b>	<b>3528</b>					<b>1406.19</b>	<b>50.61</b>	<b>1456.80</b>
<b>V</b>	<b>Other Charges</b>								
36	PGCIL								175.53
37	ULDC								0
38	NRLDC								0
<b>39</b>	<b>Total</b>	<b>13401</b>							<b>3410.01</b>

The Commission approves power purchase cost at Rs. 3410.01 Crores for power purchase of 13401 MU (gross) against Rs. 4134.00 Crores projected by the Board for power purchase of 14726 MU.

**4.9 Employee Cost**

4.9.1 The Board has submitted that the gross employee cost in 2007-08 is expected to increase by 9.67% over the previous year and has projected an amount of Rs. 1973 crores on this account. The Board has indicated that this increase is on account of annual increments and DA increase, growth in other staff costs, increase in employee cost relating to BBMB and enhanced impact of uncontrollable factors. This amount includes expenditure of Rs 4.85 crores relating to Fringe Benefit Tax, which has been dealt by the Commission separately in para 4.15.

4.9.2 The Board has also referred to various measures being undertaken to curtail employee cost including freezing fresh recruitment, complete ban on creation of new posts, outsourcing of security work to private agencies, reduction in generation incentive by 10%, withdrawal of compassionate appointments to the wards of the deceased employees, special schemes for employees to avail five year leave for self employment and computerization.

4.9.3 The Commission notes that the issue of employee cost came up for detailed consideration of the Appellate Tribunal wherein the Board had made identical submissions for being allowed higher employee cost. The Tribunal has in its order of May 26, 2006 observed that:

- (i) employee cost of the Board as per different parameters is the highest when compared with several other SEBs in the country;
- (ii) initiatives of the Board in curtailing employee cost have remained ineffective;
- (iii) there is no force in the plea of the Board that the Commission was legally bound to allow actual cost incurred specially with respect of uncontrollable expenses keeping judicial pronouncements in view;
- (iv) employee cost per KWH of energy sold by the Board remained unsustainably high; and
- (v) the Board had not taken any forceful measures to reduce employee cost.

4.9.4 The findings of the Tribunal are clear and unambiguous, leaving the Commission with no choice but to apply the same while deciding employee cost for the year 2007-08. In doing so, the Commission notes that the position of the Board as compared to other SEBs in the country remains substantially the same in so far as the parameters taken into account by the Tribunal are concerned. The Tribunal had specifically referred to the

need for introducing Voluntary Retirement Schemes but no such initiative seems to have been taken. There is also no indication that the Board has evolved manpower and productivity norms for different categories of employees taking present conditions into account.

- 4.9.5 The Commission further observes that the Tribunal has gone as far as to observe that if productive efficiency of the Board's employees does not improve, employee cost allowed by the Commission for 2005-06 will remain capped till better performance is discernible. A rigid interpretation of the Tribunal's observation could even be that no further costs are to be allowed at all. The Commission, however, is of the view that the intent of the Tribunal's observations refer to not allowing any increased employee cost to the Board other than giving relief for inflationary impact. By adopting the latter interpretation, the Commission determines employee cost of the Board as per the Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2005. Accordingly, the cost on this account determined by the Commission for the year 2006-07 is to be taken as the base expense and the figure for the succeeding year worked out by applying the variation in the WPI rate. As WPI increase for 2007-08 is not yet available, the Commission takes into account the increase in WPI in 2006-07 (6.61%) and by applying the same on the base figure, the Commission determines employee cost for 2007-08 as Rs. 1661.41 crores.

**The Commission, therefore, approves Rs. 1661.41 crores as employee cost for the year 2007-08.**

### **4.10 Repair and Maintenance Expenses**

- 4.10.1 The Board has projected R&M expenses for the year 2007-08 at Rs. 295.66 crores which is an increase of 13.48% over its last year's R&M cost of Rs. 260.55 crores. The Board has referred to factors such as - vintage technology thermal stations requiring high maintenance effort, cost incurred for reduction in T & D losses, increasing demand, normative increase in inflation and laying of new transmission lines after the commissioning of Lehra Mohabbat Stage 2 as the reasons for the increase.
- 4.10.2 The Commission notes that the reasons for increase in R&M cost of Rs. 35.11 (295.66 – 260.55) crores are by and large general and not backed by any specific proposal. Moreover, the cost of a new transmission line can more appropriately be charged to

capital works and included, if need be, in the investment plan. The Commission would, therefore, allow expenses on this account as per its Regulations.

4.10.3 The PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005 provide for allowing an annual enhancement based on increase in WPI over and above the O&M expenses approved by the Commission for the year 2006-07. WPI increase during the period from April 1, 2006 to March 31, 2007 is of the order of 6.61% and applying this to R&M expenses of Rs. 254.53 crores approved in the previous year, such expenses for 2007-08 work out to Rs. 271.35 crores.

**The Commission, therefore, approves Rs. 271.35 crores as Repair and Maintenance expenses for the year 2007-08.**

#### **4.11 Administration and General Expenses**

4.11.1 The Board has projected administration and general expenses at Rs. 87.41 crores for the year 2007-08, an increase of about 40% over the A&G expenses of Rs. 60.60 crores sought by the Board for the year 2006-07. The abnormally high increase is mainly on account of separately identified training costs of Rs. 22.21 crores. No information has, however, been provided by the Board as to the manner in which training at a much higher cost is to be imparted. While, the Commission appreciates the initiative of the Board in enhancing skills and expertise of its employees, it would not be possible to consider allowing such high expenditure without ascertaining the details thereof. The Commission, therefore, withholds approval of these costs pending further examination of the matter in consultation with the Board and would reconsider the issue in the annual review of 2007-08 to be undertaken next year.

4.11.2 In view of above, the Commission intends to assess the A&G expenditure as per the provisions of the PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005 whereby annual enhancement based on increase in WPI is to be permitted. There has been an increase of 6.61% in the WPI from April 1, 2006 to March 31, 2007 and by applying this to the A&G expenditure approved for 2006-07, A&G costs for 2007-08 works out to Rs. 62.41 crores.

**The Commission, therefore, approves Rs. 62.41 crores as Administration and General Expenses for the year 2007-08.**

## Chapter 4

### 4.12 Depreciation

4.12.1 The Board has assessed depreciation charges at Rs. 696.81 crores for the year 2007-08 based on the closing block of assets for the year 2006-07.

4.12.2 The Commission has taken the audited figures for the approved level of investments and the amounts as provided in the audited accounts of 2005-06 as the basis and accordingly worked out the depreciation amount as Rs. 696.82 crores for the year 2007-08. The detailed function wise working is as given in Table 4.22.

**Table 4.22: Depreciation Charges - 2007-08**

Sr. No.	Item	Assets as on April 1 2006 (as per Balance Sheet) (Rs in crores)	Rate (%)	Depreciation for (2006-07) (Rs in crores)	Assets as on April 1 2007 (Rs in crores)	Rate (%)	Depreciation for (2007-08) (Rs in crores)
1	2	3	4	5	6	7	8
1	Thermal	3,114.43	4.89%	152.30	3,351.83	4.89%	163.90
2	Hydro	5,669.15	2.46%	139.46	5,683.64	2.46%	139.82
3	Internal Combustion	2.68	0.00%	0.00	2.68	0.00%	0.00
4	Transmission	1,731.10	5.28%	91.40	2,233.37	5.28%	117.92
5	Distribution	4,124.72	5.86%	241.71	4,664.72	5.86%	273.35
6	Others	136.74	1.34%	1.83	136.74	1.34%	1.83
	<b>Total</b>	<b>14,778.82</b>		<b>626.70</b>	<b>16,072.98</b>		<b>696.82</b>

**The Commission accordingly approves depreciation charges of Rs. 696.82 crores for the year 2007-08 as against Rs. 696.81 crores claimed by the Board.**

### 4.13 Interest and Finance Charges

4.13.1 The Board has claimed interest and finance charges of Rs. 1,334.82 crores for the year 2007-08 as per details discussed in the succeeding paras.

4.13.2 **Investment Plan:** The Board has proposed an ambitious investment plan of Rs. 3778.85 crores for the year 2007-08 while actual expenditure in 2005-06 and the estimated expenditure in the subsequent year as intimated by the Board were Rs. 1371.85 crores and Rs. 1212.30 crores respectively. It is apparent that the Board can on an average absorb an expenditure roughly Rs. 1500 crores every year on this account but given the Board's need to make substantial investments in strengthening the transmission and distribution network the Commission is allowing an investment plan of Rs. 2500 crores for the year 2007-08. However, as specified in the PSERC (Terms and

Conditions for Determination of Tariff) Regulations, 2005, this is subject to specific approval to be given by the Commission for each scheme/proposal.

4.13.3 **Working Capital:** The Board has projected working capital requirement of Rs.1243.80 crores for which interest charges of Rs. 200 crores have been estimated. The rate of interest assumed is 16.08%, which is decidedly on the higher side. Moreover, these projections don't appear to be in consonance with the manner in which they need to be worked out as per provisions contained in the Regulations, which are stipulated in Table 4.23.

**Table 4.23: Working Capital Requirement - 2007-08**

(Rs in crores)	
Particulars	Approved by Commission for FY 2007-08
One month Fuel Cost	200.36
One month Power Purchase Cost	284.17
One month Employee Cost	138.45
One month Administration and General Expenses	5.20
One month Repair and Maintenance Expenses	22.61
<b>Total requirement for working capital</b>	<b>650.79</b>

4.13.4 The total working capital requirement worked out in accordance with Regulations and at costs now being approved comes to Rs. 650.79 crores. Interest on the above amount, applying the short term Prime Lending Rate of 12.75 % of the State Bank of India as in April 2007 results in an interest expenditure of Rs. 82.98 crores only as against Rs. 200 crores claimed by the Board.

4.13.5 **Finance Charges:** The Board has estimated these charges at Rs. 20 crores, which works out to 0.53% of the proposed investment plan of Rs. 3778.85 crores. After adjustment of consumer contribution of Rs. 220 crores, assumed at the level of previous year and taking the approved investment of Rs. 2500 crores, the actual investment requirement comes to Rs. 2280.00 crores for the year 2007-08. On this basis, finance charges @ 0.53% as indicated by the Board would work out to Rs.12.08 crores.

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 an amount of Rs. 84.60 crores as capitalization of interest charges for the year 2007-08.

**4.13.7 Interest on Government Loans:** The Board has neither proposed any new Government loans nor repayment of earlier loans in 2007-08. Accordingly, interest on Government Loans is retained at the same level as approved for the year 2006-07 which is Rs. 375.91 crores on Government loans of Rs. 3074.91 crores.

As stated in para 3.14.6, the Commission has determined a cumulative diversion of capital funds of Rs. 3828.23 crores (inclusive of bonds of Rs 637.35 crores having no carrying cost) for 2006-07 in compliance of the Tribunal's judgment dated May 26, 2006. Considering that the values for 2007-08 are all estimates, the level of diversion is being kept at the same level as in the previous year, with the actual diversion being computed when audited annual accounts for 2006-07 becomes available. Interest on the diverted amount of Rs. 3190.88 crores (exclusive of bonds) @ 12.22% per annum (average interest rate of Government Loans) works out to Rs. 389.92 crores. The Commission had consciously disallowed Rs. 100 crores from the interest cost of the Board in the Tariff Orders of 2003-04 to 2006-07 to save the utility from further financial distress. For the same reason, the Commission disallows Rs. 100 crores from the interest cost of the Board for the year 2007-08 as well.

4.13.8 Keeping the above in view, the Commission determines interest cost on State Government loans at Rs. 85.99 (375.91-289.92) crores for 2007-08 after taking into account the decision of the Commission regarding adjustment of interest of Rs. 289.92 crores disallowed for diversion of capital funds towards revenue purposes by the Board.

4.13.9 On the basis of above decisions, the Commission approves interest and finance charges as given in Table 4.24.



Table 4.24: Interest and Finance Charges - 2007-08

(Rs in 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 & Govt. loans)	5919.22	3710.44	762.19	8867.47	759.01
2	Approved by Commission (other than WCL & Govt. loans)	4888.59	2280.00	762.19	6406.4	579.78
3	Government loans	3074.91	-	-	3074.91	375.91
4	Interest on GPF					116.00
5	<b>Total (2+3+4)</b>	<b>7963.5</b>	<b>2280.00</b>	<b>762.19</b>	<b>9481.31</b>	<b>1071.69</b>
6	<b>Less: Amount Disallowed on a/c of Diversion to:</b>					
a	<b>Board - Rs. 100 crores</b>					<b>389.92</b>
b	<b>GoP - Rs. 289.92 crores</b>					
7	<b>Total (5 - 6)</b>					<b>681.77</b>
8	Interest on working capital					82.98
9	Lease Rental					1.52
10	<b>Total interest</b>					<b>766.27</b>
11	Add finance charges					12.08
12	<b>Grand total</b>					<b>778.35</b>
13	Less capitalization					84.60
14	<b>Net interest &amp; finance charges</b>					<b>693.75</b>

The Commission, therefore, approves Rs. 693.75 crores as Interest and Finance charges for the year 2007-08.

#### 4.14 Return on Equity

4.14.1 According to the provisions contained in Regulation 25 of the PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005, Return on Equity will be computed on the paid up equity capital determined in accordance with Regulation 24 while also keeping the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004 in view. Return on Equity admissible accordingly is 14% p.a. on equity capital as on 1<sup>st</sup> April, 2007. Return on Equity is permitted for generation of internal resources and must be distinguished from actual profits especially in the case of

an entity, which is reporting losses in its accounts. Accordingly, the return on equity @ 14% of Rs. 2946.11 crores works out to Rs. 412.46 crores.

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

### 4.15 Fringe Benefit Tax (FBT)

The Board has estimated statutory liability on account of FBT to the tune of Rs. 4.85 crores. However, the Commission allows FBT amounting to Rs. 4.40 crores at the level of actual payment for 2005-06 as given in the annual accounts for the year 2005-06.

### 4.16 Non-Tariff Income

4.16.1 The Board has projected non-tariff income of Rs. 362.44 crores for the year 2007-08. The Commission accepts the estimation made by the Board. The amount of subsidy payable on account of meter rentals and service charges of Rs. 7 crores for AP has also been included in the non-tariff income. Non-tariff income of the Board for the year 2007-08 including this amount then works out to Rs. 369.44 crores.

**The Commission, therefore, approves Rs. 369.44 crores as non-tariff income for the year 2007-08.**

### 4.17 Revenue from Existing Tariff

4.17.1 The Revenue from existing tariff as projected by the Board for the year 2007-08 is Rs. 9,075.50 crores. However, the expected revenue from existing tariff on the basis of sales approved by the Commission will work out to Rs. 9160.24 crores as given in Table 4.25.

Table 4.25: Revenue from Existing Tariff – 2007-08

Sr. No.	Category of consumers	Energy sales (MU)	Tariff rates (p/Unit)	Revenue (Rs. in crores)
1	2	3	4	5
1	Domestic			
a)	Up to 100 units	3,607	221	797.15
b)	101-300 units	1,537	368	565.62
c)	Above 300 units	782	389	304.2
	<b>Total (a+b+c)</b>	<b>5,926</b>		<b>1666.97</b>
2	NRS	1,748	423	739.4
3	Public lighting	143	423	60.49
4	Industrial			
a)	SP	655	337	220.74
b)	MS	1,649	372	613.43
c)	LS	8,412	372	3129.26
	<b>Total (a+b+c)</b>	<b>10,716</b>		<b>3963.43</b>
5	Bulk supply	630	396	249.48
6	Railway traction			
7	Common pool	300		73.07
8	Outside state	827		333.79
9	<b>Total</b>	<b>20,290</b>		<b>7086.63</b>
10	AP consumption	8,645	214	1850.03
11	<b>Total</b>	<b>28,935</b>	-	<b>8936.66</b>
12	Add MMC, Demand and Other charges	-	-	223.58
13	<b>Grand Total</b>	-	-	<b>9160.24</b>

Note: In Column 5, Sr No 8- the Outside state sale amount has been considered pro rate based on the verified numbers for the year 2006-07.

**The Commission, as such, approves revenue from existing tariff at Rs. 9160.24 crores for the year 2007-08.**

#### 4.18 Revenue Requirement

4.18.1 The summary of the revenue requirement of the Board for the year 2007-08 as analyzed in the preceding paragraphs is given in Table 4.26

Table 4.26: Revenue Requirement - 2007-08

			(Rs. in crores)
Sr. No.	Item of expense	Proposed by the Board	Approved by The Commission
1	2	3	4
1	Cost of fuel	2,922.00	2,404.28
2	Cost of power purchase	4,134.00	3,410.01
3	Employee cost	1,973.00	1,661.41
4	R&M expenses	295.66	271.35
5	A&G expenses	87.41	62.41
6	Depreciation	696.81	696.82
7	Interest charges	1,334.82	693.75
8	Return on Equity	412.50	412.46
9	Fringe Benefit Tax	4.85	4.40
10	<b>Total revenue requirement</b>	<b>11,861.05</b>	<b>9,616.89</b>
11	Less: non tariff income	362.44	369.44
12	<b>Net revenue requirement (10-11)</b>	<b>11,498.61</b>	<b>9,247.45</b>
13	Revenue from tariff	9,075.50	9,160.24
14	<b>Gap for 2007-08 (12-13)</b>	<b>2,423.11</b>	<b>87.21</b>
15	Consolidated Gap for 2006-07		336.57
16	<b>Total Gap (14+15)</b>	<b>2,423.11</b>	<b>423.78</b>

As can be seen from the above, a revenue gap (deficit) of Rs. 87.21 crores exists for the year 2007-08. After taking into account the carried forward gap (deficit) of Rs. 336.57 crores for 2006-07, the Board will be left with a revenue gap (deficit) of Rs. 423.78 crores by the end of the year 2007-08.

The Annual Revenue Requirement for the year 2007-08 is assessed at Rs. 9,616.89 crores with energy sales of 28935 MU. The average cost of supply with this revenue requirement comes out to 332.36 paise per unit. The corresponding figure of average cost of supply per unit for 2006-07, as worked out by the Commission was 340.39 paise. However, the combined average cost of supply (which is the average cost of supply after taking into account past years' gap) works out to 343.99 paise per unit against 329.94 paise per unit last year. This combined average cost of supply is now being considered for determination of tariff.

# Chapter 5

## Tariff Related Issues

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Some Tariff related issues have been raised by various Consumers/ Consumer Organizations during the course of public hearings held by the Commission in pursuance of the suo-motu tariff determination for the year 2007-08. Other matters came up for consideration either in the earlier Tariff Orders of the Commission or have been taken up at the instance of the Board. The Commission has examined all these issues taking into account the responses of the Board. These issues are discussed below:

### 5.1 Parallel Operation Charges

The Board has proposed to discontinue the levy of Parallel Operation charges on Captive /Co-generation plant owners for the following reasons:

- a) Northern Grid is big enough to take on small TG/DG sets without any setback to the system.
- b) The revenue by way of Parallel Operation charges per annum is less than Rs. 3.5 crores which is meagre keeping in view the benefits accruing from encouraging private generation in the State.
- c) A Group of the Forum of Regulators has also observed that there is little justification for levy of Parallel Operation charges/Grid Support charges.
- d) Cogenerators, like Sugar Mills are faced with bills due to levy of these charges even when they are not running their plants during off season.

The Board has further proposed to levy one time Permission Fee for parallel operation at the rate of Rs. 50 per KVA. It has further been proposed that plants running in parallel in an unauthorized manner will be liable to pay double the Permission Fee besides suitable compensation to the Board for damage, if any, caused to the Board's system.

Presently captive/co-generation Plants feeding a captive load are charged Parallel Operation Charges at the rate of Rs. 200 per KVA per month on 5% of the capacity of the captive /co-generation plant. However, the captive/co-generation Plant which supplies surplus power to the Board besides feeding a captive load, is charged Parallel

Operation Charges proportionate to the total capacity available for feeding captive load worked out by deducting capacity earmarked for sale of power to the Board from the total capacity.

**The Commission is generally in agreement with the proposal of the Board and decides as under:**

- (i) Levy of parallel operation charges will be discontinued.**
- (ii) The Board will levy one time Permission Fee @ Rs.50/- per KVA of the capacity for feeding captive load in the case of all captive/co-generation plants run in synchronism with the grid.**
- (iii) In the case of captive/co-generation plants selling surplus power to the Board in addition to feeding captive load, the Permission Fee will be worked out by deducting capacity earmarked for sale of power to the Board from the total capacity of the captive/co-generation plant.**
- (iv) Plants run in parallel in an unauthorized manner will be liable to pay double the Permission Fee besides compensation to the Board for damage, if any, caused to the Board's system. Parallel running of such plant will be permitted only after ensuring technical suitability. In case the technical requirements are not complied with, the permission fee will stand forfeited.**
- (v) Captive power plant owners who are not consumers of the Board may on request be permitted to run in parallel with the Board's system subject to compliance of the above conditions.**

## **5.2 OTHER ISSUES**

### **5.2.1 Two Part Tariff (TPT) for Large Supply & Railway Traction Consumers.**

In the Tariff Order for the year 2006-07, the Commission had advised the Board to furnish a detailed proposal on the lines indicated therein which also addressed concerns raised by consumers during public hearings. Earlier the Commission in the Tariff Order for 2005-06 had directed the Board to introduce two part tariff for Large Supply consumers & Railway Traction from the year 2006-07. The Board's proposal was to contain all the relevant data pertaining to load and contract demand profiles of consumers in these categories. The Board had also been advised to go into the reasons

for earlier reverting to single part tariff and also clearly bring out the revenue implications for consumers and the Board.

While furnishing data in pursuance of the suo-motu determination of ARR for the year 2007-08 by the Commission, the Board has submitted a two part tariff proposal, which is not comprehensive.

The Commission therefore reiterates that the Board should by 31<sup>st</sup> October, 2007 submit a proposal which addresses the observations made by the Commission in its earlier Tariff orders.

### 5.2.2 Bulk Supply Tariff

In the Tariff Order for 2006-07, the Commission had directed the Board to carry out an assessment of consumption by Bulk Supply consumers of electricity for Domestic, Industrial, Commercial and Street Lightning purposes separately which may cover all the bulk supply consumers or may take a representative sample to achieve satisfactory over all results.

Some Bulk Supply consumers have represented that in view of the fact that the majority of their consumers fall in the domestic supply category, existing tariff rates prove to be uneconomic specially when costs incurred in providing, maintaining and operating the local distribution system in addition to expenses on account of billing and revenue collection are taken into consideration. In this back ground, the Commission had directed the Board to carry out a study bringing out the actual consumption patterns of Bulk Supply consumers which would separately bring out power consumed for domestic, industrial, commercial and street lighting purposes.

The Commission notes that no information on the above lines has been made available by the Board.

The Commission therefore reiterates its earlier directive that the Board should submit a comprehensive proposal by 31<sup>st</sup> October, 2007.

### 5.2.3 KVAH Tariff

The Commission in its Tariff Order for 2006-07 had directed the Board to examine the issues related to introduction of KVAH tariff and submit its proposals along with the next ARR. The Commission had also observed that in doing so, the Board would need 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 feasibility 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.

The Commission notes that the Board's proposal in respect of KVAH Tariff available in the data supplied by the Board is incomplete, with most of the issues referred to above having not been addressed.

The Commission therefore reiterates that the Board should examine all matters relevant to the introduction of KVAH tariff and submit its proposals alongwith the next ARR.

**The Commission observes that it has not been able to clinch issues relating to introduction of two part tariff, rate of Bulk Supply, and adoption of KVAH based tariff in the absence of comprehensive inputs from the Board. Accordingly, the Board is being again urged to submit proposals covering all aspects in the time frames indicated above. In the event of proposals not being forthcoming, or being incomplete, the Commission will consider the feasibility of undertaking a study at its own initiative with a view that necessary decisions on these matters are not delayed further.**



### 5.3 High Voltage Rebate

The Commission in its Tariff Order for 2006-07 had decided to continue with existing provisions for rebates and surcharge for availing supply at different voltages.

Some Industrial Consumer Associations have brought out that prior to 1.4.2006, the Board was not levying surcharge @ 17.5 % on large supply consumers (existing upto June, 95) having contract demand exceeding 4000 KVA and supply catered at 11 KV. Moreover, those consumers who had been issued feasibility clearance for release of load/demand exceeding 2250 KW/1500 KVA at 11 KV by March, 97 had also been exempted from levy of this surcharge. It has been further brought out that 10% surcharge leviable on large supply consumers with contract demand exceeding 2500 KVA and upto 4000 KVA was leviable on the demand in excess of 2500 KVA on prorata basis and not on total demand. Moreover, these decisions had been taken by the Board on the basis of recommendations of a Committee constituted by Govt. of Punjab and had been in force up to 31.3.2006. It is urged that since the Commission had decided to continue the existing system as such, the exemptions available should be continued after 1.4.2006.

It has further been argued that rebate of 3% admissible for supply at 66 KV is meagre and needs to be enhanced to atleast 10% keeping in view the fact that consumers take the responsibility of not only installing infrastructure involving substantial investment but also bearing its operational & maintenance cost including T&D losses.

The Commission notes that as per the General Conditions of Tariff and Schedules of Tariff, rebates and surcharges while effecting high voltage supply are:-

- (i) Large Supply consumers and consumers of all other categories except Railway Traction supplied at 33 KV/66 KV are allowed rebate @ 3%. Large Supply consumers and consumers of other categories except Railway Traction, catered at 132KV/220KV are allowed rebate @ 5%. The rebate is admissible on consumption charges including demand charges, if any, or monthly minimum charges.
- (ii) For Large Supply consumers with contract demand exceeding 2500 KVA and upto 4000 KVA catered at 11 KV, surcharge @ 10% is leviable on consumption

charges including demand charges, if any, or monthly minimum charges. A surcharge of 17.5% is leviable on consumption charges including demand charges, if any, or monthly minimum charges on all Arc Furnace consumers and other Large Supply consumers having contract demand above 4000 KVA and catered at 11 KV.

- (iii) Medium Supply, Small Power, Domestic Supply and Non-Residential Supply consumers catered at 11 KV are allowed 7.5% rebate on their consumption charges including demand charges, if any, or monthly minimum charges. Also Large Supply consumers catered at LT (i.e 400 volts) are levied 20% LT surcharge. Steel rolling mills supplied under LS category but connected at LT are levied steel rolling mill surcharge @ 5% in addition to LT surcharge @ 20%.

The Board has stated that the matter of levying 17.5% /10% surcharge on old consumers is subjudice. Regarding enhancing quantum of rebate from 3% presently admissible to 33 KV/66 KV consumers, the Board contends that rebates and surcharges have been appropriately determined on the basis of a study which brought the advantages accruing as well as the disadvantages of supply catered at different voltages.

The Commission observes that the Board's ARR filings for the year 2004-05 and subsequent proposals for the General Conditions of Tariff do not indicate any exemption being allowed by the Board regarding levy of 17.5 % surcharge to a few consumers. The Commission observes that it had approved the relevant provisions in the Tariff Order 2004-05 on the basis of filings of the Board and neither any objection was raised by the consumers nor was any reference made by the Board. The Commission had accordingly approved the General Conditions of Tariff and Schedule of Tariff effective from April 1, 2006. A similar provision had been made in para 5.2.2 of Tariff Order for 2006-07. The Commission also notes that the Board after filing the ARR for the year 2004-05 had issued commercial instructions on Oct 11, 2004 before issue of the Tariff Order on November 30, 2004. According to these instructions, the Board decided to enhance energy consumption of large supply consumers with contract demand exceeding 2500 KVA and up to 4000 KVA catered at 11 KV by 10% on prorata basis for demand in excess of 2500 KVA and not for the entire demand. This, in effect, amounted to a surcharge of 10 % on this category. This issue of 10% enhancement of consumption as such was not a part of the proceedings/recommendations of the Committee referred in second para of this issue. The Commission also observes that Domestic Supply and

Non-Residential Supply consumers with supply catered at 33/66KV are eligible for 7.5 % rebate besides a further rebate of 3% as per existing policy.

The Commission also notes that a few affected consumers have challenged the bills recently raised by the Board on account of high voltage surcharge and the Hon'ble Punjab and Haryana High Court has been pleased, as an interim measure, to stay recovery of the surcharge.

**The Commission observes that issues concerning rebate and surcharge on high voltage supply have to be dealt with holistically. It is also noted that the matter concerning recovery of high voltage surcharge is subjudice. Accordingly, the Commission will be in a position to address these issues separately after taking into account all the legal implications arising out of the Order of the Hon'ble Court.**



# Chapter 6

## Determination of Tariff

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### 6.1 Annual Revenue Requirement

6.1.1 The Commission has determined the ARR for the year 2007-08 as Rs. 9,616.89 crores. After making adjustment on account of non-tariff income and revenue from tariff at existing level, the revenue gap (deficit) assessed by the Commission for the year 2007-08 works out to Rs. 87.21 crores.

6.1.2 The Commission has simultaneously undertaken an exercise of truing up for the year 2005-06 consequent upon the availability of audited Annual Statement of Accounts. As a result, net revenue surplus of the Board for the year 2005-06 has been worked out as Rs.173.95 crores against the surplus of Rs. 385.24 crores determined earlier.

6.1.3 The Commission has also taken up the review of its Tariff Order for the year 2006-07, which has resulted in the gap of 2006-07 being revised to a deficit of Rs. 510.52 crores instead of Rs. 281.05 crores originally determined by the Commission.

6.1.4 The combined impact of the three exercises is that at the prevalent level of tariff, revenue of the Board is deficit by Rs. 423.78 crores as against its total requirement.

### 6.2 Separate Tariffs for Each Function

6.2.1 In determining tariff, the Commission is guided by the principles enshrined in Section 61 of the Electricity Act, 2003. Further, the Commission has also notified Regulations laying down terms & conditions for determination of tariff. These Regulations incorporate guidelines for working out the Annual Revenue Requirement of a power utility and the tariff for each function separately. The National Electricity Policy and the Tariff Policy have also been notified by the Government of India in Notifications dated February 12, 2005 and January 6, 2006 respectively. The Commission has been guided by the provisions of the Act, its Regulations, Tariff Policy, the principles adopted by it in its earlier five Tariff Orders and has also kept inputs received from consumers in view.

6.2.2 The Appellate Tribunal has in its Judgement in appeals against Tariff Orders of 2004-05 and 2005-06 stated that:

*“155. The Commission in accordance with the provisions of Sub Sections (2) and (5) of Section 62 of the Act of 2005 and Section 86(1)(a) thereof, is mandated to determine separate tariff for generation, supply, transmission, distribution, wheeling and retail sale of electricity within the State irrespective of the fact whether the State utility has remained vertically integrated or has been unbundled.*

*156. In view of the aforesaid discussion, we direct that the Commission shall determine the tariff separately for generation, transmission, distribution, wheeling and retail sale of electricity. Even for the determination of tariff for the year . . . . . From the year 2007-08, the Commission is directed to determine separate tariff for generation, transmission, distribution, wheeling and retail sale of electricity.”*

6.2.3 In order to comply with this direction of the Tribunal, separate tariffs have been determined through segregation of the ARR assessed for 2007-08 based on the information provided by the Board and Annual Audited Accounts of 2005-06 (Statement 6 and Gross Fixed Assets Related Statements – Schedule 20). The proportion under each head across the three functions of Generation, Transmission and Distribution is detailed at Annexure IV while the Return on Equity has been allocated based on the value of Fixed Assets of each function. In addition, the consolidated gap upto 2006-07 has been allocated to each of the functions to arrive at the consolidated ARR for 2007-08.

6.2.4 Worked out on the above basis, the Segregated ARR across the three functions is as given in the Table 6.1. The Generation function has also been further segregated into Thermal and Hydel taking into the fact that the Regulations for determining the tariff for them are different.

Table 6.1: Segregation of ARR – 2007-08

Sr. No.	Item of expense	(Rs. in Crores)					
		Generation			Transmission	Distribution	Total
		Hydel	Thermal	Total			
1	2	3	4	5	6	7	8
1	Cost of fuel	-	2,404.28	2,404.28	-	-	2,404.28
2	Cost of power purchase	-	-	-	-	3,410.01	3,410.01
3	Employee cost	82.12	198.90	281.02	146.92	1,237.86	1,665.80
4	R&M expenses	73.05	87.11	160.16	39.07	72.12	271.35
5	A&G expenses	2.86	5.47	8.33	13.67	40.41	62.41
6	Depreciation	166.61	171.28	337.89	104.04	254.90	696.83
7	Interest charges	358.18	88.59	446.77	87.14	159.84	693.75
8	Return on Equity	159.71	87.81	247.52	48.75	116.19	412.46
9	<b>Total revenue requirement</b>	<b>842.53</b>	<b>3,043.44</b>	<b>3,885.97</b>	<b>439.59</b>	<b>5,291.33</b>	<b>9,616.89</b>
10	Add: Consolidated Gap for 2006-07	29.49	106.51	136.00	15.38	185.18	336.57
11	<b>Gross revenue requirement (9+10)</b>	<b>872.02</b>	<b>3,149.95</b>	<b>4,021.97</b>	<b>454.97</b>	<b>5,476.51</b>	<b>9,953.46</b>

### 6.3 Generation Tariff

6.3.1 The Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2005 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 the CERC Regulations, the Generation Tariff comprises of:

- (i) Annual Capacity (Fixed) Charges – comprising of Interest on Loans, Depreciation, Return on Equity, O & M Expenses and Interest on Working Capital; and
- (ii) Energy (Variable) Charges

6.3.3 These charges are recoverable on the basis of norms, which are different for thermal and hydel stations and are specific to each power plant.

6.3.4 In the case of thermal plants, the Annual Capacity Charges are payable on achievement of availability of 80% (and pro-rata lowered in case of Availability is less than 80%), whereas for hydel stations, full Annual Capacity Charges are payable on achievement of a Capacity Index of 85-90% depending on the nature of the hydel plant (storage type / run of the river, etc.). The daily capacity index is the actual capacity expressed as a percentage of the maximum available capacity for the day whereas, capacity index is the average of the daily capacity indices over a year.

## Chapter 6

6.3.5 The Commission has assessed plant-wise fixed charges on the basis of data supplied by the Board which is reproduced at Annexure V. Plant-wise proportion of generation cost under each head is depicted in Annexure VI. Based on these head-wise proportionate costs the total revenue requirement for each plant is computed in Annexure VII. The plant-wise annual capacity charges approved for each plant in 2007-08 are 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 (storage type / run of the river, etc.).

**Table 6.2: Annual Capacity Charges – Generation – 2007-08**

Sr. No.	Plant	Annual Capacity Charges (Rs. in crores)	Net Generation (MU)	* Fixed Charges (paise/unit)
1	2	3	4	5
<b>A</b>	<b>Thermal Plants</b>	<b>745.67</b>		
1	GGSTP	391.07	8702	45
2	GNDTP	67.09	2464	27
3	GHTP	287.51	3223	89
<b>B</b>	<b>Hydel Plants</b>	<b>872.02</b>		
1	RSD	634.26	1552	409
2	Mukerian	54.79	1019	54
3	UBDC	25.71	443	58
4	Shanan	11.28	525	21
5	Anandpur Sahib	34.53	638	54
6	Micro Hydel	1.60	7	229
7	L. Bank & R. Bank	36.70		NA
8	Beas & Beas Extn.	73.15		NA

**\* The Fixed Charges (paise / unit) calculated is only indicative in nature.**

**The Capacity Charges for Hydel Plants at Sr.No. B 7 & B 8 are determined by BBMB.**

Accordingly, total annual fixed charges recoverable in the case of thermal and hydel plants are:

- (i) Thermal : Rs 745.67 crores
- (ii) Hydel : Rs. 872.02 crores

6.3.6 These capacity charges are payable depending upon the availability of each plant. These charges shall be payable on achievement of target availability as discussed in paras 6.3.7 and 6.3.8.



6.3.7 **Target Availability for Thermal Plants:** The normative availability as per CERC norms has been fixed for full payment of the Annual Fixed Charges for each thermal plant. Accordingly, the target availability for the three plants for charging full Annual Fixed Charges is as given in the Table 6.3.

**Table 6.3: Target Availability – 2007-08**

Sr. No.	Plant	Target Availability
1	2	3
1	GNDTP	80.00%
2	GGSTP	80.00%
3	GHTP	80.00%

6.3.8 **Target Capacity Index for Hydel Plants:** Hydel plants are allowed to recover annual capacity charges based on capacity index to be computed by them. The Commission notes that the Board has not been following the practice of computing this parameter in the past and is directed to monitor capacity index which should be depicted in the ARR for the succeeding year.

6.3.9 **Variable Energy Charges for Thermal Plants:** These charges are on account of fuel costs to be paid to the Generators and are computed per unit on the basis of power available at the bus. As per the ARR for 2007-08, the total fuel cost of all the three thermal plants is Rs. 2,404.28 crores. These costs have been worked out plant-wise and can be used to derive the variable charge per unit of sold energy by each plant. Accordingly, the variable charge per unit of sold energy approved for 2007-08 for each plant is as given in Table 6.4.

**Table 6.4: Energy/ Variable Charge – 2007-08**

Sr. No.	Particulars	GNDTP	GGSTP	GHTP
1	2	3	4	5
1	Fuel Cost (Rs. in crores)*	474.16	1,416.83	513.29
2	Net Generation (MU)	2,464	8,702	3,223
3	Variable Charge per unit sold (Rs./kWh)	1.9244	1.6282	1.5926

Note: The Plant-wise Fuel Cost have been taken as approved by the Commission instead of as apportioned in Annexure VII.

6.3.10 **Total Energy Charges for Generating Plants:** The Commission has calculated the total energy charges (a sum of Fixed and Variable charges) for Generating Plants as shown in Table 6.5.

**Table 6.5: Total Energy Charges – 2007-08**

Sr. No.	Plant	Fixed Charges (paise/unit)	Variable Charges (paise/unit)	Total Charges (paise/unit)
1	2	3	4	5 = 3 + 4
<b>A</b>	<b>Thermal Plants</b>			
1	GGSTP	45	163	208
2	GNDTP	27	192	219
3	GHTP	89	159	248
<b>B</b>	<b>Hydel Plants</b>			
1	RSD	409	-	409
2	Mukerian	54	-	54
3	UBDC	58	-	58
4	Shanan	21	-	21
5	Anandpur Sahib	54	-	54
6	Micro Hydel	229	-	229

## 6.4 Transmission

6.4.1 The Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2005 specify that the Transmission Tariff will have the following components:

- (i) Charges for use of the Network;
- (ii) Operation Charges; and
- (iii) Reactive Charges

6.4.2 The Board has expressed its inability to segregate the SLDC costs while reactive charges for Intra-State Open Access customers are to be realized as per Regulations specified by the Commission. Thus, only the charge for use of network is being assessed.

6.4.3 Charges for use of network are to be calculated in accordance with the methodology specified in the Terms and Conditions for Determination of Tariff Regulations, 2005 framed by the Commission. The Annual Transmission Charges as per Table 6.1 are Rs. 454.97 crores while Transmission Capacity intimated by the Board in its letter of June 12, 2007 as 5870 MW has been taken into account.

6.4.4 On the above lines, the Commission determines the charges for use of network as Rs. 2123.50 /MW/Day [  $454.97 \times 10^7 / (5870 \times 365)$ ].

## **6.5 Distribution / Wheeling**

6.5.1 The Charges for use of Distribution Network are to be calculated in accordance with the methodology specified in the Terms and Conditions for Determination of Tariff Regulations, 2005 framed by the Commission. The Annual Distribution Charges as per Table 6.1 are Rs. 2,066.50 crores (excluding the power purchase costs) while the Distribution Capacity has been taken as 6088 MW as intimated by the Board in their letter dated June 12, 2007.

6.5.2 Accordingly, the Commission determines Wheeling Charges as Rs. 9299.68 /MW/Day [  $2,066.50 \times 10^7 / (6088 \times 365)$ ].

## **6.6 Cost of Supply and Cross Subsidy**

6.6.1 The Appellate Tribunal in para 119 of its judgement of May 26, 2006 had directed that: -

- (i) The Commission shall determine the cost of supply of electricity to different classes and categories of consumers;
- (ii) The Commission shall determine the average cost of supply;
- (iii) Once the figures of cost of supply and average cost of supply are known, the Commission shall determine the extent of cross subsidies added to tariff in respect of each class/category of consumers; and
- (iv) The consumers who are being cross subsidized by the Commission, a limit of consumption shall be specified for which special support through cross subsidy may be provided. Once the consumer exceeds the limit, he shall be charged at normal tariff.

These directions are to be applicable from Tariff Order 2007-08 onwards.

6.6.2 The Appellate Tribunal had issued the above directions after considering submissions made by the Industrial Consumers wherein it was emphasized that tariff needs to be based on the cost of supply of electricity to each category of consumer having regard to

the voltage at which supply is made available. As per requirements of the Act, the Commission has to ensure that tariff determination moves towards cost of supply and the cross subsidies are reduced progressively. However, the Act neither defines the term cost of supply nor clarifies whether it is with reference to class or category wise cost or average cost of supply. The Tariff Policy provides that the tariff should progressively reflect the cost of supply of electricity with tariffs being brought within  $\pm 20\%$  of the average cost of supply latest by the end of 2010-11. The Tribunal took note of the existence of cross subsidies in the system and required gradual reduction to prevent tariff shock to the consumers. The Tribunal while finding no fault with the approach adopted for the determination of tariff by the Commission has at the same time not concurred with the Commission's view that the "Cost of Supply" means 'Average cost of Supply'.

- 6.6.3 In order to comply with the Tribunal's directions to determine cost of supply of electricity to different classes and categories of consumers, the Commission had called for requisite data from the Board. The latter intimated that it had appointed consultants for this purpose who had in due course submitted their report. The Board was, however, unable to agree with the findings of the Study carried out by the consultants as it was of the view that the same was based on inadequate and unrepresentative samples with the findings arrived at on the basis of a large number of assumptions. With the Board not accepting the findings of the consultants, no reliable data is presently available with the Commission to proceed further in working out cost of supply for different classes and categories of consumers.
- 6.6.4 The Commission notes with concern that the Board allowed their own consultants to proceed ahead with the study without any clarity as to the manner in which samples were to be selected or the assumptions that need to be taken into account for arriving at any definitive conclusions. The Board has been separately directed to have a study undertaken in this respect based on agreed parameters and submit its findings to the Commission at the earliest.
- 6.6.5 Average Cost of Supply has been determined by the Commission applying the same methodology as in its previous tariff orders.
- 6.6.6 The Commission has determined the average cost of supply and the extent of cross subsidies added to the tariff for each category of consumers as required by the Tribunal in directions referred to in para 6.6.1 (ii) and (iii).

6.6.7 In so far as the directive at 6.6.1 (iv) is concerned, the Commission notes that the first slab of Domestic Supply and Agricultural Power consumers are the only two subsidized categories in the State. A subsidized tariff is charged in the case of Domestic Supply only upto a limit of the first 100 units after which a higher tariff becomes payable. In the case of AP consumers, it is necessary to observe that out of a total of about 9.5 lac such consumers, only 13441 connections are presently metered. The Board which had been directed to effect 100% metering in the past has expressed its inability to achieve this objective in the near future for reasons that have to do both with the cost effectivity of the proposed metering and the resistance experienced from the consumers in installing the meters. While the Commission on its part has clarified to the Board that it is unable to review its earlier directive for comprehensive metering of agricultural power connections, the fact remains that the Board has yet to take any concrete steps in this direction. There may be several practical difficulties in evolving a normative limit for subsidized agricultural consumption given variations in agro-climatic conditions and differing cropping patterns in the State. Even if such a norm could over time be evolved, practical enforcement of minimum consumption limits for each consumer would be impossible in the absence of complete metering of agricultural connections. In these circumstances, it has not been possible for the Commission to fix a limit on subsidized consumption in the case of AP consumers.

## **6.7 Determination of Retail Tariff**

6.7.1 The Commission has arrived at a revenue deficit of Rs. 87.21 crores for the year 2007-08 as worked out in para 4.18 of this Order. After adding adjustments made for the earlier years, the total deficit works out to Rs. 423.78 crores as shown in Table 4.26.

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 of Common Pool consumers, Outside State sales and PLEC.

6.7.3 The consolidated revenue gap of Rs. 423.78 crores for the year 2007-08 is thus to be covered with an increase of 4.90% in the existing tariff across all categories except the Common Pool consumers, Outside state sales and PLEC but including MMC. The ARR of the Board for the year 2007-08 as assessed by the Commission covers the complete financial year. The recoveries of tariff, therefore, have to be such that total revenue

requirement of the Board for the year 2007-08 is recovered during the current financial year. However, since revised tariff is proposed to be effective from September 1, 2007, the amount of Rs. 423.78 crores needs to be recovered in the balance period of 7 months of 2007-08. In that case the increase of 4.90% in the existing rates has to be annualized and a uniform increase of 8.40% effected for all categories except the Common Pool consumers, Outside state sales and PLEC but including MMC. The provisions of the Act, Tariff Policy and the Commission's own Regulations require that there be a gradual movement towards reduction of cross subsidy. The Tariff Policy aims at bringing down cross subsidy to  $\pm 20\%$  of the average cost of supply by the year 2010-11. The Commission's Regulations provide for elimination of cross subsidy with reference to the average cost of supply by 2015. On the other hand, no change in cross subsidy levels has been effected in the last two Tariff Orders of the Commission. In this backdrop, it is imperative that tariffs are now fine-tuned with a view to gradually move towards the ultimate objective without, in the process, causing undue stress to any category of consumers. With this end in view, the Commission has decided to increase tariff for the first slab of Domestic Supply consumers by 8.4% while the enhancement in the case of AP consumers would be 12%. The increase in tariff for all other categories of consumers has been pegged at 7%. Monthly minimum charges will also to be increased proportionately. The existing and revised tariffs are indicated in Table 6.6.

Table 6.6- Existing and Proposed Tariff for the Year 2007-08

Sl. No.	Category of consumers	Existing Tariff		Tariff approved by the Commission - w.e.f. September 1, 2007	
		Energy Rate P/KWH	MMC Rs./ KW or part thereof	Energy Rate P/KWH	MMC Rs./ KW or part thereof
<b>A)</b>	<b>PERMANENT SUPPLY</b>				
1	Domestic				
a)	Upto 100 units	221	30	240	33
b)	101 to 300 units	368		394	
c)	Above 300 units	389		416	
2	Non-Residential	423	109	453	117
3	Public lighting	423	As per 8 hrs / Day	453	As per 8 hrs / Day
4	Agricultural Pumpsets	i) Without Govt. subsidy 214 Ps / kwh or Rs. 208/ BHP / Month ii) With Govt. subsidy 0	N.A.	i) Without Govt. subsidy 240 Ps / kwh or Rs. 236/ BHP / Month ii) With Govt. subsidy 0	NA
5	Industrial				
a)	Small power	337	89	361	95
b)	Medium	372	119	398	127
c)	Large				
i)	General industry	372	119	398	115 /KVA
ii)	PIU	372	328	398	316 /KVA
iii)	Arc Furnace	372	312	398	300 /KVA
6	Bulk Supply (including MES)				
	HT	382	179/KVA	409	192 /KVA
	LT	406	179/KW	434	192 /KW
	Average	394		422	
7	Railway Traction	443	179/KVA	474	192 /KVA
<b>B) SEASONAL INDUSTRY : COTTON GINNING, PRESSING AND BAILING PLANT, 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	337	328	361	351
	MS	372	328	398	351
	LS	372	328	398	316 /KVA
b)	Off season				
	SP	400	NA	428	NA
	MS	431	NA	461	NA
	LS	428	NA	458	NA
<b>C) ICE FACTORY &amp; ICE CANDIES AND COLD STORAGE</b>					
a)	Season (April to July)				
	SP	337	447 (April to July)	361	478
	MS	372		398	478
	LS	372		398	430 /KVA
b)	Off Season				
	SP	337	89	361	95
	MS	372	89	398	95
	LS	372	89	398	86 /KVA

D) GOLDEN TEMPLE, AMRITSAR AND DURGIANA TEMPLE, AMRITSAR					
Golden Temple, Amritsar					
a)	First 2000 units	Free	N.A.	Free	N.A.
b)	Beyond 2000 units	301	N.A.	322	N.A.
Durgiana Temple, Amritsar					
a)	First 2000 units	As per pattern applicable for Golden Temple, Amritsar		As per pattern applicable for Golden Temple, Amritsar	
b)	Beyond 2000 units				
E) TEMPORARY SUPPLY					
i)	Domestic	663	Rs.551 or Rs.110/KW whichever is higher	709	Rs.590 or Rs.118/KW whichever is higher
ii)	NRS	663	Rs.1102 or Rs.276/KW whichever is higher	709	Rs.1179 or Rs.295/KW whichever is higher
iii)	Industrial (SP,MS & LS)	As per tariff approved at A(5) above for permanent supply + 100%	Rs.441/KW of sanctioned load	As per tariff approved at A(5) above for permanent supply + 100%	Rs.472/KW of sanctioned load for SP and MS and Rs. 425/KVA for LS
iv)	Wheat Thresher	-do-	-do-	-do-	-do-
v)	Fairs, exhibition & melas Congregations	Bulk supply tariff as at A(6) + 50%	Rs.4411 per service	Bulk supply tariff as at A(6) + 50%	Rs.4720 per service
vi)	Touring Cinemas				
a)	Lights and fans	663	For (a) and (b) Rs. 1102 or	709	For (a) and (b) Rs. 1179 or Rs.
b)	Motive load	Rate for Industrial permanent supply as at A(5) + 100%	Rs. 276/KW of sanctioned load whichever is higher	Rate for Industrial permanent supply as at A(5) + 100%	295/KW of sanctioned load whichever is higher
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 Govt. 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 Govt Subsidy;				
iii	AP consumers and consumers mentioned in (i) & (ii) will not be charged service charges and meter rentals in view of Govt.subsidy;				
iv	DS and NRS consumers shall continue to be charged MMC on the basis of actual sanctioned load and no rounding off should be carried out for computing the MMC;				
v	Demand Surcharge in respect of Large Supply Industrial Consumers for exceeding sanctioned contract demand shall be charged @ Rs. 750/- (instead of Rs. 250/-) per KVA of contract demand in excess of sanctioned contract demand w.e.f. next billing cycle.				
vi	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;				
vii	Checking of load of DS consumers shall continue to be suspended.				



## 6.8 Effect of Tariff Revision on Cross Subsidy

6.8.1 The Commission in its Regulations for Determination of tariff 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 per existing tariff in 2006-07 has been worked out in Table 6.7.

6.8.2 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. PLEC charges have been loaded to the LS category.

**Table 6.7: Aggregate Quantum of Cross subsidy for the year 2006-07 at existing tariff**

									Combined average cost of supply (paise / unit)	329.94
Sr. No	Category	Energy Sales (MU)	Existing tariff paise / unit	Revenue with existing 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	3505	221	774.61	20.38	46.35	841.34	1156.44	-315.10	
b)	101-300	1493	368	549.42	8.68	19.76	577.86	492.60	85.26	
c)	>300 units	760	389	295.64	4.41	10.04	310.09	250.75	59.34	
	<b>Total</b>	<b>5758</b>		<b>1619.67</b>	<b>33.47</b>	<b>76.15</b>	<b>1729.29</b>	<b>1899.79</b>	<b>-170.50</b>	
2	NRS	1639	423	693.30	9.52	21.68	724.50	540.77	183.73	
3	Public Lighting	129	423	54.57	0.75	1.71	57.03	42.56	14.47	
4	<b>Industrial</b>									
a)	SP	638	337	215.01	3.71	8.44	227.16	210.50	16.66	
b)	MS	1653	372	614.92	9.61	21.86	646.39	545.39	101.00	
c)	LS	7998	372	2975.26	153.15	105.76	3234.17	2638.86	595.31	
	<b>Total</b>	<b>10289</b>		<b>3805.19</b>	<b>166.47</b>	<b>136.06</b>	<b>4107.72</b>	<b>3394.75</b>	<b>712.97</b>	
5	Bulk Supply	464	394	182.82	2.69	6.12	191.63	153.09	38.54	
6	Railway Traction	109	443	48.29	0.65	1.46	50.40	35.96	14.44	
7	Common Pool	300		73.07	0.00	3.95	77.02	98.98	-21.96	
8	Outside State	848		342.27	0.00	0.00	342.27	279.79	62.48	
9	AP	8233	214	1761.86	0.00	108.84	1870.70	2716.40	-845.70	
10	<b>Total</b>	<b>27769</b>		<b>8581.04</b>	<b>213.55</b>	<b>355.97</b>	<b>9150.56</b>	<b>9162.09</b>	<b>1171.23</b> <b>-1182.76</b>	

This means that Rs. 1171.23 crores of cross subsidy is generated at the existing levels of tariff whereas Rs. 1182.76 crores is required resulting in a deficit of Rs. 11.53 crores. This is mainly on account of change in sales and non- tariff income.

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6.8.3 The position indicating the cross subsidy levels in the system during the year 2007-08 with revised tariffs except Common Pool consumers and Outside State sales is indicated in Table 6.8.

**Table 6.8: Aggregate Quantum of Cross Subsidy for the year 2007-08 at Revised Tariff**

										Combined average cost of supply (paise / unit)		343.99	
		April 2007-August 2007			September 2007-March 2008								
Sr. No	Category	Energy Sales (MU) (Total x 5/12)	Existing tariff paise / unit	Revenue with existing tariff (Rs. crores)	Energy Sales (MU) (Total x 7/12)	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+8+9+10)	Energy Sales (MU)	Expected Revenue with average cost (Rs. crores)	Cross Subsidy generated (+) Utilised (-) (11-13)
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		3.95	77.02	300	103.20	-26.18
8	Outside State	345		139.08	482		194.71			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
10	<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>

Accordingly, Rs.1241.13 crores subsidy is likely to be generated at the revised level of tariff against which Rs. 1,238.70 crores cross subsidy will be utilized leaving a marginal surplus of Rs. 2.43 crores only.

6.8.4 Utilising the figures of the actual quantum of cross subsidy in each consumer category with existing and revised tariffs as brought out in Table 6.7 and Table 6.8 above, the gross quantum of cross subsidy from each category for the years 2006-07 and 2007-08 after tariff determination through this Order is given in Table 6.9.

Table 6.9- Aggregate Quantum of Cross Subsidy-Comparison of Existing and Revised tariffs

		Existing Average Cost of supply 329.94 paise/unit			
		Revised Average cost of supply 343.99 paise/unit			
		Quantum of Cross Subsidy in absolute terms			
		2006-07		2007-08	
Sr. No.	Category	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	3505	-315.10	3607	-333.52
b)	101-300	1493	85.26	1537	90.13
c)	>300 units	760	59.34	782	62.71
	<b>Total</b>	<b>5758</b>	<b>-170.50</b>	<b>5926</b>	<b>-180.68</b>
2	NRS	1639	183.73	1748	202.70
3	Public Lighting	129	14.47	143	16.58
4	<b>Industrial</b>				
a)	SP	638	16.66	655	17.33
b)	MS	1653	101.00	1649	103.29
c)	LS	7998	595.31	8412	638.92
	<b>Total</b>	<b>10289</b>	<b>712.97</b>	<b>10716</b>	<b>759.54</b>
5	Bulk Supply	464	38.54	510	43.76
6	Railway Traction	109	14.44	120	16.40
7	Common Pool	300	-21.96	300	-26.18
8	Outside State	848	62.48	827	49.31
9	AP	8233	-845.70	8645	-879.00
	<b>Grand Total</b>	<b>27769</b>	<b>1171.23</b>	<b>28935</b>	<b>1241.13</b>
			<b>-1182.76</b>		<b>-1238.70</b>

6.8.5 Further, the cross subsidy levels as per existing tariff and revised tariffs are as given in Table 6.10.

Table 6.10- Cross Subsidy Levels

		Existing Tariff Combined Average Cost of supply 329.94 paise/unit				Combined Average Cost of supply 343.99 paise/unit			
		2006-07				2007-08			
Sr. No.	Category	Energy Sales (MU)	Total Revenue (Rs Crores)	Realisation per unit-Paise per unit	Cross Subsidy levels	Energy Sales (MU)	Total Revenue (Rs Crores)	Realisation per unit-Paise per unit	Cross Subsidy levels
1	2	3	4	5	6	7	8	9	10
1	<b>Domestic</b>								
a)	Upto 100	3505	841.34	240.04	-27.25%	3607	907.25	251.52	-26.88%
b)	101-300	1493	577.86	387.05	17.31%	1537	618.84	402.63	17.05%
c)	>300 units	760	310.09	408.01	23.66%	782	331.71	424.18	23.31%
	<b>Total</b>	<b>5758</b>	<b>1729.29</b>	<b>300.33</b>	<b>-8.97%</b>	<b>5926</b>	<b>1857.80</b>	<b>313.50</b>	<b>-8.86%</b>
2	NRS	1639	724.50	442.04	33.98%	1748	803.99	459.95	33.71%
3	Public Lighting	129	57.03	442.09	33.99%	143	65.77	459.93	33.70%
4	<b>Industrial</b>								
a)	SP	638	227.16	356.05	7.91%	655	242.64	370.44	7.69%
b)	MS	1653	646.39	391.04	18.52%	1649	670.53	406.63	18.21%
c)	LS	7998	3234.17	404.37	22.56%	8412	3532.56	419.94	22.08%
	<b>Total</b>	<b>10289</b>	<b>4107.72</b>	<b>399.23</b>	<b>21.00%</b>	<b>10716</b>	<b>4445.73</b>	<b>414.87</b>	<b>20.61%</b>
5	Bulk Supply	464	191.63	413.00	25.17%	510	219.19	429.78	24.94%
6	Railway Traction	109	50.40	462.39	40.14%	120	57.68	480.67	39.73%
7	Common Pool	300	77.02	256.73	-22.19%	300	77.02	256.73	-25.37%
8	Outside State	848	342.27	403.62	22.33%	827	333.79	403.62	17.33%
9	AP	8233	1870.70	227.22	-31.13%	8645	2094.79	242.31	-29.56%
	<b>Grand Total</b>	<b>27769</b>	<b>9150.56</b>	<b>329.52</b>		<b>28935</b>	<b>9955.76</b>	<b>344.07</b>	

It will be seen from the Table above that there is reduction in cross subsidy level as compared to the existing level of cross subsidy for all the categories.

#### 6.8.6 Government Subsidies

After determination of the ARR and tariff for the year 2007-08, the Commission through its letter no. 3484 dated 31.8.07 (Annexure VIII) solicited, the views of the GoP regarding its plan to extend subsidy to any consumer or class of consumers under Section 65 of the Act. It was indicated in the said reference that GoP presently subsidizes AP consumers, Scheduled Castes DS consumers and Non-SC BPL DS consumers. The requirement of funds for maintaining the same level of subsidy and the arrears on this account from the previous years is indicated in Table 6.11.

Table 6.11 - Requirement of Subsidy to maintain Status Quo in the year 2007-08

(Rs. in crores)

S.No.	Particulars	Amount
1	2	3
(a)	AP Subsidy for the current year for assessed consumption of 8645 MU	1981.15
(b)	Subsidy for free supply to Scheduled Castes DS consumers and Non-SC BPL DS consumers for current year	130.95
(c)	Subsidy on account of Meter Rentals and Service Charges to AP for the current year	7.00
(d)	Subsidy recoverable for the period upto 2005-06	7.64
(e)	Subsidy recoverable for the year 2006-07	421.99
	<b>Net Subsidy payable by the GoP</b>	<b>2548.73</b>

GoP in its letter dated September 10, 2007 (copy at Annexure IX) has accorded approval for grant of such subsidy. The Commission accepts the decision of the GoP regarding grant of subsidy and the same has been incorporated in the tariff structure in Table 6.6.

## 6.9 Open Access Charges

6.9.1 As per the Open Access Regulations framed and notified by the Commission, the Open Access Charges for the year 2007-08 are computed in Table 6.12.

Table 6.12: Open Access Charges – 2007-08

Sr. No.	Open Access Charges	
1	Transmission Charges	Rs. 2123.50 /MW/Day
2	Wheeling Charges	Rs. 9299.68 /MW/Day
3	Transmission + Wheeling Charges Chargeable from long term customers (Rs./MW/Day)	Rs. 3807.35 /MW/Day
4	Transmission+ Wheeling Charges Chargeable from short term customers (Rs./MW/Day)	Rs. 2284.64 /MW/Day
5	T&D Losses	
	(i) For Voltages at 66 KV and above @ 30% of normative T & D Loss	5.85%
	(i) For Voltages below 66 KV @ 50% of normative T & D Loss	9.75%
6	Surcharge	Nil
7	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**

For reasons brought out in para 6.7, the Commission decides to make the revised tariff (annualized) applicable with effect from 1<sup>st</sup> September, 2007. The tariff structure determined above shall remain operative till March 31, 2008.

This order is signed and issued by the Punjab State Electricity Regulatory Commission on this the 17th day of September, 2007.

**Date: September 17, 2007**

**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**