



**BEFORE THE TAMIL NADU ELECTRICITY REGULATORY COMMISSION  
CHENNAI**

**Petition No T.P.1 of 2005**

**Present:**      **Hon'ble Thiru A. Balraj, Chairman**  
**Hon'ble Thiru S. Thangarathnam, Member**  
**Hon'ble Thiru B. Jeyaraman, Member**

**ORDER NO. 2 DATED 15.05.2006**

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**In the matter of:      **Determination of Transmission Charges, Wheeling  
Charges, Cross Subsidy surcharge and Additional  
Surcharge.****

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Sub-section (2) of Section 42 of the Electricity Act, 2003, stipulates that the State Commission shall introduce open access in such phases and subject to such conditions as may be specified, within one year of the appointed date. Accordingly, the Commission has notified the Tamil Nadu Electricity Regulatory Commission – Intra State Open Access Regulations 2005 in the Tamil Nadu Government Gazette dated the 3<sup>rd</sup> August.2005 so as to introduce open access in Tamil Nadu. As per Regulation 9 of the aforesaid Regulations, various charges payable to State Transmission Utility / Transmission Licensee and Distribution Licensee by an open access customer have to be determined by the Commission. As directed by the Commission, the TNEB filed a petition for determination of the above charges on 26.09.2005 and the Petition was registered and numbered as T.P. 1 of 2005.

In exercise of the powers conferred by section 42 of the Electricity Act, 2003 (Act 36 of 2003) and all other powers enabling it in this behalf, the Tamil Nadu Electricity Regulatory

Commission (TNERC) after having considered the written objections, consulted the members of the State Advisory Committee, heard the issues raised by the stakeholders in a public hearing , the reply of the Tamil Nadu Electricity Board, the applicant herein, and having considered the relevant documents available on record, passes this order, fixing the transmission charges , wheeling charges and other charges specified under the aforesaid Open Access Regulations and payable by an open access customer.

Sd.....

***B.Jeyaraman***  
***Member***

Sd.....

***S.Thangarathnam***  
***Member***

Sd.....

***A.Balraj***  
***Chairman***

## **1.0 PETITION BY TNEB**

1.1 The TNEB in their petition have stated the following::

(i) Board's system of accounting of revenue and expenses is not designed to meet the requirement of the open access market and hence various assumptions have to be made to estimate the expenses.

(ii) The Board maintains separate accounts for its **generation function**. The balance expenditure after excluding the expenditure for generation function is the expenditure for transmission and distribution function.

(iii) The apportionment of T & D expenses into Transmission and Distribution has been done on the following basis.

(a) As a result of study conducted in the past, information about transmission assets and depreciation till March 2003 was available with the Board. To estimate the asset base for FY 04, FY 05 and FY 06, further information was collected from the field and the value of transmission assets updated. The balance was considered as asset base for distribution function.

(b) Employees and Administration & General expenses have been apportioned on the basis of number of employees.

(c) R & M expenses have been apportioned to Transmission and Distribution on the basis of Gross Fixed Assets.

(d) Operating Expenses have been estimated based on the past trend.

(e) Interest and Financing Charges have been apportioned based on information from Filed Offices.

iv. As an integrated utility, the Board is entitled for a return of 3% capital base.

## **1.2. TRANSMISSION CHARGES**

1.2.1. The TNEB have furnished the following information for determination of Transmission Charges payable by the Open Access customers.

### **(a) Available Transmission Capacity**

The TNEB have arrived at the available transmission capacity as 6654 MW taking into consideration the generation capacity at normative PLF of various sources connected to the grid.

(b) **Transmission Losses**

The percentage of transmission losses furnished for 2005-06 is :

(1) 400 KV / 230 KV / 110 KV 3.20

(2) 66 KV and 33 KV 6.00

(c) **Gross block and Depreciation**

The value of Gross Fixed Assets of transmission function at the beginning of FY 05 was furnished as Rs.2886.18 crs. and accumulated Depreciation as Rs.995.67 cr. and Net fixed assets as Rs.1890.50 cr.

(d) **Allocation of outstanding loan**

Out of the total loan outstanding as on 31.03.05, a sum of Rs.3954.68 cr. was allocated to transmission assets for the purpose of calculation of interest.

(e) **Operating Expenses**

The operating expenses for 05-06 have been estimated based on the past trend.

(f) The Postage stamp method is recommended to be adopted to work out the transmission charges so as to recover the total amount of transmission charges from all the beneficiaries in the ratio of resources allocated.

1.2.2. The TNEB have proposed the following Annual Transmission Charges and the transmission charges payable by Long Term & Short Term Open Access customers.

S.No.	Particulars	Rs. in lakhs	
		Actuals for 2004-05	Estimated for 2005-06
1	Net Repairs & Maintenance Expenses	1452	1988
2	Net Employee expenses	18041	19214
3	Net Administration & General expenses	953	1065
4	Interest on loan	34109	35119
5	Depreciation	17560	13128
6	Interest on Working Capital	1847	1852
7	Return on Capital base	5044	5028
8	Annual Transmission Charges	79006	77394
9	Available transmission capacity		6654
10	Transmission Charges (Rs. per MW/per day)		3187
11	Transmission Charges (Rs. per MW/per day) for long term open access customers		3187
12	Transmission Charges (Rs. per MW/per day) for short term customers		1594

The TNEB have proposed the rate for Short Term Open Access customers at 50% of rate for long term open access customers.

### 1.3. WHEELING CHARGES

The TNEB have submitted the following information for determination of Wheeling Charges.

- (i) It is expected that open access consumers will generally be supplied at HT voltage. In such case an open access consumer may not use the entire distribution assets. Hence the wheeling charges should be determined by considering the cost at HT level only (the cost of LT to be excluded). Under such circumstances, separation of cost into HT and LT would be required.
- (ii) The total expenses allocated to Distribution have been apportioned between **HT system and LT system on the basis of voltage wise value of assets (i.e) value based on length of HT and LT net work.**
- (iii) The Board have proposed the following Annual Wheeling Charges for HT system:

S.No.	Particulars	Rs. in lakhs	
		Actuals for 2004-05	Estimated for 2005-06
1	Net Repairs & Maintenance Expenses	1467	2077
2	Net Employee expenses	45148	48552
3	Net Administration & General expenses	2384	2692
4	Interest on loan	20683	20006
5	Depreciation	19297	12843
6	Other debits	383	784
7	Interest on Working Capital	2378	2396
8	Return on capital base	3533	3612
9	<b>Total Wheeling Charges</b>	<b>95273</b>	<b>92962</b>

- (iv) The TNEB have proposed the quantum of energy to be fed into grid in 05-06 as 52284 MU and proposed the wheeling charges payable by the open access customers as below:

<b>S.No.</b>	<b>Particulars</b>	<b>2005-06</b>
1	Energy fed into the grid in MU	52284
2	Transmission loss above 110 KV	3.20 %
3	Energy sent to lower net work (MU)	50611
4	Loss at 66 KV & 33 KV (%)	6%
5	Energy sent to Distribution Network MU	47574
6	Annual Wheeling Charges – Rs. in lakhs	92962
7	Wheeling Charges (paise / unit) by Long term open access customers (paise / unit)	19.54
8	Wheeling Charges by Short Term customers (paise / unit)	9.77

#### **1.4. CROSS SUBSIDY SURCHARGE**

- (1) The TNEB have made the following submission.
- (i) Of the different methods to estimate cost of supply, the Board proposes to use embedded cost to supply for computation of cross subsidy surcharge.
- (ii) The Board have calculated and furnished the cost of supply for FY 05 and FY 06 as below:

<b>S.No.</b>	<b>Particulars</b>	<b>Rs. in lakhs</b>	
		<b>Actuals for 2004-05</b>	<b>Estimated for 2005-06</b>
1	Units sold in MU	41200	42873
2	Power Purchase	706969	740620
3	Generation Cost	294208	336578
4	Repair & Maintenance	18549	16690
5	Employee Cost	147100	159006
6	Admn. & General Expenses	15062	16487
7	Depreciation & other related debts	107914	105205
8	Interest & Finance Charges	96884	94304
9	Other Debts	911	1969
10	Extraordinary items	50	0
11	Total Expenditure (2 to 10)	1387647	1470859
12	Average cost of supply Rs./unit	3.37	3.43
13	Average cost at HT end	2.78	2.84
14	Average cost at LT end	3.62	3.68

(2) TNEB have calculated single average cost of supply to all HT categories and another single cost for all LT categories. The TNEB have also estimated average rate of realization from different categories of consumers and proposed cross subsidy surcharge as below:

<b>No.</b>	<b>Category of Consumers</b>	<b>Average Rate of Realisation (Paise / Unit)</b>	<b>Average Cost of Supply (Paise / Unit)</b>	<b>Cross Subsidy Surcharge (Paise / Unit)</b>
1	<b>HT Supply</b>			
	HT Tariff I (Industries).	444.11	283.56	160.55
	Educational Institutions	438.65	283.56	155.09
	Commercial	621.81	283.56	338.25
2.	<b>LT Supply</b>			
	Educational Institutions	450.00	368.19	81.81
	Industries (III B)	447.14	368.19	78.95
	Commercial	565.00	368.19	96.81

- (3) The TNEB have also made the following suggestions / proposals.
- (a) The surcharges have to be so designed that it benefits the consumers who opt for open access without adversely affecting the viability of the utility.
- (b) Where a consumer meets part of his demand from supplier other than the utility through open access (by reducing his contracted demand with utility), such consumer should be asked to pay cross subsidy surcharge in proportion to the extent of reduction in cross subsidy.

### **1.5. ADDITIONAL SURCHARGE**

The TNEB have not come out with any definite proposal; but have discussed the following options available for determination of additional surcharge.

Option 1: Based on back up support to be provided by the Utility.

Option 2 : Based on standard cost of the utility.

They have requested the Commission to determine additional surcharge on case to case basis based on the data provided by them.

## **1.6. SCHEDULING AND SYSTEM OPERATION CHARGES, REACTIVE CHARGES AND GRID SUPPORT CHARGES**

(1) TNEB have not proposed any charges and requested that the Commission may fix appropriate charges.

## **1.7 PRAYER**

- (1) The TNEB have made the following prayers in their petition:
- (i) To approve the Transmission and Wheeling Charges requirement for the financial year 2005-06.
  - (ii) To determine the transmission charges, wheeling charges, cross subsidy surcharge.
  - (iii) To approve the approach for additional surcharge and consider the same on case to case basis.
  - (iv) To approve all the expenses and assumptions while determining the charges.
  - (v) To be considerate about the availability of data as past accounting processes were not in line with new regulatory requirement.

## **2. COMMISSION'S APPROACH TO THE PETITION**

2.1. The proposals in the Petition were initially scrutinized by the staff of the Commission and the following observations were communicated to TNEB in Commission's letter dated 4.10.2005.

- (i) The values of assets furnished in the petition do not correlate with the values of assets in Annual Statement of Accounts and with the figures furnished to M/s. ICRA to develop a cost to serve model.
- (ii) The study report on the information about transmission assets and depreciation till March 2003 and details of information collected in addition to transmission asset beyond the study period require to be furnished to assess the correctness of the figures
- (iii) The insurance expenses for 04-05 were allocated more than actual.
- (iv) The outstanding loans as at the end of FY 04-05 allocated to Transmission and Distribution were far in excess of Net Fixed Assets and the balance net Fixed

Assets for generation arrived at, differed from the Net Fixed Assets for generation assets in the Preliminary Annual Statement of Accounts for 04-05.

- (v) Working sheet for the embedded cost is required to be furnished.
- (vi) The transmission loss of 9.22% upto 33 KV level needed a closer look and reconfirmation.
- (vii) Asset value and Line Losses for 22 KV and 11 KV to be furnished distinctly to compute wheeling charges for 22 KV and 11 KV separately.
- (viii) In the absence of any tariff revision, the rate of realization should normally be the same till the next revision. But different rate of realizations have been furnished for HT industrial consumers for 03-04, 04-05 and 05-06.
- (ix) The estimated sale of energy for 05-06 furnished is different from the demand forecast for 05-06 furnished separately.

2.2.1. The TNEB in letter dated 18.10.2005 furnished the following reply.

- (a) The value of asset as furnished in the Balance Sheet as on 31.03.05 (preliminary) has been adopted. The information about the transmission assets and depreciation as received from the field which works out to Rs.1896.12 cr. has also been furnished.
- (b) The total funds raised from various financial institutions, equity funds, borrowings for working capital, Provident Fund and Security Deposit have been matched with total asset and work in progress. The interest has been allocated to different sources and weighted cost arrived at.
- (c) The total financing of the assets (i.e.) equity and debt are apportioned in proportion to the value of the asset and the interest has been apportioned to the Assets based on the weighted cost of finance.
- (d) The value of distribution assets have been apportioned between HT 22 / 11 KV and other than this based on line length with associated cost.
- (e) The insurance provision made for generation assets was also included for allocation among transmission and distribution. This has been excluded and revised.
- (f) The working sheet for the embedded cost of supply of Rs.2.78 (HT end cost) and Rs.3.62 (LT end cost) has since been furnished.

- (g) The line loss percentage mentioned in the Petition was based on a study conducted in selective feeders. The line loss in various voltage levels for the petition is now furnished as below:

230KV	110KV	66KV	33KV	22KV	11KV	LT
1.00%	1.50%	0.50%	1.50%	2.50%	3.00%	8.00%

- (h) The asset value between 22 KV and 11 KV are not readily available. This will be gathered and furnished. However, it can be in the ratio of 50: 50 for calculation purpose.
- (i) The reduced rate of realization from HT consumers in 2004-05 was due to change in demand.
- (j) The demand forecast for 2005-06 mentioned in letter dt.25.8.2005 is based on CAGR prepared in August 2005. The demand forecast furnished in the petition is based on the Budget Estimate prepared in the beginning of 2005.

2.2.2. The TNEB have also furnished revised statements consequent to revision of the value of the Assets.

2.3. To ensure transparency in the process of determination of various charges payable by Open Access customers, copy of the petition, the observations of the staff of the Commission and the reply of TNEB were hosted in Commission's website on 10.11.05 inviting comments / suggestions from the stake holders. A public notice was also released in newspapers on 18.11.05 and copies of the Petition were offered for sale to interested public.

2.4 Copies of the Petition were sent to the members of the State Advisory Committee. The State Advisory Committee Meeting was convened on 11.11.2005 and the members expressed the following views:

- (i) The Commission may consider fixing time frame to TNEB for redesigning the accounting system to suit the regulatory environment.

- (ii) The expenses of load despatch centres may be excluded from Transmission and Distribution heads as separate charges, proposed to be levied for load despatch centre.
- (iii) Interest on working capital may be excluded as Open Access customers are required to pay security deposit for three months.
- (iv) Return on capital may be calculated at 14% on equity instead of 3% on capital base.
- (v) The TNEB have not furnished any specific reason for proposing rate for short term open access customers at 50% of rate for Long Term open access customers. As specified by CERC, 25% of the rate of Long Term open access customers may be adopted for Short Term Open Access customers.
- (vi) The cost of transmission network may be restricted to the cost of 230 KV and 110 KV lines. 66 KV and 33 KV lines may form part of Distribution network.
- (vii) The transmission capacity has been estimated based on the normative PLF. The TNEB may either follow principles of CERC or sum up the capacity of the segments of transmission lines to arrive at the transmission capacity. The TNEB may be asked to furnish list of transmission segments.
- (viii) The quantum of energy fed into the grid, as furnished, require detailed study to ascertain the correctness.
- (ix) The wheeling charges can be capacity charges and user charges.
- (x) A provision for cross subsidy surcharge is a built-in bias to prevent migration. There should be a time limit for elimination of cross subsidy.
- (xi) The cross subsidy surcharge can be fixed as 50% of the difference between the present tariff and embedded cost.

### **3. VIEWS EXPRESSED BY PUBLIC**

3.1.1. A list of stakeholders who have submitted written comments / objections are furnished in the Annexure I. Copies of comments / objections were furnished to TNEB with direction to reply the stakeholders directly with copies of reply to the Commission.

- 3.1.2 A public hearing was conducted on 23.12.2005 in the Commission's premises to give an opportunity to the stakeholders to present their views before the Commission. A list of stakeholders who presented their views before the Commission is furnished in the Annexure II.
- 3.1.3 The following views were expressed by the stakeholders in the written submission and also during public hearing:

### **3.2. Transmission Capacity**

- i. The generation capacity connected to the Tamil Nadu system including contracted capacity of other transactions may be considered. The capacity is shown as 6600 MW, whereas the peak demand has been shown as 7535 MW. The overall connected generating capacity after netting of auxiliary consumption is about 11400 MW. This may be adopted.
- ii. The transmission charges per MW of capacity should be arrived at by dividing the cost on peak demand of 7556 MW and not on generation capacity of 6654 MW
- iii. The PLF considered for private wind mills is 15%, whereas in draft discussion paper for NCES, the PLF 25.5% has been considered.

### **3.3. Rate for Short term Open Access**

- i. 25% of long term charges may be prescribed for short term transaction in line with CERC guidelines. A similar approach may be adopted for distribution network.
- ii. The difference of transmission charges between short-term customers and long-term open access customers are high. Long-term open access customers may be given some additional weightage in terms of concession or rebate than the short term customers.

### **3.4. Voltage wise cost**

- i. While the losses have been separated for EHT and HT levels, the network costs have not been separated.
- ii. The network cost at voltage levels may be differentiated for determination of transmission cost.

- iii. There should be a separate transmission charge upto 110 KV and less than 110 KV transmission system based on transmission loss indicated in the petition
- iv. TNEB may be directed to take all efforts to separate the accounts of transmission and distribution activities and adopt MW – Mile method or contracted path method within a time frame.
- v. The wheeling charges shall be commensurate with the distance from the point of injection and point of consumption through a natural path of transmission / power flow.

### **3.5. Return on Capital Base**

The return should be only on actual capital base of TNEB net of loans and not on net block as the net block is financed by loans for which actual interest which constitutes a return, has already been considered

### **3.6. O & M Expenses**

- i. The projected expenses are abnormally high. It would be reasonable if an escalation of 4% / 4.5% to 5% is assumed over the average of preceding five years.
- ii. There is no clarity on the method of capitalization of expenses.
- iii. Employees' expenses and interest on loan constitute 70.2% of transmission charges and 73.75% of wheeling charges which is exorbitantly high. This requires review.

### **3.7. Losses**

- i. The losses for the various voltages are on higher side. Actual losses may be specified.
- ii. If the point of injection is on 230 / 110 / 66 / 33 KV and the point of drawal is on 22 / 11 KV, the transmission charges and wheeling charges shall be 50% of the charges at the respective voltage. If the wheeling of the power is at voltage 33 KV and above, only transmission charges shall be applicable.
- iii. The total cost should be divided by the total units fed into the grid without deducting losses, as such losses are separately charged

### **3.8. Interest on working capital**

- i. The rate of interest on working capital is based on Primary lending Rate (PLR) at 10.5%. It should be based on RBI bank rate.
- ii. Receivables may be assumed for one month as TNEB recovers interest for receivables beyond one month.
- iii. When the consumer is paying in advance two months probable current consumption charges as Security Deposit, there is no rationale in demanding interest on working capital.

### **3.9. Interest on loan**

- i. The outstanding loan is disproportionate and funds with higher interest rate have been allotted to transmission and wheeling.

### **3.10. Cross subsidy surcharge**

- i. 25% of the difference in cost of realization and average cost of supply may be ordered as cross subsidy surcharge to encourage third party sale.
- ii. No proposal or time frame for eliminating the surcharge is indicated.
- iii. When a consumer moves out of a licensee, the utility avoid the highest marginal cost. Therefore the loss of cross subsidy would be in relation to the difference between the highest marginal cost (plus the network cost) and realization from the class of consumers. This would be the compensatory realization for the distribution licensee.
- iv. Liability of cross subsidy surcharge on open access consumers who were never consumers of distribution licensee need to be addressed.

### **3.11. Additional Surcharge**

- i. Additional surcharge may be ordered as **nil**, as TNEB have no stranded capacity.
- ii. The additional surcharge cannot exceed wheeling charges as the additional surcharge is **on** wheeling charges.
- iii. The approach brought out in the draft National Tariff Policy may be adopted to determine additional surcharge.
- iv. Levy of additional surcharge would have to be viewed against the recovery from back up supply.

- v. Necessary mechanism of set off may be suggested to minimize the impact of additional surcharge both on the distribution licensee as well as on the open access customer.

### **3.12 Applicability of the charges to be decided under this Order**

The Commission has notified the Intra State Open Access Regulations on 3.8.2005. It may be stipulated in the orders that the charges specified by the Commission will apply to all those who have availed Open Access on or after this notification.

## **4. RESPONSE OF TNEB**

- 4.1. The TNEB have furnished written reply to the stakeholders with copy to the Commission. The Chairman/TNEB and the Chief Financial Controller also replied the points raised during the public hearing. The response of TNEB is as below:

### **4.2. Transmission Capacity**

The transmission net work capacity has been developed to cater to the installed capacity of the system. But the generation depends on Plant load factor which again depends on age, fuel, heat rate, nature and demand in the grid. Hence the capacity has been arrived out with reference to PLF.

The capacity for private wind mills was proposed based on the quantity actually purchased.

### **4.3. Rates for Short Term Open Access**

The power sector is capital intensive industry requiring huge investment and investment can be recovered fully by utilizing the capacity fully. Lesser percentage of charges from short term consumers will attract more short term consumers and very less long term open access customers. When the short term customers quit from availing the transmission facility the investment will become stranded. This will lead to wide disparity between the charges for Long Term and Short Term consumers, which is similar to subsidizing and subsidized retail category of consumers.

### **4.4. Voltage wise Cost**

It is not feasible to derive the net work cost at different voltage level. The TNEB will endeavor to furnish voltage wise cost in future.

#### **4.5. O & M expenses**

The forecast of expenses for 2005-06 is based on previous year expenses and the price trend prevailing in the economy. There are no overstated expenses.

A portion of revenue expenditure equivalent to 25% of the capital expenditure is capitalized as some of the men and materials are employed both in maintenance work and in the execution of capital works. The 25% on capital works being adopted by the Board contributes 23% towards employees cost, 1.5% towards administrative expenses and 0.5% towards depreciation.

#### **4.6. Losses**

- i. The T & D loss of 18% is the lowest in the country.
- ii. The loss is computed as all the services are not metered. The consumption by unmetered Agricultural and Hut consumers are computed based on load and hours of supply. The consumption by metered services and the computed consumption by the unmetered services are deducted from the total input energy to arrive at the loss.
- iii. The Transmission and Wheeling charges are calculated taking into account the injection at higher voltage (i.e.) 230/110/66/33 KV and the drawal at various voltage levels. Therefore the question of charging 50% does not arise.
- iv. The transmission charges with applicable charges as fixed by the Commission may be applicable for injection and drawal at 33 KV and above.

#### **4.7. Interest on Working Capital**

- i. Primary Lending Rate of 10.5% of SBI has been adopted.
- ii. Working Capital requirement has been arrived at based on the regulations notified by the Commission.
- iii. The consumers are allowed to use the lines and subsequently billed. They are allowed nearly 60 days time from the day of consumption to that date of receipt of payment. Hence two months average receivable is considered necessary.
- iv. The security deposit is not sufficient to meet the working capital requirement of the Board and the Board is paying an interest @ 6% on Security Deposit.

#### 4.8. Interest on Loan

The allocation of funds and interest to the transmission and distribution functions has been revised to have uniformity ((i.e.) overall weighted average cost) and furnished to the Commission.

#### 4.9. Return on Capital Base

Calculation of return on capital base is as per Electricity (Supply) Annual Accounting Rules, 1985

#### 4.10. Cross Subsidy Surcharge.

- i. When High Tension industries and commercial consumers migrate from the Board, the Board will loose cross subsidy.
- ii. The Act provides for elimination of cross subsidy surcharge over a period of time. The Commission has to decide on the quantum of cross subsidy surcharge.

#### 4.11 Additional Surcharge.

The Open Access Regulations provides for additional surcharge. It cannot be eliminated since it is to compensate the stranded cost.

#### 4.12 Applicability of the Order

The Transmission and Wheeling Charges may be made applicable to both the existing and new consumers. At present the existing consumers are covered under Agreement.

### 5.0. COMMISSION'S RULINGS

#### 5.1. GROSS BLOCK

The TNEB in their petition have furnished the following information for 2004-05 and projection for 2005-06:

2004-05 (Pre actual)			(Rs.in Lakhs)		
S. No	Particulars	Transmission	Distribution		
			HT	LT	Total
1	Gross Block at the beginning of the year	271987	274818	414466	689284
2	Gross Block at the end of the year	288618	301493	455268	756761
3	Accumulated depreciation	82375	112009	168927	280936
4	Depreciation during the year	17560	19297	26108	45405

Projection for 2005-06			(Rs.in Lakhs)		
Sl.No	Particulars	Transmission	Distribution		
			HT	LT	Total
1	Gross Block at the beginning of the year	288618	301493	455268	756761
2	Gross Block at the end of the year	320462	312452	471814	784266
3	Accumulated depreciation	99567	130014	227939	357953
4	Depreciation during the year	13128	12843	308770	321613

However, the annual statement of accounts for the year **2004-05** (preliminary) reveals the following information:

(Rs. in lakhs)					
SI.No	Particulars	Transmission	Distribution		
			HT	LT	Total
1	Gross Block at the beginning of the year	189447	296413	447595	744008
2	Gross Block at the end of the year	191373	328492	496036	824528
3	Accumulated depreciation	46466	127080	191895	318975
4	Depreciation during the year	143	24578	37115	61693

The correct value of asset is essential for determination of charges. The TNEB in their Petition have submitted that till date, Generation, Transmission and Distribution are the integrated functions of the Board and there is no functional division of accounts.

- i. They had furnished the value of Transmission Assets as on 31.3.05 based on information available with them and details collected from field.
- ii. As the value of transmission assets furnished in the petition differed from the value of transmission assets as per the accounts, the TNEB were asked to furnish the study report and the information collected from the field.

- iii. The TNEB furnished the information collected from the field and requested the Commission to adopt the value as per the accounts.
- iv. The information on the Transmission Assets based on the study report and further data collected from the fields had some obvious errors and values furnished against some of the circles like Madurai EDC do not correspond to the number of sub-station and transmission lines in the circle
- v. The capital expenditure on transmission projects incurred in general construction circles are capitalized in Distribution Circle on getting the capital expenditure transferred from General Construction Circles
- vi. It is seen that the value of transmission asset in Distribution Circles has been classified with Distribution Assets.
- vii. During the discussion it was suggested that the value of transmission assets can be collected from cumulative balances in the balance sheets of the distribution circles against the account code numbers for transmission assets.
- viii. Accordingly the TNEB in their letter dated 07.12.2005 furnished the value of transmission assets as Rs.3532.01 crores and submitted revised statements.
- ix. A cursory look into the Balance Sheets of TNEB for the previous **10 years** revealed that the TNEB had made an investment of more than **Rs.3000 crs during these years in transmission projects.**
- x. The value of transmission assets furnished by the TNEB in the Petition as well as in the Accounts do not appear to commensurate with the transmission infrastructure created by the Board. More than 10000 MW of generation capacity has been connected to the grid and the grid could accommodate the peak demand of 7556 MW and the sustained peak of 7473 MW during 2005. As per the information available in "TNEB's Statistics at a glance for 2004-05" the TNEB had the following Transmission Infrastructure as on 01.04.2005.

EHT & HT lines : 146823 kms

EHT & HT substations : 1082 nos.

Power Transformer Capacity : 34270 MVA

It was therefore decided to have a prudence check of the investment made by TNEB in transmission to verify the correctness of value of transmission asset.

- xi. The audited Annual Accounts of the TNEB from the inception to 2003-04 were obtained and perused.
- xii. The TNEB have been maintaining their accounts in formats prescribed in the Electricity (Supply) Annual Accounts Rules, 1985 from the financial year 1985-86.
- xiii. The earlier formats for Annual Accounts had a separate schedule for detailed function wise capital expenditure. Thus the Balance Sheets for the years upto 1984-85 have detailed function wise capital expenditure in the erstwhile formats at that time.
- xiv. In the revised formats the capital expenditure statements are furnished with reference to budget, duly tallying with cash and fund flows.
- xv. The capital expenditure on Generation Project and Distribution Project under REC, street lights funded by the State Government have been distinctly furnished in the Capital Expenditure Statement for all the 20 years from 1985-86 to 2004-05. However, from 1985-86 to 1992 - 1993 and for 2000-01 and 2001-02 consolidated expenditures on transmission and Distribution (T & D) function have been furnished. From 1993-94, the expenditure on Transmission and Distribution has been furnished distinctly.
- xvi. Taking the total capital expenditure as on 31.03.85 as Opening Balance, the function wise capital expenditure as per the Balance Sheet upto 31.03.2005 was consolidated.
- xvii. Wherever combined expenditure on T & D have been furnished upto 1992-93, the expenditure have been allocated between Transmission and Distribution in the ratio of 60 : 40 based on the average expenditure between these two functions during the subsequent three years from 1993-94. On consolidation, the total Capital Expenditure incurred upto 31.03.05 was found to be Rs.20635.49 cr. on different functions as detailed below:

Year	Capital Expenditure			
	Generation	Transmission	Distribution	Total
OB 03/85	764.73	369.02	748.06	1881.81
1985-86	119.57	60.92	149.72	330.21
1986-87	42.04	90.08	318.40	450.52
1987-88	283.68	73.58	124.38	481.64
1988-89	232.17	90.98	155.71	478.86
1989-90	325.23	100.65	160.96	586.84

Year	Capital Expenditure			
	Generation	Transmission	Distribution	Total
1990-91	318.4	52.18	101.3	471.88
1991-92	321.6	144.72	180.34	646.66
1992-93	468.01	148.96	143.57	760.54
1993-94	374.19	162.05	257.2	793.44
1994-95	439.39	268.86	280.93	989.18
1995-96	559.70	328.78	377.62	1266.10
1996-97	279.27	373.56	440.04	1092.87
1997-98	206.35	327.67	401.82	935.84
1998-99	283.37	405.66	442.96	1131.99
1999-00	421.57	292.4	485.41	1199.38
2000-01	522.52	797.18	351.05	1670.75
2001-02	371.30	360.34	481.82	1213.46
2002-03	323.39	397.50	515.21	1236.10
2003-04	480.53	397.61	682.60	1560.74
2004-05	297.79	362.58	796.31	1456.68
<b>Total</b>	<b>7434.80</b>	<b>5605.28</b>	<b>7595.41</b>	<b>20635.49</b>
Less: WIP on <b>31.03.05</b>	834.25	711.98	1515.63	3061.86
	6600.55	4893.30	6079.78	17573.63
Less: Diff. Adjusted	18.07	12.67	26.60	57.34
As per accts	6582.48	4880.63	6053.18	17516.29

Note: WIP means Work-in-Progress.

xviii. After adjusting the capital expenditure yet to be capitalized as on 31.03.05, the expenditure capitalized (i.e.) transferred to Fixed Asset is Rs.17573.63 cr. (gross value of Fixed Assets.) However, it has been decided to adopt the total gross value of Assets as Rs.17516.29 as in the Balance Sheet as on 31.03.05 and accordingly the difference is proportionately adjusted.

xix. The value of Gross Fixed Assets for different functions as on 31.03.2005 is arrived at as below for the purpose of calculation of depreciation and interest:

Generation : Rs.6582.48 cr.  
Transmission : Rs.4880.63 cr.  
Distribution : Rs.6053.18 cr.

## **5.2 DEPRECIATION**

- 5.2.1 The accumulated depreciation upto 31.03.2005 as furnished in the preliminary Annual Accounts of TNEB have been re-allocated with reference to the assets value arrived at above.
- 5.2.2 Regulation 24 of the TNERC (Terms and conditions for determination of Tariff) Regulations 2005 stipulates the following:
- i. The depreciation shall be calculated at the rates as per the Annexure to the Regulations
  - ii. Depreciation shall be chargeable from the first year of operation. In case of operation of the asset for part of the year, depreciation shall be charged on pro-rata basis
  - iii. After the assets are fully depreciated the benefit of reduced tariff shall be made available to the consumers.
- 5.2.3 TNEB have calculated depreciation for the group of assets while different assets within a group have different life period attracting different rates of depreciation. For example TNEB have calculated depreciation at 6% for plant and machinery while the transformer, Kiosk etc, classified as plant and machinery will attract 3.6% depreciation and batteries attracting 18%.
- 5.2.4 TNEB have not excluded the 100% value of assets which have been depreciated upto 90% value.
- 5.2.5 TNEB have not claimed any pro-rata depreciation for the assets commissioned during the year.
- 5.2.6 The Commission obtained the value of assets with reference to the description of various assets so as to correlate the life and rate of depreciation in line with the Tariff Regulations.
- 5.2.7 The details of assets which have been depreciated upto 90% of their value were collected from approved depreciation statement furnished by the accounting units of TNEB.
- 5.2.8 As on 31.03.2005 capital work in progress to the tune of Rs.2441.13 crores was pending capitalization. It was ascertained that 3 X 50MW Pykara Ultimate stages Hydro project was commissioned on 06.09.2005.
- 5.2.9 The Commission calculated the depreciation as detailed below:

- i. 100% Value of assets which have been depreciated upto 90% value was excluded from the gross value of assets.
- ii. The capital work in progress relating to the above hydro project was taken into asset and pro-rata depreciation provided for.
- iii. Since the expenditure on Work in Progress on the assets already put into the beneficial use might be pending allocation to fixed assets account for want of work order closing, 50% of the remaining value of work in progress as on 31.03.2005 was taken to asset and depreciation provided for.
- iv. The rate of depreciation with reference to description of assets as in the regulation was adopted.
- v. The total depreciation arrived at has been allocated to different functions with reference to gross value of assets as detailed below

	Function	Asset Value in crs	Depreciation in crs
1	Generation	6582.48	236.39
2	Transmission	4880.63	175.27
3	Distribution HT	2411.59	86.60
4	Distribution LT	3641.59	130.78
5	Total	17516.29	629.04

### 5.3 OPERATIONAL EXPENSES

5.3.1 The TNEB have claimed the following operational expenses in their petition:

(Rs.in Crores)

O & M expenses	Actual 2000-01	Actual 2001-02	Actual 2002-03	Actual 2003-04	Actual 2004-05	Average	Estimate 2005-06	Percentage increase
<b>Repairs and Maintenance Expenses</b>								
Transmission	15.07	15.29	12.95	16.56	14.52	14.88	<b>19.88</b>	33.64
Distribution	32.83	33.32	28.21	36.10	36.79	33.45	<b>52.13</b>	55.84
<b>Employee Cost</b>								
Transmission	204.82	191.95	173.58	187.49	180.41	187.65	<b>192.14</b>	2.38
Distribution	1035.39	1083.01	1056.97	1113.27	1132.41	1084.21	<b>1218.79</b>	12.41

<b>Administration and General Expenses</b>								
Transmission	8.75	8.17	8.13	9.55	9.53	8.83	<b>10.65</b>	20.66
Distribution	44.22	46.12	49.52	56.72	59.82	51.28	<b>67.56</b>	31.75
<b>Total Operating Expenses</b>								
Transmission	228.64	215.42	194.66	213.61	204.45	211.36	<b>222.67</b>	5.35
Distribution	1112.44	1162.45	1134.70	1206.09	1229.02	1168.94	<b>1338.48</b>	14.50

5.3.2 TNEB have stated that they maintain separate accounts for its generation functions. They have arrived at the operating expenses for transmission and distribution after deducting the expenditure relating to the generation from the total operating expenses.

5.3.3 The expenses relating to transmission and distribution have been apportioned among transmission and distribution on the following assumption:

- i. The repairs and maintenance expenditure have been apportioned in the ratio of assets value.
- ii. Employee's costs and administrative and general expenditure have been apportioned based on the strength of employees.

5.3.4 The stakeholders expressed the view that the projected expenses are abnormally high and it would be reasonable if an escalation of 4% / 4.5% to 5% is assumed over the average of preceding five years.

5.3.5 The stakeholders have also stated that there is no clarity on the method of capitalization of expenses.

5.3.6 TNEB have replied that the expenses for 2005-06 have been forecasted based on previous year expenses and the price trend prevailing in the economy. There is no overstated expense.

5.3.7 TNEB have also stated that a portion of revenue expenditure equivalent to 25% of the capital expenditure is capitalized as some of men and machineries are employed both in maintenance work and in the execution of capital works.

5.3.8 Regulation 25 of the TNERC (Terms and conditions for determination of Tariff) Regulations 2005 stipulates the following;

- i. The operation and maintenance expenses shall be derived on the basis of actual operation and maintenance expenses for the past five years previous to current year based on the audited annual accounts.
- ii. The average of such normative operation and maintenance expenses after prudence check shall be escalated at 4% per annum to arrive at the operation and maintenance expenses for current year.

5.3.9 The Commission collected the actual expenses net of capitalization relating to generation for the period from 2001-02 to 2004-05 from the statement of accounts of the relevant generation circles of TNEB and adopted the figures furnished by TNEB for 2000-01. The expenses relating to transmission and distribution for these years were arrived at by deducting the expenses relating to generation from the total expenses net of capitalization as per the accounts. The expense for 2005-06 has been estimated with an escalation of 4% over the average of preceding five years.

5.3.10 The Commission accepts the principles adopted by TNEB for capitalizing revenue expenses

5.3.11 The Commission has arrived at the operational expenses as detailed below:

(Rs.in Crores)

O & M Expenses	Actual 2000-01	Actual 2001-02	Actual 2002-03	Actual 2003-04	Actual 2004-05	Total	Average	Estimated with 4% escalation for 2005-06
<b>Repairs and Maintenance Expenses</b>	121.90	127.91	138.15	149.00	185.49	<b>722.45</b>	<b>144.49</b>	<b>150.27</b>
Generation	74.01	67.10	77.96	77.31	97.53	<b>393.91</b>	<b>78.78</b>	<b>81.93</b>
Transmission & Distribution	47.89	60.81	60.19	71.69	87.96	<b>328.54</b>	<b>65.71</b>	<b>68.34</b>
Transmission	21.38	27.14	26.87	32.00	39.26	<b>146.65</b>	<b>29.33</b>	<b>30.50</b>
Distribution	26.51	33.67	33.32	39.69	48.70	<b>181.89</b>	<b>36.38</b>	<b>37.83</b>
<b>Employee Cost</b>	1369.63	1422.92	1379.09	1452.08	1471.01	<b>7094.73</b>	<b>1418.95</b>	<b>1475.70</b>
Generation	129.42	116.40	116.32	121.16	128.81	<b>612.11</b>	<b>122.42</b>	<b>127.32</b>
Transmission & Distribution	1240.21	1306.52	1262.77	1330.92	1342.20	<b>6482.62</b>	<b>1296.52</b>	<b>1348.38</b>
Transmission	204.82	215.77	208.55	219.80	221.66	<b>1070.60</b>	<b>214.12</b>	<b>222.69</b>
Distribution	1035.39	1090.75	1054.22	1111.12	1120.54	<b>5412.02</b>	<b>1082.40</b>	<b>1125.70</b>
<b>A &amp; G Expenses</b>	118.02	121.23	132.02	147.86	150.62	<b>669.75</b>	<b>133.95</b>	<b>139.31</b>

Generation	65.05	63.16	66.79	72.95	64.55	<b>332.50</b>	<b>66.50</b>	<b>69.16</b>
Transmission & Distribution	52.97	58.07	65.23	74.91	86.07	<b>337.25</b>	<b>67.45</b>	<b>70.15</b>
Transmission	8.75	9.59	10.78	12.37	14.22	<b>55.71</b>	<b>11.14</b>	<b>11.59</b>
Distribution	44.22	48.48	54.45	62.54	71.85	<b>281.54</b>	<b>56.31</b>	<b>58.56</b>
<b>Total Operational Expenses</b>								
Generation	268.48	246.66	261.07	271.42	290.89	<b>1338.52</b>	<b>267.70</b>	<b>278.41</b>
Transmission	234.95	252.50	246.20	264.17	275.14	<b>1272.96</b>	<b>254.59</b>	<b>264.77</b>
Distribution HT	440.68	467.28	454.97	483.40	494.45	<b>2340.78</b>	<b>468.16</b>	<b>486.88</b>
Distribution LT	665.44	705.62	687.02	729.95	746.64	<b>3534.67</b>	<b>706.93</b>	<b>735.21</b>

The expenses relating to distribution have been allocated between HT and LT in the ratio of length of line and associated costs i.e. at 39.84: 60.16

#### 5.4 INTEREST ON LOAN

In the petition, the TNEB have allocated interest on loan for transmission and distribution functions as detailed below:

S. No	Particulars	Transmission	Distribution
1	Loan as on 31.03.05 allocated (Rs.in Crores)	3954.68	6687.02 including CCD of Rs.2616.36
2	Estimated Borrowings during 2005-06 (Rs.in Crores)	1042.68	1575.04
3	Repayment due in 2005-06 (Rs.in Crores)	631.21	918.83
4	Estimated Loan outstanding at the end of 2005-06 (Rs.in Crores)	4366.15	7343.23
5	Weighted average interest rate	9.51%	8.31%
6	Interest Payable (Rs.in Crores)	395.63	582.84
7	Less: Interest on funds utilized during Construction (Rs.in Crores)	44.44	80.65
8	Net interest included in the annual charges (Rs.in Crores)	351.19	502.19

5.4.1 It was noticed that the outstanding loan as on 31.03.2005 allocated to different functions were disproportionate to the net value of assets as on 31.03.2005 as detailed below:

(Rs. in Crores)			
S. No	Particulars	Net fixed assets	Loan allocated
1	Transmission	1447.63	3954.68
2	Distribution	4438.60	4070.66 + CCD of Rs.2616.36
3	Generation	4266.70	1000.12(balancing figure)

5.4.2 This fact was communicated to TNEB. The TNEB have revised the statement.

TNEB have added the work in progress to the value of net fixed asset and allocated the total funds to match such value. The gross interest during 2004-05 was allocated to such value at weighted average rate of interest as detailed below:

(Rs.in Crores)

S.NO	Function	Net fixed assets	Work in progress	Total	Interest
1	Generation	4266.69	871.64	5138.33	462.94
2	Transmission	1447.64	704.55	2152.19	193.93
3.	Distribution – HT	1768.34	638.93	2407.27	216.88
4	Distribution – LT	2670.26	964.81	3635.07	327.48
5	Total	10152.93	3179.93	13332.86	1201.23

5.4.3 Interest on work in progress pending capitalization at the end of the year shall be capitalized; but the TNEB have not deducted such interest while allocating interest to different functions. Also TNEB have not furnished revised projections for 2005-06.

5.4.4 As per the information made available to the Commission interest commitment on loan to the Board for 2005-06 was Rs. 1125.33 crores including interest of Rs.147.89 crores on security deposit.

5.4.5 As per sub regulation (2) of Regulation 86 of the TNERC's Tariff Regulations the interest on security deposit shall be excluded for purpose of calculating wheeling charges.

5.4.6 The Commission has arrived at the net interest allocable to the different functions as Rs. 765.66 crores as detailed below:

(Rs.in Crores)

SL No	Institutions	Outstanding as on 31st March 2005	Estimated Borrowings during 05-06	Repayment due	Balance as on 31.03.06	Rate of Interest	Amount of Interest
1	TNEB Bonds	1984.39		474.67	1509.72	12.47	217.92
2	LIC	388.76		56.54	332.22	10.61	38.23
3	REC/Bank				0.00		0.00
4	REC/Normal	1721.77	331.72	130.00	1923.49	8.39	152.97
5	PFC	1413.72	312.50	172.45	1553.77	8.06	119.64
6	PFC/ADB				0.00		0.00
7	TNPFC	2158.29	700.00	615.00	2243.29	11.03	242.77
8	NABARD	88.18	52.16	1.38	138.96	6.90	7.84
9	MTL and ICICI	780.03	800.63	350.69	1229.97	5.81	58.36
10	APDRP	204.85	48.83	5.12	248.56	9.35	21.20
11	PMGY	24.53	1.10	0.59	25.04	10.53	2.61
12	HUDCO	257.11		25.00	232.11	10.19	24.93
13	Total Instr. Loans	9021.63	2246.94	1831.44	9437.13	9.60	886.47
14	GPF & FBF						68.30
15	Other finance charges						22.67
16	Interest on Security Deposit						147.89
17	<b>Total</b>	<b>9021.63</b>	<b>2246.94</b>	<b>1831.44</b>	<b>9437.13</b>		<b>1125.33</b>
18	Less : IDC						211.78
19	Interest on Security Deposit						147.89
20	<b>Nett Interest</b>						<b>765.66</b>

5.4.7 The above interest amount of Rs.765.66 Crores is allocated to different functions with reference to the net value of assets as below::

Function	Gross Asset	Depreciation	Net Assets	Interest
Generation	6582.48	2767.09	3815.39	287.73
Transmission	4880.63	2051.68	2828.95	213.34
Distribution – HT	2411.59	1013.76	1397.82	105.41
Distribution – LT	3641.59	1530.83	2110.77	159.18
<b>Total</b>	<b>17516.29</b>	<b>7363.36</b>	<b>10152.93</b>	<b>765.66</b>

## 5.5 INTEREST ON WORKING CAPITAL

5.5.1 In accordance with the Tariff Regulations notified by the Commission, the Interest on working capital which is computed on normative basis at the rate equivalent to short-term primary lending rate of State Bank of India as on 1<sup>st</sup> April of the relevant year shall form part of the aggregate revenue requirement of the licensee.

5.5.2 Accordingly the TNEB have claimed interest on working capital for 2005-06 based on the norms fixed in the tariff regulations as detailed below:

(Rs.in Lakhs)

S. No	Particulars	Transmission	Distribution
1	Operation and Maintenance expenses for one month	1855.57	11154.07
2	Maintenance spares at 1% of assets	2886.18	7567.61
3	Receivables for two months	12898.84	38564.88
4	Total working capital	17640.59	57286.55
5	Primary Lending Rate of SBI	10.5%	10.5%
6	Interest on working capital	1852.26	6015.09
7	Interest for HT		2396.41

5.5.3 The Members of State Advisory Committee and the Public expressed the view that there is no rationale in demanding interest on working capital when the open access consumers are required to pay security deposit equivalent to three months

average billing and other consumers are paying in advance two months probable current consumption charges as deposit. They also contended that the rate of interest may be the Bank rate announced by RBI instead of the primary lending rate.

5.5.4 The TNEB in their response have contended that the consumers are allowed to use the lines and billed only subsequently. They are allowed 60 days time from the date of use / consumption to the date of payment. Hence it is considered necessary to allow two months receivable for working capital. As regards security deposit for current consumption charges, an interest of 6% on security deposit is allowed.

5.5.5 The Commission considers that in view of the time gap between the usage and payment of charges, the interest on working capital may be allowed as provided for in the regulations.

5.5.6 The interest on security deposit is not included for calculating annual charges as provided for in the Tariff Regulations.

5.5.7 The interest on working capital on normative basis will be as below:

(Rs.in Crores)

Sl.No.	Particulars	Transmission	Distribution HT	Distribution LT
1	Operation and Maintenance expenses for one month	22.07	40.57	61.27
2	Maintenance spares at 1% of assets	48.80	24.12	36.40
3	Receivables for two months	121.77	120.82	182.44
4	Total working capital	192.64	185.51	280.11
5	Primary Lending Rate of SBI	10.5%	10.5%	10.5%
6	Interest on working capital	20.23	19.48	29.41

5.5.8 However, it is seen from the accounts of the TNEB that they have availed working capital demand loan in the previous years and paid interest as below:

(Rs. In Crores)

S.No.	Year	Working Capital Demand Loan availed	Interest paid
1	2002 – 03	185.00	6.60
3	2003 – 04	410.00	25.78
3	2004 – 05	255.00	24.32

5.5.9 The TNEB have proposed a payment of Rs. 29.50 Crores towards interest on working capital demand loan for all the functions in their revised estimate for 2005-06.

5.5.10 The Commission considers that the interest on working capital may be restricted to Rs. 29.50 Crores which is allocated to different functions based on net asset value as detailed below:

(Rs.in crores)

Function	Gross Asset	Depreciation	Net Assets	Interest in
Generation	6582.48	2767.09	3815.39	11.09
Transmission	4880.63	2051.68	2828.95	8.22
Distribution - HT	2411.59	1013.76	1397.82	4.06
Distribution -LT	3641.59	1530.83	2110.77	6.13
<b>Total</b>	<b>17516.29</b>	<b>7363.36</b>	<b>10152.93</b>	<b>29.50</b>

## 5.6 RETURN ON CAPITAL BASE

5.6.1 In the petition TNEB have proposed Return on Capital base for 2005-06 as detailed below:

(Rs. In Crores)

Sl.No	Particulars	Transmission	Distribution - HT
1	Gross block at the beginning of the year	2886.18	3014.93
2	Less: Accumulated depreciation	995.68	1300.14
3	Net Block (1-2)	1890.50	1714.79
4	Less: Consumers contribution	214.67	510.80
5	Capital base (3-4)	1675.83	1203.99
6	Return – 3% on item 5	50.28	36.12

5.6.2 The Members of State Advisory Committee and the public expressed the following views / objections:

- i. Return on capital may be calculated at 14% on equity instead of 3% on capital base.
- ii. The return should be only on actual capital base of TNEB **net of loans** and not on net block as the net block is financed by loans for which actual interest has already been considered.

5.6.3 The TNEB in their response have stated that 3% return on capital base has been claimed as per the Electricity (Supply) Annual Accounts Rules 1985.

5.6.4 Regarding the return on capital base, the following facts have to be taken into consideration;

- i. The TNEB continue to function as integrated utility
- ii. As per section 59 of the Electricity Supply Act 1948 (since repealed), the Board shall earn a surplus not less than 3% of the value of the net fixed assets of the Board in service at the beginning of the year.
- iii. The surplus is calculated and accounted for in accordance with the Electricity (Supply) Annual Accounts Rules 1985, made under sub-section (1) of section 69 of the Electricity (Supply) Act 1948. These rules have not yet been rescinded or modified.
- iv. Clause (d) of sub-section (2) of section 185 of the Electricity Act 2003, stipulates that all rules made under sub-section (1) of section 69 of the Electricity (Supply) Act 1948 (54 of 1948) shall continue to have effect until such rules are rescinded or modified as the case may be.

5.6.5 In the context of the above, the Commission accepts the TNEB's proposal on Return on Capital base.

5.6.6 With the revision of assets value, the Commission fixes the Return on Capital base as below:

(Rs. In Crores)

S. No	Particulars	Transmission	Distribution – HT	Distribution – LT
1	Gross block at the beginning of the year	4880.63	2411.59	3641.59
2	Less: Accumulated depreciation	2051.68	1013.76	1530.83

3	Net Block (1-2)	2828.95	1397.82	2110.77
4	Less: Consumers contribution	528.74	261.26	394.51
5	Capital base (3-4)	2300.21	1136.56	1716.26
6	Return – 3% on item 5	69.01	34.10	51.48

## 5.7 OTHER DEBITS

- 5.7.1 TNEB in their petition have allocated a sum of Rs.19.69 Crores towards other debits for calculation of Annual Wheeling charges for distribution net work for 2005-06.
- 5.7.2 The other debits include price variance payable on account of adopting standard price in the valuation of materials, provision for bad and doubtful debts and write off losses.
- 5.7.3 The fast moving materials used mainly in distribution are covered under standard price which is being revised annually. The provision for bad and doubtful debts is towards sundry debtors for sale of power and hence relates to distribution function.
- 5.7.4 The Commission accepts the proposal to allocate the other debits to distribution function as detailed below:
- i. Distribution – HT Rs.7.84 Crores
  - ii. Distribution – LT Rs.11.85 Crores

## 5.8 ANNUAL TRANSMISSION AND WHEELING CHARGES

The Commission fixes the Annual Transmission and Wheeling charges as detailed below:

### Annual Transmission Charges

Rs.in Crores)

S. No	Particulars	Proposed by TNEB	Approved by TNERC
1	Net R&M Expenses	19.88	30.50
2	Net Employee Cost	192.14	222.69
3	Net Admn. And General Expenses	10.65	11.59
4	Interest on Loan	351.19	213.34
5	Depreciation	131.28	175.27
6	Other Debits	0.00	0.00
7	Return on Capital base	50.28	69.01
8	Interest on Working Capital	18.52	8.22
	<b>Total Charges</b>	<b>773.94</b>	<b>730.62</b>

**Annual Wheeling charges:**

(Rs.in Crores)

S. No	Particulars	Proposed by TNEB		Approved by TNERC	
		HT	LT	HT	LT
1	Net R&M Expenses	20.77	31.36	15.07	22.76
2	Net Employee Cost	485.52	733.27	448.48	677.22
3	Net Admn. And General Expenses	26.92	40.64	23.33	35.23
4	Interest on Loan	200.06	302.13	105.41	159.18
5	Depreciation	128.43	187.70	86.60	130.78
6	Other Debits	7.84	11.85	7.84	11.85
7	Return on Capital base	36.12	54.54	34.10	51.48
8	Interest on Working Capital	23.96	36.19	4.06	6.13
9	Total Charges	929.62	1397.68	724.89	1094.63

**5.9 AVAILABLE TRANSMISSION CAPACITY**

5.9.1 The TNEB have arrived at the available capacity of transmission system as on 01.04.2005 as 6654 MW based on the normative Plant Load Factor (PLF) of the generating system including contracted supply connected to the grid. The TNEB have also proposed the postage stamp method so that uniform transmission charges per MW taking the entire State as one segment could be arrived at by dividing the annual transmission charges by the available capacity.

5.9.2 The Members of the State Advisory Committee as well as the stakeholders suggested the following:

- i. The overall connected capacity after netting auxiliary consumption may be adopted.
- ii. The peak demand reached may be adopted
- iii. The TNEB may either follow the principles of CERC or sum up the capacity of segments of transmission lines to arrive at the transmission capacity.
- iv. The PLF considered for private windmill is 15%, whereas in the draft discussion paper for Non-conventional energy sources, the PLF 25.5% has been considered.

5.9.3 The TNEB in their response contend that though the transmission network capacity has been developed to cater to the installed capacity of the system, the

generation depends on PLF, fuel and other technical parameters besides the demand in the grid.

- 5.9.4 The CERC in appendix III to their Tariff Regulation have detailed the procedures for calculation of transmission system availability. In the annexure II to the appendix, formulae for calculation of availability of each category of transmission element have been given.
- 5.9.5 The transmission system in TNEB does not have split up information on different transmission line segments and other transmission elements. In the absence of required information, the procedure outlined in CERC's regulation cannot be followed.
- 5.9.6 The Commission has incorporated the following definition for "Allotted Transmission Capacity" in Tariff Regulations based on the guidelines in CERC's Tariff regulations.
- "Allotted Transmission Capacity means the **power transfer in MW between the specified point of injection and point of drawal** to a long-term open access customer on the intra-state transmission system under the **normal circumstances** and the expression allotment of transmission capacity shall be construed accordingly.
- 5.9.7 As per regulation 59 of TNERC's Tariff regulations the transmission charges payable by a open access customer shall be calculated by dividing the total transmission charges by the **sum of allotted transmission capacity** to all the long-term open access customers of the intra-state transmission system and multiplied by the capacity allotted to that long-term open access customer.
- 5.9.8 Since the **power transfer in MW** depends on generation at specified PLF to meet the demand taking into account merit order dispatch, the Commission accepts the contention of TNEB. However, the Commission has revised the available transmission capacity from 6654 MW to 7198 MW as detailed below with new capacity added during 2005-06 and also by revising the PLF for certain stations with reference to actual generation / purchase.

SL No	Stations connected to the Transmission System	Proposed by TNEB			Considered by the Commission					
		Installed Capacity MW	Normative PLF%	Net Capacity in MW	Gen./Pu r during 2004.05 in MU	Actual PLF 2004-05	PLF Adopted to arrive capacity in %	Capacity in MW	Aux. Cons. in %	Net Capacity
	<b>Thermal</b>									
1	ETPS	450.00	50	204.75	646	16.39%	47	211.50	8	194.58
2	NCTPS	630.00	80	458.64	3840	69.58%	80	504.00	8	463.68
3	MTPS	840.00	80	611.52	6611	89.84%	90	756.00	7.9	696.28
4	TTPS	1050.00	80	764.40	7414	80.60%	81	850.50	7.6	785.86
	<b>GAS</b>									
5	BBGTPS	120.00	25	29.10	40	3.81%	3.81	4.57	0.9	4.53
6	Kovilkalappal	107.88	85	88.95	595	62.96%	85	91.70	3	88.95
7	Kuttalam	101.00	85	83.60	677	76.52%	85	85.85	3	83.27
8	Valudur	95.00	85	78.33	666	80.03%	81	76.95	3	74.64
9	<b>Hydro</b>	1987.40	25	494.37	5883	33.79%	33.79	671.54	0.5	668.18
10	<b>Wind</b>	19.36	10	1.94	17	10.02%	10	1.94		1.94
	<b>IPPs</b>									
11	GMR	196.00	68.5	134.26	657	38.27%	68.50	134.26		134.26
12	SPC	105.66	68.5	72.38	268	28.95%	68.50	72.38		72.38
13	PPN	330.50	68.5	226.39	403	13.92%	68.50	226.39		226.39
14	MPC	106.00	68.5	72.61	268	28.86%	68.50	72.61		72.61
15	STCMS	250.00	68.5	171.25	1473	67.26%	68.50	171.25		171.25
16	ABAN	113.21	68.5		629	63.43%	68.50	77.55		77.55
17	RK Energy	58.20	68.5		120	23.54%	68.50	39.87		39.87
	<b>CGS</b>									0.00
18	NLC I	500.00	75	375	3124	71.32%	75.00	375.00		375.00
19	NLC II	441.00	75	330.75	3227	83.53%	84.00	370.44		370.44
20	NLC I Expansion	240.00	75	180.00	1733	82.43%	83.00	199.20		199.20
21	NTPC (STPS)	588.00	80	470.40	4665	90.57%	91.00	535.08		535.08
22	Thalcher	405.00	80	324.00	3954	111.45%	80.00	324.00		324.00

23	MAPS	294.00	77	226.38	1105	42.91%	43.00	126.42		126.42
24	Kaiga	237.00	77	182.49	1338	64.45%	64.00	151.68		151.68
25	<b>NTPC SR Stage III</b>	118.00	80				80.00	94.40		94.40
	<b>Others</b>									0.00
26	Private Windmill	2020.87	15	303.13	3497	19.75%	25.84	522.19		522.19
27	CPP	432.00	80	481.60	648	17.12%	80.00	345.60		345.60
28	Co-gen	296.60	80		1005	38.68%	55.00	163.13		163.13
29	NTPC ER	180.00	80	180.00	1052	66.72%	67.00	120.60		120.60
30	Kayankulam	180.00	80	144.00	129	8.18%	8.00	14.40		14.40
31	Total	12492.68		<b>6654.23</b>				7391.00		<b>7198.36</b>

## 5.10 DEMAND AND ENERGY FORECAST

5.10.1 TNEB in their petition have projected a demand of 42873 MU from various categories for the year 2005-06. The input energy requirement has been proposed as 52284 MU with a T & D loss of 18%.

5.10.2 However, in the load and demand forecast furnished by the TNEB with reference to regulation 6 of Tamil Nadu Electricity Distribution Code, the forecast for 2005-06 has been furnished as below:

- i. Demand 43710 MU
- ii. T & D loss 18%
- iii. Input energy 53305 MU

5.10.3 The TNEB have stated that the load and demand forecast has been made based on the Compounded Annual Growth Rate (CAGR) for each category of consumers.

5.10.4 The Commission accepts the demand and energy requirement proposed based on Compounded Annual Growth Rate

## 5.11 SOURCE AND COST OF SUPPLY

5.11.1 The TNEB have proposed in their petition, the following information on the energy requirement, sources to meet the energy requirement and the cost therefor:

S. No	Source	Units (MU)	Cost (Rs.in Crores)
1	TNEB's own generation – Net	25053	3365.78
2	Purchase from CGS	19236	3727.10
3	IPPs	4652	2309.65
4	Private Windmills	2080	669.76
5	Co-generation	753	237.20
6	Captive Generation	510	160.65
7	Total	52284	10470.14
8	Transmission charges –PGCIL		301.84
9	Total Cost		10771.98

- 5.11.2 The Commission have revised the quantum of generation and purchase to suit the demand and energy requirement accepted by it based on the merit order.
- 5.11.3 The Commission obtained the information on the actual fuel cost for the period from April 2005 to November 2005. The quantum of energy to be generated by the stations for the balance four months was arrived at with reference to actuals upto 11/2005 and the revised estimate (Resources statement for 11/2005).
- 5.11.4 The quantum of coal was estimated with reference to the specific consumption of coal and the cost of coal worked out based on the quarterly average landed cost approved by the TNEB. The cost of gas, oil, lubricants, etc, for the balance period from December 2005 to March 2006 has been projected in proportion to the actual generation upto November 2005.
- 5.11.5 The variable cost of power from central generating stations has been projected with reference to the actual rate including FSA and incentive claimed in the bill for December 2005. The balance capacity charges payable for the year has also been included.
- 5.11.6 It was ascertained from the monthly return on the details of power purchase received from TNEB that there is an increase of more than 42% in the variable cost of LSHS run generating stations of IPPs than the variable cost proposed in the petition. It is due to levy of 16% excise duty, 2% education cess and 10.2% service charges besides an increase of around Rs.2000/ton in the basic cost of LSHS. These are statutory levies and hence it has to be accepted.

5.11.7 The Commission has revised the quantum and cost of power generated and purchased as detailed below:

S. No	Source	Units (MU)	Cost (Rs.in Crores)
1	TNEB's own generation – Net	24181.50	2945.60
2	Purchase from CGS	20568.27	3701.28
3	IPPs	3575.22	1897.63
4	Private Windmills	3497.00	1126.03
5	Co-generation	754.00	237.51
6	Captive Generation	729.00	219.43
7	Total	53305.00	10127.48
8	Transmission charges –PGCIL		306.97
9	Total Cost		10434.45

## 5.12 TRANSMISSION CHARGES FOR LONG-TERM OPEN ACCESS CUSTOMERS

5.12.1 The Commission accepts the proposal of TNEB to adopt the pooled cost method for determination of transmission and wheeling charges as this method is simple and easy to implement in the absence of voltage wise asset value. The regulation 59 of TNERC's Tariff regulations also provides that the transmission charges payable by an intra-state open access customer shall be calculated by dividing the total transmission charges by the sum of allotted transmission capacity to all the long-term open access customers of the intra-state transmission system and multiplied by the capacity allotted to that long-term open access customer.

5.12.2 The Commission fixes the transmission charges for 2005-06 for long-term open access customers as detailed below:

SL No.	Particulars	Proposed by TNEB	Approved by TNERC
1	Annual Transmission Charges Rs.in Lakhs	77394	73062
2	Available Transmission Capacity in MW	6654	7198
3	Transmission Charges Rs/MW/Day	3187	2781

## 5.13 WHEELING CHARGES FOR LONG-TERM OPEN ACCESS CUSTOMERS

5.13.1 The Commission fixes the wheeling charges for 2005-06 for long-term open access customers as detailed below:

S. No.	Particulars	Proposed by TNEB	Approved by TNERC
1	Energy Fed into Grid in MU	52284	53305
2	Transmission loss upto 33KV	4.50%	4.50%
3	Energy sent into Distribution Net Work in MU	49931	50906
4	Less: Energy consumed upto 33KV in MU	1729	1729
5	Energy consumed in 22 and 11 KV in MU	48202	49177
6	Annual Wheeling Charges Rs. in lakhs	92962	72489
7	Wheeling charges for long term OA customers in paise per unit	19.29	14.74

#### **5.14 RATE FOR SHORT-TERM OPEN ACCESS CUSTOMERS**

5.14.1 In the petition, TNEB have proposed rate for short-term open access customers at 50% of the rate for long-term open access customers.

5.14.2 The following objections were raised during the State advisory committee meeting and in public hearing:

- i. The TNEB have not furnished any specific reason for proposing rate for short term open access customers at 50% of rate for long term open access customers. As specified by CERC, 25% of the rate of long term open access customers may be adopted for short term open access customers.
- ii. The difference of transmission charges between short-term customers and long-term open access customers are high. Long-term open access customers may be given some additional weightage in terms of concession or rebate than the short term customers.

5.14.3 The TNEB in their response have stated that the power sector is capital intensive industry requiring huge investment and investment can be recovered fully by utilizing the capacity fully. Lesser percentage of charges from short term consumers will attract more short term customers and very less long term open access customers. When the short term customers quit from availing the transmission facility the investment will become stranded. This will lead to wide disparity between the charges for Long Term and Short Term consumers, which is similar to subsidizing and subsidized retail category of consumers.

5.14.4 The Commission fixes the rate for short-term open access customers at 25% of the rate for long-term open access customers **in line with the provisions in CERC's Regulations.**

## 5.15 TRANSMISSION AND DISTRIBUTION LOSS

5.15.1 TNEB in their petition had furnished the following percentage of transmission loss

S. No	Particulars	Actual for 2003-04	Actual for 2004-05	Estimate for 2005-06
1	400 KV / 230 KV / 110 KV	3.61	3.20	3.20
2.	66 KV / 33 KV	6.78	6.00	6.00

5.15.2 The overall transmission and distribution loss considered to arrive at the energy requirement was 18%. As the distribution loss would be lesser than the transmission loss the TNEB were asked to look into this and also to furnish loss levels at 22 KV and 11 KV distinctly.

5.15.3 The TNEB have subsequently furnished the loss levels as below

230 KV	110 KV	66 KV	33 KV	22 / 11 KV	LT
1.00%	1.50%	0.50%	1.50%	5.50%	8.00%

5.15.4 The stakeholders have raised the following objections / views:

- i. The losses for the various voltages are on higher side. Actual losses may be specified.
- ii. If the point of injection is on 230 / 110 / 66 / 33 KV and the point of drawal is on 22 / 11 KV, the transmission charges and wheeling charges shall be 50% of the charges at the respective voltage. If the wheeling of the power is at voltage of 33 KV and above, only transmission charges shall be applicable.
- iii. The total cost should be divided by the total units fed into the grid without deducting losses, as such losses are separately charged.

5.15.5 The TNEB furnished the following reply to the stakeholders

- i. The T & D loss of 18% is the lowest in the country.

- ii. The loss is computed as all the services are not metered. The consumption by unmetered Agricultural and Hut consumers are computed based on load and hours of supply. The consumption by metered services and the computed consumption by the unmetered services are deducted from the total input energy to arrive at the loss.
- iii. The Transmission and Wheeling charges are calculated taking into account the injection at higher voltage (i.e.) 230/110/66/33 KV and the drawal at various voltage levels. Therefore the question of charging 50% does not arise.
- iv. The transmission charges with applicable charges as fixed by the Commission may be applicable for injection and drawal at 33 KV and above.

5.15.6 The Commission accepts the percentage of losses furnished by the TNEB.

5.15.7 As far as the concessional charges demanded for those injecting power at higher voltage and drawing power at different voltage, it is to be noted that only the network cost is proposed to be recovered as transmission charges and the open access customers are required to compensate the line loss in kind as per the open access regulations.

5.15.8 There will be losses when point of drawal is different from point of injection irrespective of the voltage levels of injection and drawal. All the losses should be compensated so that that the transmission licensee / utility do not suffer. The open access customers are required to compensate the average transmission loss from the point of injection to the point of drawal. Accordingly the open access customers shall compensate the loss as detailed below;

Sl.No	Injection voltage	Drawal voltage	Trans. loss (in %)	Distn Loss (in %)	Total Loss (in %)
1	22 kV/ 11 kV	22 kV / 11 kV	5.00	5.00	10.00
2	33 kV	22 kV / 11 kV	2.25	5.00	7.25
3	110 kV	22 kV / 11 kv	1.25	5.00	6.25
4	110 kV	33 kV	1.25	2.25	3.50
5	110 kV	110 kV	1.25	1.25	2.50

6	230 kV	22 kV / 11 kV	0.5	5.00	5.50
7	230 kV	33 kV	0.50	2.25	2.75
8	230 kV	110 kV	0.50	1.25	1.75
9	230 kV	230 kV	0.50	0.50	1.00

## 5.16 VOLTAGE WISE COST

5.16.1 The TNEB have not furnished the voltage wise cost and have furnished only average cost at HT end and LT end as detailed below:

S. No	Particulars	2004-05	2005-06
1	Average cost at HT end Rs / unit	2.78	2.84
2	Average cost at LT end Rs / unit	3.62	3.68
3	Average cost of supply	3.37	3.43

5.16.2 The stakeholders have raised the following objections / views:

- i. While the losses have been separated for EHT and HT levels, the network costs have not been separated.
- ii. The network cost at voltage levels may be differentiated for determination of transmission cost.
- iii. There should be a separate transmission charges upto 110 KV and less than 110 KV transmission system based on transmission loss indicated in the petition.
- iv. The wheeling charges shall be commensurate with the distance from the point of injection and point of consumption through a natural path of transmission / power flow.
- v. The TNEB may be directed to take all efforts to separate the accounts of transmission and distribution activities and adopt MW – Mile method or contract path method within a time frame.

5.16.3 TNEB have replied that under the present accounting system it is not feasible to derive the network cost at different voltage levels. The TNEB will endeavor to furnish voltage wise cost in future.

## 5.17 AVERAGE RATE OF REALIZATION

5.17.1 The average rate of realization as per the TNERC's Tariff Order dated 15.03.2003 and the rate of realization for 2005-06 proposed by TNEB in their present petition are furnished below:

S. No	Consumer category	Rate of Realization as per Tariff Order (Rs/kwhr)	Rate of Realization as per present petition (Rs/kwhr)
1	HT – Industries	4.47	4.44
2	HT – Recognized Educational Institutions	4.31	4.38
3	HT – Commercial	6.21	6.22

5.17.2 The TNEB have stated that the changes in rate of realization are due to changes in demand.

5.17.3 The Commission accepts the rate of realization furnished by the TNEB.

## 5.18 CROSS SUBSIDY SURCHARGE

5.18.1 TNEB have proposed the following cross subsidy surcharge

S. No	Consumer category	Rate of Realization (Ps/kwhr)	Average cost of supply (Ps/kwhr)	Cross Subsidy Surcharge
1	HT – Industries	444.11	283.56	160.55
2	HT – Recognized Educational Institutions	438.65	283.56	155.09
3	HT – Commercial	621.81	283.56	338.25

5.18.2 The following views were expressed in the State Advisory Committee meeting and in Public hearing:

- i. Provision for cross subsidy surcharge is a built-in bias to prevent migration.
- ii. The cross subsidy surcharge can be fixed as 50% of the difference between the present tariff and embedded cost.
- iii. 25% of the difference in cost of realization and average cost of supply may be ordered as cross subsidy surcharge to encourage third party sale.
- iv. No proposal or time frame for eliminating the surcharge is indicated.

- v. When a consumer moves out of a licensee, the utility avoid the highest marginal cost. Therefore the loss of cross subsidy would be in relation to the difference between the highest marginal cost (plus the network cost) and realization from the class of consumers. This would be the compensatory realization for the distribution licensee.
- vi. Liability of cross subsidy surcharge on open access consumers who were never consumers of distribution licensee need to be addressed.

5.18.3 TNEB have responded as below:

- i. When HT industries and Commercial consumers migrate from the Board, the Board will lose cross subsidy.
- ii. The Act provides for elimination of cross subsidy surcharge over a period of time and the Commission has to decide on the quantum of cross subsidy surcharge.

5.18.4 Commission considered the following points:

- i. The proviso to sub section (2) of section 42 of the Electricity Act 2003, specifies that open access may be allowed before cross subsidies are eliminated, on payment of a surcharge in addition to the wheeling charges and such surcharge shall be utilized to meet the requirements of current level of cross subsidy.
- ii. It has also been provided that such surcharge and cross subsidy shall be progressively reduced and eliminated.
- iii. Accordingly, the surcharge shall be the difference between the tariff applicable to the relevant category of consumers and the cost of distribution licensee to supply electricity to the consumers of the applicable class.
- iv. In the National Tariff policy notified by the Government of India, the following provision has been made:

“In case of a consumer opting for open access, the distribution licensee could be in a position to discontinue purchase of power at the margin in the merit order. Accordingly, the cost of supply to the consumer for this purpose may be computed as the aggregate of (a) the weighted average power purchase cost (inclusive of fixed and variable charges) of top 5% power at the margin, **excluding liquid fuel based generation**, in the merit order approved by the SERC adjusted for the

average loss compensation of the relevant voltage level and (b) the distribution charge determined on the principles as laid down for intra-state transmission charges.

Surcharge formula:

$$S = T - \{C (1 + L/100) + D\}$$

Where

S is the surcharge

T is the Tariff payable by the relevant category of consumers

C is the Weighted average cost of power purchase of top 5% at the margin excluding liquid fuel based generation and renewable power

D is the Wheeling charge

L is the System Losses for the applicable voltage level, expressed as a percentage

5.18.5 The surcharge based on the above formula will be as below:

- i. Total energy requirement 53305 MU
- ii. 5% of the total energy 2665 MU
- iii. The merit order ranking is furnished below:

**Merit Order Ranking**

S.No	Particulars	Considered by TNERC						Ranking
		Units (MU)	Total VC	VC P/u	Total FC	Total OC	Total Cost	
1	<b>CGS</b>							
	NLC TS I	3124.67	54203.57	1.73	0.00	4355.02	58558.59	<b>10</b>
	NLC II Stage I	1299.23	15375.91	1.18	1404.58	470.40	17250.89	6
	NLC II Stage II	1925.21	28884.83	1.50	3014.25	2918.89	34817.97	<b>8</b>
	NLC TS I Expansion	1524.26	18750.14	1.23	12760.39	3044.79	34555.32	7
	NTPC SR	3697.31	33527.12	0.91	11479.44	195.14	45201.70	3
	NTPC SR III	967.56	10080.77	1.04	6343.67	312.30	16736.74	5
	NTPC ER	2499.00	10603.88	0.42	7556.03	-194.02	17965.89	1
	KAYAMKULAM	128.93	5296.59	<b>4.11</b>	11218.97	0.00	16515.56	<b>13</b>
	TALCHER	3954.76	30180.39	0.76	25249.24	3314.23	52115.40	2
	NVVN	13.67	613.63	4.49	65.63	0.00	679.26	NA
	MAPS	1044.98	20933.37	2.00	0.00	98.03	21031.40	NA
	KAIGA	1339.44	40342.05	3.01	0.00	0.00	40342.05	NA

	ABT	496.26	14356.98	2.89	0.00	0.00	14356.98	NA
	POWER GRID	0.00	0.00		30535.01	0.00	30535.01	
	SRLDC	0.00	0.00		161.92	0.00	161.92	
			0.00					
	Total CGS	22015.27	283149.23		109789.13	7886.32	400824.68	
2	<b>IPPs</b>							
	GMR	618.04	23630.24	3.82	16917.98	114.58	40662.80	LF
	Samalpatti	217.99	8336.04	3.82	10466.89	257.73	19060.66	LF
	PPN	244.01	10378.78	4.25	33004.00	0.00	43382.78	14
	Madurai	214.68	7944.07	3.70	10589.75	0.00	18533.82	LF
	ST_CMS	1499.91	23088.34	1.54	29697.00	0.00	52785.34	9
	ABAN	680.59	6682.26	0.98	6335.02	0.00	13017.28	4
	ARKAY	100.00	0.00		2320.00	0.00	2320.00	4
	Total IPP	3575.22	80059.73		109330.64	372.31	189762.68	
3	<b>Pvt. Windmill</b>	3497.00					112603.40	NA
4	<b>Captive</b>	729.00		3.01			21942.90	11
5	<b>Co-generation</b>	754.00		3.15			23751.00	12
6	Total Purchase ( 6 to 10)	30570.49					748884.66	

Note: **N.A. - Not applicable** LF - Liquid Fuel Generation

- iv. Purchase of power at the margin in the merit order excluding liquid fuel based generation and renewable power and the weighted average power cost are furnished below:

S. No	Station	Units purchased in MU	Total Cost Rs.in Lakhs	Cost (Rs. / unit)
1	P.P. Nallur	244.01	14430.75	5.914
2	Kayamkulam	128.93	6459.39	5.01
3	Captive	729	21942.90	3.01
4	Co-gen	754	23751	3.15
5	NLC TS I	809.06	13996.74	1.73
6	<b>Total</b>	<b>2665.00</b>	<b>80580.78</b>	<b>3.024</b>

Weighted Average power cost including Fixed Charges is Rs.3.02/- per unit.

- v. Weighted average power purchase cost adjusted for average loss compensation plus wheeling charge for injection and drawal at different voltage is as below:

Sl.No	Injection voltage	Drawal Voltage	Total Loss (in %)	Weighted average power purchase cost (paise /unit)
1	22 kV/ 11 kV	22 kV / 11 kV	10.00	302 (1+10.00/100) +14.74 = 346.94
2	33 kV	22 kV / 11 kV	7.25	302 (1+7.25/100) +14.74 = 338.64
3	110 kV	22 kV / 11 kv	6.25	302 (1+6.25/100) +14.74 = 335.62
4	110 kV	33 kV	3.50	302 (1+3.50/100) +14.74 = 327.31
5	110 kV	110 kV	2.50	302 (1+2.50/100) +14.74 = 324.29
6	230 kV	22 kV / 11 kV	5.50	302 (1+5.50/100) +14.74 = 333.35
7	230 kV	33 kV	2.75	302 (1+2.75/100) +14.74 = 325.05
8	230 kV	110 kV	1.75	302 (1+1.75/100) +14.74 = 322.03
9	230 kV	230 kV	1.00	302 (1+1.00/100) +14.74 = 319.76

- vi. The Commission fixes the surcharge payable by different category of open access customers for injection and drawal at different voltage level is as below:

Sl.No	Injection voltage	Drawal voltage	Weighted average power purchase cost (paise/unit)	Cross subsidy surcharge		
				Industries (RoR 444.11p/u)	Edu.intstn (RoR 438.65p/u)	Comml. (RoR 621.81p/u)
1	22 kV/ 11 kV	22 kV / 11 kV	346.94	97.17	91.71	274.87
2	33 kV	22 kV / 11 kV	338.64	105.47	100.01	283.17
3	110 kV	22 kV / 11 kv	335.62	108.49	103.03	286.19
4	110 kV	33 kV	327.31	116.8	111.34	294.5

5	110 kV	110 kV	324.29	119.82	114.36	297.52
6	230 kV	22 kV / 11 kV	333.35	110.76	105.3	288.46
7	230 kV	33 kV	325.05	119.06	113.6	296.76
8	230 kV	110 kV	322.03	122.08	116.62	299.78
9	230 kV	230 kV	319.76	124.35	118.89	302.05

5.18.6. The Act provides that the cross subsidy surcharge may be levied until such time the cross subsidies are not eliminated. Hence the Open Access customers who were not consumers of the Distribution Licensee are also liable to pay cross subsidy surcharge till the cross subsidies are eliminated.

#### **5.19 ADDITIONAL SURCHARGE**

5.19.1 Sub-section (4) of section 42 of the Electricity Act, stipulates that “Where the State Commission permits a consumer or class of consumers to receive supply of electricity from a consumer other than the distribution licensee of his area of supply, such consumer shall be liable to pay an additional surcharge on the charge of wheeling, as may be specified by the State Commission, to meet the fixed cost of such distribution licensee arising out of his obligation to supply”.

5.19.2 The TNEB have not come out with any definite proposal and have requested the Commission to determine additional surcharge on case to case basis based on the data provided by them. They have also discussed the following options said to be available for determination of additional surcharge

Option 1: Based on backup support to be provided by Utility

Option 2: Based on stranded costs of the utility

5.19.3 The stakeholders expressed the following views:

- i. Additional surcharge may be ordered as **nil**, as TNEB have no stranded capacity.
- ii. The additional surcharge cannot exceed wheeling charges as the additional surcharge is on wheeling charges.

- iii. The approach brought out in the draft National Tariff Policy may be adopted to determine additional surcharge.
- iv. Levy of additional surcharge would have to be viewed against the recovery from back up supply.
- v. Necessary mechanism of set off may be suggested to minimize the impact of additional surcharge both on the distribution licensee as well as on the open access customer.

5.19.4 TNEB in their response have stated that the open access regulation provides for additional surcharge and it cannot be eliminated since it is to compensate the stranded cost.

5.19.5 The National Tariff Policy para 8.5.4 stipulates that The additional surcharge for obligation to supply as per section 42 (4) of the Act should become applicable only if it is conclusively demonstrated that the obligation of a licensee, in terms of existing power purchase commitments, has been and continues to be stranded, or there is an unavoidable obligation and incidence to bear fixed costs consequent to such a contract.

5.19.6 At present there is deficit in the generation capacity available at the disposal of TNEB. The fact as to whether any contracted capacity is stranded or not can be conclusively demonstrated as and when open access is allowed and the capacity migrated could be ascertained. The Commission therefore decides that there is no charge towards additional surcharge for the present.

## **5.20 SCHEDULING AND SYSTEM OPERATION CHARGES**

5.20.1 TNEB in their petition have not included scheduling and system operation charges and reactive energy charges on the grounds that their accounting system does not have spilt up details to claim such charges. They have requested the Commission to fix appropriate charges for these activities.

5.20.2 The Commission in this regard has taken note of the charges specified by the Central Electricity Regulatory Commission and other Commissions and arrived at the rate.

5.20.3 The Commission fixes composite scheduling and system operating charges as below;

- i. Long-term open access customers – Rs.1000 per day or part of the day.
- ii. Short-term open access customers - Rs.500 per day / per transaction.
- iii. The above charges are payable to State Load Dispatch Centre.

## **5.21 REACTIVE ENERGY CHARGES**

- 5.21.1 i. The open access customer shall endeavor to minimize the reactive power drawal at an interchange point when the voltage at that point is below 95% of rated and shall not return reactive power supply when the voltage is above 105% rated.
- ii. As per regulation 62 (c) of the TNERC's Tariff regulations 2005, the reactive energy charges would be a variable charge reflecting voltage related drawal of Reactive Power and Reactive Power drawals by beneficiaries are to be priced as follows:-
- a. The beneficiary pays for reactive power drawal when voltage at the metering point is below 97%
  - b. The beneficiary gets paid for reactive power (return) supply when voltage is below 97%
  - c. The beneficiary gets paid for reactive power drawal when voltage is above 103%
  - d. The beneficiary pays for reactive power (return) supply when voltage is above 103%
  - e. The charges for reactive energy shall be as decided by the Commission.
- 5.21.2 The Commission fixes the reactive energy charges as 6 paise / KVARh, taking into consideration the rates fixed by CERC and other State Commissions.
- 5.21.3 The consumers, who are also open access customers, shall maintain average power factor of not less than 0.90 lag. Such consumers maintaining power factor less than 0.90 lag shall be liable to pay compensation charges and the consumers maintaining power factor more than 0.95 lag shall be given incentive as per the tariff order in force.

## 5.22 GRID AVAILABILITY CHARGES

5.22.1 As per Regulation 9 (7) of the TNERC Intra-State open access regulations 2005, the distribution licensee is entitled to collect grid availability charges for providing standby arrangements (backup supply from grid) to open access customers in the following cases.

- i. In case of outages of generator supplying to a consumer on open access, and when the generator who happens to be an open access customer is permitted to avail start up power from the grid at the charges to be determined by the Commission.
- ii. When the scheduled generation is not maintained and when the drawal by the consumer is in excess of the schedule.

5.22.2 The TNEB have not submitted any proposal for determining grid support charges.

### 5.22.3 **Outage of Generator conditions and providing Start up Power:**

Para 8.5.6 of the National Tariff policy stipulates that in case of outages of generator supplying to a consumer on open access, standby arrangements should be provided by the licensee on payment of tariff for **temporary connection to that consumer category as specified by the Appropriate Commission**. The Commission has not specified any tariff for temporary supply to HT categories. However, it has been specified in the tariff order in force from 16-3-2003 , that, the industries requiring HT supply during construction period shall be charged under HT tariff III ( Applicable to commercial establishment and other categories of consumers not covered under HT tariff – IA, IIA, IIB and V) Accordingly, in case of outages of generator supplying to a consumer on open access, standby arrangements should be provided by the licensee to meet the demand of the open access beneficiary, on payment of consumption charges (energy charges plus the energy equated demand charges) applicable to HT tariff III , which is presently 621.81 paise per unit. Similarly, in case of drawal by

the generator for start up power from the Licensee, the generator shall be permitted to draw the start up power on payment of consumption charges (energy charges plus the energy equated demand charges) applicable to HT tariff III, which is presently 621.81 paise per unit.

**5.22.4 When the scheduled generation is not maintained and / or when the drawal by the consumer is in excess of the schedule.**

The Open Access regulations specified by the Commission stipulates that *“the applicable tariff of that consumer category shall be allowed as grid support charges till ABT regime is implemented and as and when ABT regime is implemented the grid availability charges shall be UI charges or the tariff applicable for that particular category whichever is higher.”*

In this context, the applicable tariff as referred above, consist of energy charges and demand charges.

**a) Energy Charges applicable:** When the generator is synchronized with the Grid, energy charges shall be payable by the open access customer, for the units supplied by the Distribution Licensee (i.e. balance units arrived at after subtracting the units supplied by the generator from the total consumption of the user during the billing month) at the applicable rate for that category. The time of day consumption (TOD) shall be charged for the nett consumption only (deducting the generated energy from the energy consumed during the respective time slots).

**b) Demand charges applicable:** In addition to energy charges stipulated above, the open access customer shall pay applicable demand charges as detailed below:

There are 2880 time blocks of 15 minutes interval in a billing month. It is not feasible to segregate precisely the quantum of demand supplied in each time block in the billing month to the open access user by the generator and by the licensee distinctly. This segregation may be computed by matching the demand recorded in each time block at the generator end (A) with the demand

recorded in the corresponding time block at the open access users end (B) then

Case 1: If (B) is lesser than (A), it means there is no supply of demand by the licensee to the open access user.

Case 2: If (B) is greater than (A), it means that there is supply of demand by the licensee in that respective time block.

As per the tariff order, a demand charge in a billing month by any HT consumer is 90% of sanctioned demand or recorded demand whichever is higher. As the demand is recorded at every 15 minutes time block, the recorded demand will show the maximum demand recorded in any of the 15 minutes time block in that billing period of one month.

The probability of occurrence of case 1 is zero and the probability of licensee supplying the demand in any one of the time blocks in a billing month as in case 2 is 100 percent. In such a scenario, whether the licensee is entitled to receive the demand charges in full, even though the generator is also injecting the demand into the grid continuously, needs to be addressed. It is no doubt that, all the fluctuation in the generator end and user end is met by the licensee. However, the percentage of the demand, injected by generator is also to be taken for consideration and to that extent, the demand charges receivable by the Licensee is to be restricted.

Till a mechanism is put in place to ascertain the relation between the demand generated in each of the 2880 fifteen minutes time blocks and the demand recorded at the consumer end in the related time blocks, a reasonable approximation has to be followed to arrive at the demand supplied by the generator. Since the variation in meeting the demand of the open access customer by the two parties involved, is possible in the full range of 0 to 100 %

and only the actual energy generated is available at the generation end, it is considered prudent to convert 51 % of the energy generated for the open access user, into an equated demand with reasonable approximations as the deemed demand supplied by the generator. In line with such an approximation, a deemed demand concept is proposed.

The demand charges for a open access user shall, accordingly, be such percentage as specified for the “**deemed demand**” supplied by the generator plus 100% of the applicable demand charges for that category of Open access user for the balance demand supplied by the Distribution Licensee.( i.e. the difference between the maximum demand recorded and the deemed demand subject to the tariff order issued then and there on demand charges).

**Deemed demand charges:** The transmission losses in each voltage play a vital role in deciding the deemed demand. The loss levels at each voltage are given above. The loss factor depends on the voltage at which the power is injected and the voltage at which the open access user draws. Since various combinations are possible, a simple methodology is adopted to approximate the loss factor under various scenarios. Even though the power, in an interconnected grid, flows by displacement and does not actually traverse the whole distance from point of injection to the point of travel, the accepted principle, in general is, that the loss estimation shall be based on the theoretical route of flow. For example, even though the generated power is injected by a generator at 11 kV and is also drawn at the same voltage of 11 kV at a distant place , the power is supposed to have been transformed through the higher voltages of 33, 110,230 kV etc., again transformed into the lower levels and reach the point of drawal. To emulate such scenarios it is assumed that the said power, flows in an upward and downward direction as indicated below, through various voltage transformation levels and undergoes 50 % of the loss, in each direction, in that level.

Injection voltage level and 50% of the loss		Drawal voltage level and 50% of the loss	
5	230 kV ( 0.5 %)	230 kV ( 0.5 %)	6
4	110 kV ( 0.75 %)	110 kV ( 0.75 %)	7
3	66 kV ( 0.25 %)	66 kV ( 0.25 %)	8
2	33 kV ( 0.75 %)	33 kV ( 0.75 %)	9
1	22 kV/11 kV ( 2.75 %)	22 kV/11 kV ( 2.75 %)	10

The loss factor in each level is estimated to be as follows:

Injection voltage / box no	Drawal voltage / box no	Route	Total loss	Loss factor = (100-% loss) /100
22 kV/ 11 kV ( 1 )	22 kV / 11 kV (10 )	1 to 5 & 6 to 10	(2.75+0.75 +0.25+0.75+0.5) & (0.5+0.75+0.25+0.75+2.75) = 10.00 %	0.90
33 kV ( 2)	22 kV / 11 kV (10 )	2 to 5 & 6 to 10	(+0.75 +0.25+0.75+0.5) & (0.5+0.75+0.25+0.75+2.75) = 7.25 %	0.9275
110 kV (4)	22 kV / 11 kV (10 )	4 to 5 & 6 to 10	(0.75+0.5) & (0.5+0.75+0.25+0.75+2.75) = 6.25 %	0.9375
110 kV (4)	33 kV ( 9 )	4 to 5 & 6 to 9	(0.75+0.5) & (0.5+0.75+0.25+0.75) = 3.50 %	0.965
110 kV (4)	110 kV (7)	4 to 5 & 6 to 7	(0.75+0.5) & (0.5+0.75) = 2.50 %	0.975
230 kV (5)	22 kV / 11 kV (10 )	5 & 6 to 10	(0.5) & (0.5+0.75+0.25+0.75+2.75) = 5.5 %	0.945
230 kV (5)	33 kV ( 9 )	5 & 6 to 9	(0.5) & (0.5+0.75+0.25+0.75) = 2.75 %	0.9725
230 kV (5)	110 kV ( 7)	5 & 6 to 7	( 0.5 %) + ( 0.5 %+ 0.75 %) = 1.75 %	0.9825
230 kV (5)	230 kV (6)	5 & 6	(0.5 % + 0.5 %) = 1.0 %	0.99

**c). Deemed Demand Charges:** The percentage of deemed demand supplied by the Licensee, for typical cases of injection and drawal and based on the loss factors as above, is arrived at as below:

Cases	Loss factor { (100 - %loss)/100}	% of deemed units supplied at generator end { 51 / Loss factor}	Deemed demand supplied by gnerator {(3) / pf}	% of deemed demand supplied by the licensee {100 - (4)}
(1)	(2)	(3)	(4)	(5)
Injection at 11/22 KV and drawal at 11/22 KV	0.90	51 / 0.90 = 56.667	56.667/0.9 = 62.96	100 - 62.96 = 37.04
Injection at 33 KV and drawal at 22/11 KV	0.9275	51 / 0.9275 = 54.987	54.987 / 0.9 = 61.10	100 - 61.10 = 38.90
Injection at 110 KV and drawal at 22/11 KV	0.9375	51 / 0.9375 = 54.40	54.40/ 0.9 = 60.44	100 - 60.44 = 39.56
Injection at 110 KV and drawal at 33 KV	0.965	51 / 0.965 = 52.850	52.850/ 0.9 = 58.72	100 - 58.72 = 41.28
Injection at 110 KV and drawal at 110 KV	0.975	51 / 0.975 = 52.308	52.308/ 0.9 = 58.12	100 - 58.12 = 41.88
Injection at 230 KV and drawal at 22/11 KV	0.945	51 / 0.945 = 53.968	53.968 / 0.9 = 59.96	100 - 59.96 = 40.04
Injection at 230 KV and drawal at 33 KV	0.9725	51 / 0.9725 = 52.442	52.442 / 0.9 = 58.27	100 - 58.27 = 41.73
Injection at 230 KV and drawal at 110 KV	0.9825	51 / 0.9825 = 51.908	51.908 / 0.9 = 57.68	100 - 57.68 = 42.32
Injection at 230 KV and drawal at 230 KV	0.99	51 / 0.99 = 51.515	51.515 / 0.9 = 57.24	100 - 57.24 = 42.76

The billing of monthly consumption is segregated into two parts:

- (i) Quantum of energy supplied by the generator at open access user end and;
- (ii) Quantum of energy supplied by Distribution licensee to open access user.

The demand charges in a billing month are to be arrived at as detailed below:

- (a) The maximum demand recorded in a month shall be segregated into demand supplied by the generator and the demand supplied by the licensee taking into account the actual energy consumed in units, the actual energy in units supplied by the generator and average power factor maintained at the consumption point in the billing month.
- (b) The demand charges payable by the open access customer will be calculated as below:

Case 1:

Injection Voltage 110 kV

Drawal Voltage 33 kV

Percentage of deemed demand as per the table = 41.28

Sanction Demand 1000 Kva

Recorded Demand 855 Kva

Units consumed 650000 units

Power factor 0.95

Units supplied by generator (at consumption point) : 500000 units

Demand supplied by generator =  $500000/720*0.95 = 659.72$  Kva

Demand supplied by the licensee =  $855-659.72 = 195.28$  Kva

Billable demand –supplied by licensee =  $900 - 659.72 = 240.28$   
(at 90% of the sanctioned demand)

Demand charges payable =  $(659.72*0.4128*300)+(240.28*300)$   
=  $81699.72 + 72084 = 153783.72$

Case 2:

Injection Voltage 230 kV

Drawal Voltage 22 / 11 kV

Percentage of deemed demand as per the table above = 40.04

Sanction Demand 1000 Kva

Recorded Demand 950 Kva

Units consumed 700000 units

Power factor 0.92

Units supplied by generator (at consumption point): 700000 units

Demand supplied by generator =  $700000/720*0.92 = 894.44$  Kva

Demand supplied by the licensee =  $950-894.44 = 55.56$  Kva

Billable demand –supplied by licensee =  $950 - 894.44 = 55.56$  Kva

Demand charges payable =  $(894.44*0.4004*300)+(55.56*300)$   
=  $107440.13 + 16668 = 124108.13$

## **5.23 RESTORATION CHARGES**

- 5.23.1 Sub-regulation (8) of regulation 9 of Intra State open access regulations 2005 stipulates that any default in payment of various charges as specified under sub-regulations (1) to (7) within the time stipulated by the Commission will automatically result in the discontinuation of the open access to the customer and restoration of such discontinuance shall be subject to the payment of restoration charges and other restoration conditions determined by the Commission separately and from time to time.
- 5.23.2 The charges for reconnection of HT services specified by the Commission in its order on Non-tariff related miscellaneous charges shall be the restoration charges.
- 5.23.3 The conditions in Tamil Nadu Electricity Supply code for restoration of HT services disconnected for non-payment of energy charges shall apply for restoration of open access which stands discontinued for non payment of various open access charges.

## **5.24 APPLICABILITY OF THE ORDER**

- 5.24.1 The order will be applicable to all the open access customers covered under the TNERC intra state open access regulation 2005 which has taken effect from 3-8-2005.
- Provided that the existing open access customers shall continue to be covered under the agreement for the balance period remaining after 3-8-2005, unless it is mutually agreed by both parties to come under this Order at an earlier date. . . . .
- Wherever period of the agreement is not specified (open ended) in the agreement, such consumer may opt to come under this order and the Licensee shall agree for the same.
- 5.24.2 The orders will take effect from the date of this order and till such time the charges are revised. Further revision shall normally be along with the regular tariff petition by the Licensee. The Licensee may also approach the Commission for revision of these charges by filing a distinct revision petition without linkage to the regular tariff revision. Further the Commission reserves the right to initiate suo-motu procedure for revision of the charges.

## 6.0 SCHEDULE OF CHARGES

No	Details	Charges																																																												
1	Transmission Charges (Rs/MW/day) a. Long-term open access customer b. Short-term open access customer	2781.00 695.25																																																												
2	Wheeling Charges (Ps / Unit)	14.74																																																												
3	Losses to be paid in kind  <table border="1" data-bbox="289 600 1027 953"> <thead> <tr> <th>Sl.No</th> <th>Injection Voltage</th> <th>Drawal Voltage</th> </tr> </thead> <tbody> <tr><td>1</td><td>22 kV / 11kV</td><td>22 kV / 11kV</td></tr> <tr><td>2</td><td>33 kV</td><td>22 kV / 11kV</td></tr> <tr><td>3</td><td>110 kV</td><td>22 kV / 11kV</td></tr> <tr><td>4</td><td>110 kV</td><td>33 kV</td></tr> <tr><td>5</td><td>110 kV</td><td>110 kV</td></tr> <tr><td>6</td><td>230 kV</td><td>22 kV / 11 kV</td></tr> <tr><td>7</td><td>230 kV</td><td>33 kV</td></tr> <tr><td>8</td><td>230 kV</td><td>110 kV</td></tr> <tr><td>9</td><td>230 kV</td><td>230 kV</td></tr> </tbody> </table>	Sl.No	Injection Voltage	Drawal Voltage	1	22 kV / 11kV	22 kV / 11kV	2	33 kV	22 kV / 11kV	3	110 kV	22 kV / 11kV	4	110 kV	33 kV	5	110 kV	110 kV	6	230 kV	22 kV / 11 kV	7	230 kV	33 kV	8	230 kV	110 kV	9	230 kV	230 kV	<table border="1" data-bbox="1057 606 1425 953"> <thead> <tr> <th>Trans.</th> <th>Distn</th> <th>Total</th> </tr> </thead> <tbody> <tr><td>5.00</td><td>5.00</td><td>10.00</td></tr> <tr><td>2.25</td><td>5.00</td><td>7.25</td></tr> <tr><td>1.25</td><td>5.00</td><td>6.25</td></tr> <tr><td>1.25</td><td>2.25</td><td>3.50</td></tr> <tr><td>1.25</td><td>1.25</td><td>2.50</td></tr> <tr><td>0.50</td><td>5.00</td><td>5.50</td></tr> <tr><td>0.50</td><td>2.25</td><td>2.75</td></tr> <tr><td>0.50</td><td>1.25</td><td>1.75</td></tr> <tr><td>0.50</td><td>0.50</td><td>1.00</td></tr> </tbody> </table>	Trans.	Distn	Total	5.00	5.00	10.00	2.25	5.00	7.25	1.25	5.00	6.25	1.25	2.25	3.50	1.25	1.25	2.50	0.50	5.00	5.50	0.50	2.25	2.75	0.50	1.25	1.75	0.50	0.50	1.00
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3	110 kV	22 kV / 11kV																																																												
4	110 kV	33 kV																																																												
5	110 kV	110 kV																																																												
6	230 kV	22 kV / 11 kV																																																												
7	230 kV	33 kV																																																												
8	230 kV	110 kV																																																												
9	230 kV	230 kV																																																												
Indus.	Edu.Instrn.	Comml																																																												
97.17	91.71	274.87																																																												
105.47	100.01	283.17																																																												
108.49	103.03	286.19																																																												
116.80	111.34	294.50																																																												
119.82	114.36	297.52																																																												
110.76	105.30	288.46																																																												
119.06	113.60	296.76																																																												
122.08	116.62	299.78																																																												
124.35	118.89	302.05																																																												
6	Additional Surcharge	Nil for the present																																																												
7	Grid availability charge (Ps / unit) <b><u>At the time of outages</u></b> a. charges for backup power during the outage of generator – payable by open access customer b. charges payable by generator for startup power c. When scheduled generation is not maintained by the generator and / or when the drawal by the consumer is in excess of schedule	621.81 ps / unit  621.81 ps / unit  1. Energy charges at appropriate tariff for energy supplied by the licensee.																																																												

		<p>2.Demand charges :</p> <p>a) for the energy supplied by the generator supplying to the open access customer – deemed demand charges as per para 5.22</p> <p>b) for the energy supplied by the licensee – demand charges as per the tariff order.</p>
8	Reactive Energy Charges	<p>a) The beneficiary shall pay for reactive power drawal when voltage at the metering point is below 97%</p> <p>b).The beneficiary shall get paid for reactive power (return) supply when voltage is below 97%</p> <p>c).The beneficiary shall get paid for reactive power drawal when voltage is above 103%</p> <p>d).The beneficiary shall pay for reactive power (return) supply when voltage is above 103%</p> <p>e).The reactive energy charges shall be 6 paise / KVArh</p> <p>f).The consumers who are open access customers maintaining power factor less than 0.90 lag shall be liable to pay compensation charges and such consumers maintaining power factor of more than 0.95 lag shall be allowed incentive as per the tariff order in force.</p>
9	Restoration charges	The reconnection charges specified in the order on Non-tariff related Miscellaneous charges is applicable for restoration of Open Access.

## 7.0 DIRECTIVES

7.1 The TNEB have stated that their system of accounting of revenue and expenses is not designed to meet the requirement of open access regime.

- i. TNEB have already been directed to introduce the concept of profit centers / strategic business units for better accountability before assessing the feasibility of

- unbundling / re-structuring. At present, TNEB have been accounting their assets only according to the function wise classification and accounts codes therefor.
- ii. In the changing scenario, it is imperative that the function wise accounting is maintained as a whole, to avoid various assumptions when called for to furnish function wise information for regulatory purposes. The TNEB is therefore directed re-design the accounting system and furnish function wise accounts for 2005 – 06 by September 2006. Apart from redesigning the accounting system, function wise further sub-classification into the required voltage wise classification also is to be made. As directed earlier arriving the line loss at various voltage levels through proper metering system for accurate measurement of energy is to be made.
- 7.2 The value of assets furnished in the Balance Sheets requires revision as transmission assets are found to be exhibited as distribution assets. The total assets shall be reconciled with the assets furnished in the Balance Sheets of the circles and correct assets value furnished in the annual accounts for 2005 – 06.
- 7.3 The capacity of various segments of transmission lines may be arrived at and furnished, so that, transmission charges can also be thought of under MW – Mile method. Required studies may be undertaken. TNEB shall endeavor to maintain separate function wise accounts for transmission system and furnish the revenue requirement line wise, voltage wise, bay wise and for load dispatch centre wise.
- 7.4 The Capital Work in Progress as on 31.03.2005 was Rs.2441.13 crores. The transmission and distribution assets are mostly targeted for completion and commissioning within the same year. Hence, the expenditure on work in progress outstanding must include the cost of assets already put into beneficial use and is attracting interest on funds used during construction stage (IDC) resulting in unjustified value accretion to the assets and denial of depreciation. The TNEB is directed to identify such capital expenditure and transfer to fixed assets account within six months.
- 7.5 For subsequent petitions the depreciation has to be calculated and furnished in the formats prescribed in the Commission's tariff Regulations.
- 7.6 Similarly the TNEB shall ensure that the statement of capital expenditure being annexed to the Statement 7 of the Balance Sheet contain details of assets in conformity with the classification of assets as per the depreciation schedule in tariff Regulations.

7.7 The levy of Excise Duty on LSHS results in increased power purchase and generation costs. The matter may be taken up with the Government of India through Government of Tamil Nadu for grant of exemption / concession

7.8 The Consumption of coal and oil per unit has increased considerably in TTPS, resulting in increased cost of fuel. The specific consumption in TTPS was in the order of 0.63 kg/kwhr while the specific consumption of MTPS and NCTPS were in the order of 0.74 /0.75. With the mix of ECL coal with MCL coal in MTPS and NCTPS the specific consumption of coal in these stations have been reduced to the order of 0.61 while the specific consumption of coal in TTPS has been increased to 0.74 kg/kwhr. TNEB is directed to examine, take appropriate action to reduce specific consumption of coal / oil and send a report to the Commission before 30.09.2006.

***By order of the Commission***

***R.Balasubramanian  
Secretary***

### **ANEEXURE I**

#### **List of Stakeholders who have submitted written comments / objections:**

1. M/s. Kaveri Gas Power Ltd
2. M/s. Tamil Nadu Power Producers Association
3. M/s Kamachi Sponge and Power Corporation Ltd
4. M/s Coromandal Electric Company Ltd
5. Southern Railway
6. M/s. Saheli Exports Pvt. Ltd
7. M/s. India Cements Ltd

### **ANNEXURE II**

#### **List of Stakeholders who presented their views in the Public hearing on 23.12.2005**

1. Thiru. Arvind Gupta of Tamil Nadu Power Producers Association
2. Thiru. Chandrasekar of the India Cements Ltd.