

BEFORE THE HONOURABLE TAMIL NADU ELECTRICITY REGULATORY COMMISSION

Filing No. _____

Case No. _____ **TP No. 1 of 2011**

1. **IN THE MATTER OF:** Application for preliminary true-up and approval of ARR for the 2010-11 and approval of ARR for the 2011-12 and revision of tariff and approval of ARR for the 2012-13 as per Regulations 5 & 6 of TNERC (Terms and Conditions for Determination of Tariff) Regulations 2005 with other guidelines and directions issued by the Tamil Nadu Electricity Regulatory Commission [“Hon. Commission”] from time to time and under Part VII (Section 61 to Section 64) of the Electricity Act, 2003 read with the relevant Guidelines.

Tamilnadu Generation and Distribution Corporation Ltd.,

No.144, Anna Salai,

Chennai-2.

.....Petitioner

--Nil--

.....Respondent

the petitioner named above respectively showeth under:

1. Tamil Nadu Electricity Board, was a State Electricity Board constituted under section 5 of the Electricity (Supply) Act, 1948 and was in the business of Generation, Transmission and Distribution of Electricity in the State of Tamil Nadu.
2. TNEB was restructured into TNEB Ltd and two subsidiary companies viz. Tamil Nadu Generation and Distribution Corporation Ltd and Tamil Nadu Transmission Corporation Ltd.

3. Tamilnadu Generation and Distribution Corporation Ltd., (TANGEDCO) was incorporated on 01.12.2009 and the Certificate for commencement of business was obtained on 16.03.2010.

4. The Government vide G.O.(Ms.) No.100, Energy (B2) department, dt 19.10.2010 has issued Tamil Nadu Electricity (Reorganisation and Reforms) Transfer Scheme, 2010 for the purpose of transfer and vesting of property, rights and liabilities of the Tamil Nadu Electricity Board in the State Government and re-vesting thereof by the State Government into corporate entities and also for the transfer of personnel of the Tamil Nadu Electricity Board to corporate entities and for determining the terms and conditions on which such transfer and vesting will be made. The opening balances of assets and liabilities are transferred based on the 2008-09 un-audited balance, which was the latest available data at that time. TANGEDCO started functioning independently from 1.11.2010 onwards.

5. As per clause 9(1) of the transfer scheme the assets transfer is provisional for a period of one year and employees transfer is provisional for a period of three years from the effective date of transfer, i.e. 1.11.2010. The Government has been addressed for one more year extension i.e. up to 31.10.2012 for finalizing asset transfer, for which the Government notification is expected shortly.

6. This application for approval of Aggregate Revenue Requirement (ARR) for the year 2010-11 to 2012-13 under Multi year Tariff and approval of measures proposed to bridge the gap between ARR and the Expected Revenue from Charges, is being filed before the Honorable Tamil Nadu Electricity Regulatory Commission, hereinafter referred to as Hon'ble Commission (or TNERC or Commission), in accordance with the provisions of the Electricity Act, 2003. As per Proviso of Section 61 (Part – VII) of the Electricity Act, 2003, this application has been prepared in accordance with the relevant provisions of TNERC (Terms and Conditions for Determination of Tariff) Regulations 2005 and proposal for

amendments in the relevant provisions of TNERC (Terms and Conditions for Determination of Tariff) Regulations 2005 are also submitted.

7. The Board requests that the tariffs be made effective from **1-4-2012 or earlier.**

Need for tariff revision

1. Since the last partial revision from 01.08.2010, the Board has witnessed substantial increase in its operational costs on account of increase in its cost of inputs, production cost, wages-salaries of employees as well as the inflationary conditions.
2. The existing tariff based on the latest estimate of energy sold for the year , 2011-12 and 2012-13 would recover only Rs.24187.51 Crores, and Rs.26676.33 Crores including tariff subsidy amount of Rs. 2071.41 Crs and Rs.2234.77 Crs respectively. Apart from this, an amount of Rs.971.86 Crores, Rs.861.84 Crores are expected as miscellaneous receipt against the total annual revenue requirement of Rs.39655.90 Crores, and Rs.42085.17 Crores for 2011-12 & 2012-13 for all the activities of TANGEDCO. A gap of Rs.14496.53 Crores & Rs.14547.00 Crores for the year 2011-12 & 2012-13 for the activities of TANGEDCO arises. Hence, the same is proposed to be partially covered through the revision for the year 2012-13 in the tariffs. The summary of Annual Revenue Requirement are furnished below:

**Summary of Tariff proposal
Rs. Lakhs**

SI.No.	Particulars	Previous Year (Audited)	Previous Year (Preliminary)	Current Year	Ensuing Year
		2009-10	2010-11	2011-12	2012-13
1	Expenses in respect of Generation	567537	611778	746651	1020674
2	Expenses in respect of Distribution	2146292	2468954	2958147	2909660
3	Annual Transmission Charges payable to TANTRANSKO	197054	233290	260793	278183
4	Aggregate Revenue Requirement	2910883	3314022	3965590	4208517
5	Less: (i) Revenue from Sale of power at Existing Tariff including Tariff Subsidy	1796312	2046901	2418751	2667633
6	(ii) Non Tariff Revenue	44011	52204	62412	74648
7	(iii) Other Income	26959	27530	28906	5668
8	(iii) Other Income for Generation	6973	6971	5868	5868
9	(iii) Other Income for trading	7164	7116		
10	Balance ARR proposed to be met with new tariff.	1029464	1173301	1449653	1454700

3. The increase in the expenditure has arisen on account of the increase in the fuel cost, cost of other inputs, and, overall cost of production, increase in wages & salaries of employees as submitted before. Increased power purchase is anticipated due to increasing demand, existing gaps in demand & supply etc. thus leading to heavy dependence on purchase of costly power.
4. The TANGEDCO has drawn up a detailed investment and capital expenditure programs to augment the generation capacities and also to strengthen the transmission & distribution systems with the aim to provide efficient service to the consumers. Any project expansion and improvement of Transmission & Distribution (T&D) Network has to be borne out of internal generation of resources. However, in the absence of revenue surplus, this amount can be raised only from the debt market. This has resulted in increase in the interest and finance charges on the borrowing to fund these expenditures. The Board is also undertaking R&M of its old generating stations, which would lead to extension of life and improvement of the Plant Load Factor (PLF). All these efforts, would ultimately result in enhanced availability of power at lower cost to the consumer. As submitted earlier the TANGEDCO has drawn up definite plans & programmes to add additional generation capacities. During the year 2011-12, an additional capacity of 9 MW in Periyar vaigai II to IV, and 30 MW in Bhavani Kattalai Barrage – III and 10 MW in Bhavani Kattalai Barrage –II and 600 MW in North Chennai TPS stage-2(Unit-1) and a capacity 600 MW in Mettur TPS Stage-3 and a capacity of 694 MW in NTPC-TNEB at Vallur

stage I totaling 1943 MW is expected to be added. During the year 2012-13, further an additional of 10 MW in Bhavani Barrages – I and 183 MW in 12 sugar Mills, 600 MW in North Chennai TPS stage -2 (Unit-2), 347 MW in NTPC-TNEB at Vallur stage II and 387 MW in NLC-TNEB at Tuticorin totaling 1527 MW will be added. In view of the envisaged capacity addition , it is necessary that the Board should have internal resources to meet the expenditures.

5. Till date TANGEDCO is undertaking various initiatives aimed at systematic improvements. In this regard, the Board has proposed various schemes for implementation of the Restructured Accelerated Power Development and Reform Program (RAPDRP). TANGEDCO is to implement R-APDRP to improve consumer satisfaction by establishing quality, reliable and stable power supply. This can be achieved by establishing IT based measuring system and strengthening of distribution networks aiming at accounting the entire unaccounted for power and reduction in T&D losses.
6. The TANGEDCO has taken efforts to correct the imbalances in the tariff structure by proposing merger of slabs in different categories of LT consumers. This merger of slab will lead to simplicity, operational convenience and will avoid the misuse of concessional slab tariff by the affluent consumers by getting more services for same purpose.
7. In this tariff proposal, substantial revision of tariff LT consumers under I-A (Domestic) (consumption below 600 units), I-B (hut), II-A (Street light &

water works), II-C (places of worship), IIIA (2) (Power loom weavers) and IV(Agricultural consumers) for whom tariff has not been revised for the past 8 years (from the year 2003) with proper tariff increase for other LT consumers. Further, due to single higher tariff slab for predominately domestic consumers under LT Tariff IC (bulk supply), and highest tariff (Rs 10.50/ unit) in LT tariff VI (Temporary supply), tariff revision for these category is not proposed.

8. At present private educational institutions, cinema theatres and cinema studios are charged under LT Tariff IIB (2). Now, new tariff rate for cinema theatres and cinema studios under LT Tariff IIB (2) higher than private educational institutions of this category is proposed in this petition.
9. It is proposed to introduce separate tariff for LT CT services with higher fixed charges, considering the cost involved for the development of their infrastructure facilities and accordingly the tariff rates for the HT services, LT services , LT CT has been progressively increased considering their cost to serve and infrastructure cost .
10. In case of HT consumers, uniform demand charge and appropriate tariff increase for all categories of HT consumers are proposed and after proposed tariff revision all categories of HT consumers except HT commercial and HT lift irrigation will be plus or minus of the 20 percent of average cost of supply.
11. The TANGEDCO is required to invest money for improvement of infrastructure network on transformers, cables, lines etc. in order to distribute

more power for meeting the increasing demand of the consumers. The Board also has to replace the worn out assets, which have become unserviceable due to wear and tear on account of serving for a long period of time. The Board also has to invest money to introduce latest technology in operation and maintenance of generating stations, in maintenance of substations, computerisation of data, billing, accounting etc. Hence the Board has to generate adequate internal resources to meet the above capital expenditure as the Board's borrowing capacity has been eroded due to consistent losses incurred during the past years. Thus the appropriate tariff increase would go a long way in enabling the Board to carry out its mandated responsibilities to provide quality service to its consumers.

12. Also due to increase in the investment in capital expenditure programme on Distribution and Generation etc. the financial assistance presently being provided by the State Government is not sufficient. Consequently, the TANGEDCO has to borrow from the market at high costs. Even TANGEDCO is unable to raise the funds through external lending institutions due to huge borrowing and accumulated losses. Hence the TANGDCO would like to submit that the proposed tariff revision is inevitable to ensure its financial stability.

Revenue – Expenditure Gap

The estimated expenditure - recovery gap for FY 2011-12 & 2012-13 as detailed below:

Particulars	Financial Year 2011-12 (Rs. Cr)	Financial Year 2012-13 (Rs. Cr)
Total operating expenses	39655.90	42085.17
Less :		
Miscellaneous Receipt	971.86	861.84
Tariff and other subsidies received from GOTN	2071.41	2234.77
Net Revenue Requirement	36612.63	38988.56
Revenue expected to be billed from the Existing tariffs of TNEB	22116.10	24441.56
Deficit <u>without</u> tariff revision	14496.53	14547.00

13. The TANGEDCO has provided the detailed analysis of income & expenditures from the last audited financial year 2009-10 to the financial year 2012-13. The analysis for FY 2010-11 is based on the preliminary Annual Statement of Accounts. The analysis for FY 2011-12 and 2012-13 is based on the projections. The TANGEDCO has proposed to treat the estimated accumulated shortfall (un-recovered revenue gap) for the year 2010-11 and 2011-12 as "Regulatory Assets". The TANGEDCO may be allowed to recover this un-recovered shortfall from the consumers in future years in a phased manner. This will enable the board in recovering the "already incurred legitimate cost" without imposing a tariff shock on its consumers, by making recovery to be spread over five financial years. The detailed calculation is provided as a part of this petition.

14. The following Sections in the Tariff application detail the various component of tariff determination exercise for the ensuing year FY 2010-11 to 2012-13

Section 1	Overview of TANGEDCO
Section 2	Action taken by TANGEDCO on Commission's directives
Section 3	Performance analysis
Section 4	Sale of Power for various consumer categories
Section 5	Projection of generation quantum and fuel cost
Section 6	Projection of Power Purchase quantum and cost
Section 7	The Energy balance and the measures being proposed by the Board for system improvement.
Section 8	Determination of annual revenue requirement
Section 9	Tariff subsidy
Section 10	Total revenue requirement and need for tariff increase
Section 11	Proposed tariff revision for various consumer categories
Annexure 1	ARR – Formats prescribed by the Hon'ble Commission

Prayer

15. The TANGEDCO requests the Hon'ble Commission that

- The accompanying ARR /Expected Revenue from Charges for the financial year 2010-11 to 2011-12 may kindly be approved.
- The accompanying ARR and tariff revision proposal to bridge the revenue gap for the year 2012-13 be accepted and accordingly an order may be issued by the Hon. Commission as deemed fit;
- Necessary road map for reduction of cross subsidy and adoption of tariff within plus or minus of the 20 percent of average cost of supply as per national tariff policy for all categories may kindly be issued.
- Since the collection efficiency at the end of the financial year is temporary one and it varies based on the change in debtors due to judgments in court cases, subsequent adjustments and collection in

the next year and the same are not directly related to performance of the TANGEDCO and TANGEDCO is taking every effort to reduce the transmission and Distribution losses, the Aggregate Transmission and Commercial loss (AT&C) over and above norms fixed by the Hon'ble commission for the year 2011-12 and 2012-13 may kindly be approved.

- The un-recovered revenue gap for the year 2010-11 to 2012-13 be treated as Regulatory Asset and carried over to be recovered through future tariffs with necessary allowance on Regulatory Asset in 5 financial years.

1 Overview of TANGEDCO

1.1 Background

1. Starting with a modest installed capacity of 156 MW (Mega Watt) at the dawn of independence, the Board's own generating capacity has grown by leaps and bounds to 10,237 MW as on 31.10.2011. The TANGEDCO has an even mix of the various generating capacities such as 2970 MW of coal based four thermal stations, 516 MW from the five Gas Turbine Stations and 2191 MW from 39 Hydro Stations. In addition, there is an infirm power of 17 MW from Wind Farms. Besides, the Board has a share of 2861 MW from Central Generating Stations, 6008 MW of privately owned wind farms and 1180 MW of Independent Power projects. The peak reached is 10859 MW on 19.07.2011 and the maximum daily consumption was 237.950 MU on 29.06.2011.

2. In fulfilling its obligations over the last five decades, the TANGEDCO has also been an effective tool for the Government in implementing its policies and fulfilling social obligations relating to agriculture and other weaker sections of the society that require positive support and special attention of the Government. This approach was however not unique to Tamil Nadu alone but has been adopted in some states, with reduced tariff to certain consumer segments.

1.2 Operational performance of the TANGEDCO

The State does not have its own coal resource and has to source its requirements partly from the Eastern Coal Fields Ltd. (ECL) and Mahanadhi Coal Fields Ltd. (MCL) mines situated in West Bengal and Orissa respectively & partly by import. The coal transportation is being undertaken through rail-cum-sea-cum rail route resulting in huge expenditure.

The TANGEDCO has also attempted to develop other sources of power generation. The commercially exploitable hydel potential, has been tapped almost to the full extent. The hydel generation is dependent on the precipitation levels during the monsoon season and the entire season in the state itself being short the hydel capacity is mainly employed as a peaking capacity. The TANGEDCO, over the past few years, has been adding gas-based stations exploiting the limited gas potential available in the State.

The State has a friendly policy for encouraging non-conventional sources of power such as the wind, co-generation etc. Tamil Nadu has the largest wind power capacity of about 6531.290 MW As on 30.09.2011. However, besides being infirm in nature, this power is available mostly during June to September. Apart from this, the State has seven independent Power Producers (IPP) plants in operation in the State. The TANGECO is making continuous efforts to add generation capacity, in spite of constraints on its financial resources. During the year 2010-11, 4 MW in Periyar Vaigai SHEP I and 36 MW share of TANGEDCO in Kaiga APS totaling 40 MW have been added. The energy requirement of the

State has been growing at a rate of 8 - 10% every year. The increasing demand is sought to be met by power purchase from central generating stations such as NLC and joint venture project at Valloor, Tuticorin and Udangudi to be implemented along with NTPC, NLC and BHEL respectively. The strategy of TANGEDCO is to conserve and maximise the precious internal resources for the much needed investment in transmission & distribution sector by leveraging the investments capacity of central utilities like NTPC, NLC and NPCIL as well as private sector in generation to its fullest possible extent.

The TANGEDCO owns and operates an extensive network of distribution consisting of 1.78 lakhs Ckt.kms of Distribution Network and 5.62 lakhs Ckt kms of LT lines as on 30.09.2011. It also owns and operates majority of the generation assets in the state and is buyer of power from the Government of India owned (Central) generating stations and private producers in the state. It also owns 1349 substations and 2,07,692 distribution transformers besides other assets as on 30.09.2011. The TANGEDCO is also making continuous efforts towards strengthening the distribution networks to reduce the technical losses in the system. As a part of the R-APDRP programme, schemes to strengthen the exiting T&D systems have also been undertaken with the support of Government of India, this is the first time the TANGEDCO is attempting to address the entire segment of T&D issues holistically.

The State has a low incidence of losses in the LT system. The incidence of theft and tampering of the meters is also low. For HT consumers, the introduction of

tamperproof meters at the consumer's premises along with a check meter facility has reduced the incidence of meter tampering. 100% metering up to 11 kV feeders has been completed. The TANGEDCO has an effective vigilance wing which conducts surprise checks on the consumer premises to detect any tampering & other malpractices. During 2010-11, about 6544 theft cases detected were notified. 3034 theft cases have been detected up to August 2011. In TNEB, 78% of the total electricity sold is on a metered basis. The loss levels have been computed taking into account the assessed consumption from the agricultural and hut consumers, which is nearly 22% of the total consumption in the State.

The TANGEDCO is also committed to render the highest standards of service to its consumers based on standards as set out by the Hon. Commission in the "Standards of Performance Regulations" for the various services to be provided to the consumers. The TANGEDCO has been maintaining an impressive record for redressal of consumer complaints, correction of faults, providing service connections, faulty meter replacement, complaints of Billing, Meter reading, payment etc. Hence the TANGEDCO is making its best efforts to provide efficient, reliable and prompt service to its consumers. A computer based power failure redressal centre has been set up in Chennai, Madurai, Coimbatore, Trichy, Vellore, Erode, Salem, Tirunelveli, Nagarcoil and Tirupur. The consumers who were earlier facing difficulty in contacting "fuse off call centres", can now directly contact the call centres using a computer based system, which will have multiple lines, queuing facility, automatic call distribution system with multiple operators. Consumers can now log on their complaints all through the day.

1.3 Need for revision in tariffs

1. As submitted in earlier paragraphs, the TANGEDCO needs to undertake capital expenditure to provide better services to the consumers. The current year capital expenditure and investments program relate to addition of generation capacity and extensive renovation and modernisation programs. The planned capital expenditure for the financial year 2011-12 will be in the range of Rs.6300 Crores. These include augmentation of the thermal and hydro capacities, strengthening of distribution system, rural electrification programs and assistance to TANTRANSCO. The programmes are intended to strengthen the existing generation and distribution system to enable the Board to meet the growing requirements of the consumers at acceptable performance standards of supply. However, these funds have to be greatly dependent on the internal generation of surpluses by the TANGEDCO.

2. The Overall average Cost of power at the consumer end for the year 2012-13 has been estimated as Rs.5.98 per unit. As against this, the overall rates of realisation from sale of power will be Rs. 3.79 per unit. Therefore for each unit sold, TANGEDCO will be incurring a loss of Rs.2.19 during FY 2012-13.

3. Due to socio economic considerations, TANGEDCO has been making operating losses with non-remunerative tariffs to recover the revenue expenditures. Hence it is difficult to generate internal resources for capital investments. The external borrowings are expensive sources of funds and are further adding to the interest burden of the TANGEDCO. It is also not feasible to raise external funds to the required extent so as to meet the entire capital expenditure requirements. The

expenditure on account of interest, on account of the external borrowings to fund all the development initiatives and also to meet the revenue deficits created on account of procurement of costly power due to rapid growth in consumption are likely to further add to the TANGEDCO's financial liabilities.

4. TANGEDCO is a performing utility in terms of its generation performance and the distribution services provided to consumers, low level of T&D losses, metering & billing performances, providing prompt services to its consumers and to their grievance redressals. The TANGEDCO has consistently been taking initiatives towards theft reduction through its internal enforcement mechanism and continuous systematic improvements. However its growing subsidised consumers base such as agriculture, huts, places of worship, handlooms and power looms and a high percentage of domestic consumers has impacted its financial performance.

5. The current tariff proposal is thus a step forward in the direction of correcting the tariff imbalances affecting the TANGEDCO and making it at least partially financially viable. However, till such time the process of tariff reforms is wholly completed, the tariffs of various categories may not reflect the average cost of supply.

2. ACTION TAKEN BY TANGEDCO ON COMMISSION'S VIEWS ON THE OBJECTIONS/COMMENTS/SUGGESTIONS

Various Views on the Objections/Comments/Suggestions issued by The Tamil Nadu Electricity Regulatory Commission and the actions taken by TANGEDCO are submitted below.

I. General issues:

a. Views

As and when the TNEB is unbundled such a Regulatory Cell may have to be created in both the TANGEDCO and TANTRANSCO. The TNEB and their successor entities are advised to take appropriate action to create such a Regulatory Cell. The Commission may be informed of action taken within a period of six months.

Action taken

The Tariff Cell is now looking after the Regulatory works of Hon'ble Tamil Nadu Electricity Regulatory Commission.

Until finalisation of staff's transfer, the Tariff cell will look after works of both TANGEDCO and TANTRANSCO.

As per G.O(MS)No.100 dated 19.10.2010, the personnel of the Board shall stand assigned to the services of the relevant Transferee, on deputation basis.

b. Views

The Commission directs that the TNEB (Now TANGEDCO) shall carry out an exercise to arrive at proper estimate of AT & C and T & D losses within a period of six months.

Action taken

TANGEDCO is as of now estimating the AT&C loss and T&D loss with some computed values based on sample metering in the absence of 100 % metering in all feeders up to consumer point. To measure T& D loss nearer to the actuals it was proposed to achieve 100% metering up to the level of DTs at least. As on 30.06.2011 only 45.35% of the total Distribution Transformers (DTs) erected have been metered. Even with 100% metering of DTs, due to dearth of man power, it is not feasible to take readings from all the meters at the same point of time which is essential for necessary accurate assessment of AT& C and T& D loss.

In order to arrive at proper estimate of AT & C and T& D loss, as a pilot study with the above arrangements in Gopi, Bhavani, Sathya mangalam under R-APDRP scheme, modems are fixed in the DT meters to enable AMR facility. The DT meters will be connected to the data centre through necessary hardware and soft ware. The work is expected to be completed by January 2012. On completion of the pilot Project, and Data capturing, the Energy Accounting / Auditing can be completed in the pilot area, based on that sample data, AT& C loss can be evaluated for the pilot area.

c. Views

Taking into account information in this Order, TNEB (Now TANGEDCO) shall file a petition for determination of wheeling charges, surcharge / additional surcharge.

Action taken

The petition on determination of wheeling charges, surcharge and additional surcharge has been filed before the Hon'ble commission.

II . GENERATION

a. Views

The TNEB (Now TANGEDCO) is directed to file a separate petition for ETPS in accordance with the Regulation within 2 months of issue of this order and the tariff of ETPS will be decided on that basis.

Action taken

A separate petition for ETPS has been filed.

b. Views

The Commission suggest that the TNEB (Now TANGEDCO) may take up the issue with the Government of India for allocation of additional gas so that the assets which are created already are put to optimum use. The TNEB (Now TANGEDCO) shall plan to maximize the output of Gas based Stations and at the same time the heat rate is also maintained at a optimal level.

Action taken

At present, the Gas supply by GAIL has been improved to 85 - 90% in all Gas Stations. Further, the shortage in gas supply will be made good when Southern Gas Grid is formed which is expected by 2014-15.

Heat Rate

The average heat rate for the period from April to July '2011 is given below:

Thiurumakottai	Gas Turbine Power Station	-	1895 Kcal/Kwhr
Kuttalam	Gas Turbine Power Station	-	1892 Kcal/ Kwhr
Valuthur	Gas Turbine Power Station -I	-	1827 Kcal/ Kwhr
Valuthur	Gas Turbine Power Station -II	-	2378 Kcal/ Kwhr

From the above, it is seen that the heat rate in Valuthur Gas Turbine Power Station -I is within the TNERC norms of 1850 Kcal/Kwhr and it was more than the above norms in Thiurumakottai Gas Turbine Power Station, Kuttalam Gas Turbine Power Station and Valuthur Gas Turbine Power Station -II due to the following reason:

1) In Thiurumakottai Gas Turbine Power Station, the Gas availability was about 70% of the agreed quantity up to May'11 thereby the plant was operated under part load. Further due to ageing of Gas turbine and consequent de-gradation of the equipments the heat rate was more than norms.

The heat rate was more than the norms in Kuttalam Gas Turbine Power Station, since the unit was shut down from 18.7.10 to 26.5.11 due to release of Generator stator for replacement at Valuthur Gas Turbine Power Station and further, the unit was running at part load 70% during April'11 and 80% to 85% during June'11 and July 2011.

2) Valuthur Gas Turbine Power Station -II was recommissioned on 7.5.11 after long breakdown from 9.1.10 due to heavy damages in GT rotor. Even after recommissioning, full load could not be reached due to vibration problems. The vibration problems were sorted by OEM. Leakage in STG was also attended. The unit was brought into its full capacity only on 18.8.2011. Hence the heat rate could not be maintained within the norms prescribed.

c. Views

TNEB (Now TANGEDCO) may also take up this matter with GAIL for use of allocated gas in various power stations and in case the TNEB (Now TANGEDCO) cannot utilise the entire gas allocated to them, the issue of using this surplus gas by other generators in the State may also be considered. This needs to be done in consultation with GAIL. Yet another issue involved in use of gas is "take or pay" contract for gas supply. TNEB (Now TANGEDCO) may ensure that at all times the allocated gas is fully utilised so that "take or pay" conditions may not be attracted.

Action taken

At present the Gas supply has been improved to 85-90% in all Gas Stations . Since all the Gas stations are utilizing the entire Gas supplied by GAIL "take or pay" condition does not arise.

d. Views

The TNEB (Now TANGEDCO) shall study the causes for the low performance of ETPS in spite of R&M works and take appropriate action to improve the performance.

Action taken

Reasons for low performance of Ennore Thermal Power Station:

All the Units at Ennore Thermal Power Station are operated under lesser load due to Chloride ingress owing to usage of contaminated cooling water, Low condenser vacuum, Condenser tube failure, Boiler tube punctures, Turbine vibration, Rotor blade failure, etc. Being an old station, outages occur in various equipments due to various

reasons which have decreased the power generation. However rectification works are being taken up then and there to reduce the forced outages in order to improve the generation and Plant Load Factor..

- ❖ The Ennore Thermal Power Station has not achieved the full load capacity since inception and average Plant Load Factor is also less than 60% due to design deficiency in 110 MW Units.
- ❖ The major constraint in achieving higher and sustained generation with reduced outages of the Units at Ennore Thermal Power Station is the highly contaminated cooling water (i.e.) the sea water available at Ennore creek.
- ❖ Since contaminated cooling water is being used for the condenser cooling, the cooling water corrodes the condenser tubes resulting in abnormal condenser tube failures. Once the tube fails, the chloride in the cooling water mixes up with the De Mineralised water resulting in scale formation in Boiler tubes and salt deposits on Turbine blades.
- ❖ This results in frequent failures of Boiler tubes, high axial shift in turbine and high vibration of turbine rotors resulting in frequent blade failures. As the quality of cooling water available is very poor, the condenser tubes are renewed periodically besides carrying out repair in turbine rotors.
- ❖ In **Units-I&II(60 MW Boiler)**,the Boiler tube leakages were analysed and observed that the tube leakages were mainly due to flue gas erosion on account of high ash content in the coal. In order to prevent tubes from erosion,shrouds

and griddling bands were provided. Subsequently the tube leakages have reduced.

- ❖ **Units III & IV (110 MW Boilers)** have served for more than 9 years after R&M works. Due to ageing and flue gas ducts erosion, punctures occurred in the R.H. bends. R.H. bends were renewed partially during AOH period in 2008-09 & 2009-10. Balance RH bends have been programmed to be renewed during the forthcoming AOH periods.

- ❖ **In Unit-V (110 MW)** during R&M period, only partial pressure parts were renewed (platen S.H. and Cold Reheater tubes). Other areas i.e. Waterwalls, Economiser, Ceiling Superheater, Hot Reheater & Exit Superheater are not renewed. Boiler has served more than 1,50,000 hrs. of service and entire boiler replacement was not done during R&M as carried out in other units 1 to 4. Hence Boiler tube leakages occur frequently. Subsequently RLA study was carried out during 2009. Based on the RLA study reports, repair works are proposed to be carried out during forthcoming capital overhaul in 2011-2012. However the weak boiler tubes are being replaced during every overhaul.

- ❖ Since ETPS is having low capacity Units which have already served their life and having perennial cooling water problem, frequent forced outages occur resulting in low generation.

Benefits of R & M works carried out at ETPS:

All the Units had served their life time (more than 25 years) while they were released for R & M works. R&M works were carried out only on Boiler and partially on Turbine side. Instead of decommissioning the Units, the Units were given a new lease of life after R & M at a minimum cost when compared to the cost of setting up a new plant even considering the lesser generation achieved after R&M works.

Action plan to improve the generation:

- 1. In Unit-I,** the load is restricted due to salt deposits on the Turbine blades, high Curtis pressure, Chloride problem. **Now a load of around 35 MW is being maintained.**

To improve the performance of the Unit, drum internal repair works have been carried out and condenser tubes were plugged and replaced partially. Further, during the Annual Overhaul works carried out in 2009, HP Rotor sand blasting had been carried out to overcome the High Curtis Pressure problem. Complete replacement of around 9200 Nos. of Condenser tubes with the Aluminium Brass material is proposed for execution during the current year 2011-12. for which the materials have been received at ETPS.

- 2. In Unit-II,** the load is restricted due to high Turbine vibration and chloride ingress. Due to chloride ingress, the Unit II was operating with low Plant Load Factor from Jan' 09. Hence shut down was availed and condenser tubes renewed, LP Rotor replacement works, HP Rotor

sand blasting, etc. were carried out along with Annual Overhaul works. A load of around 50 MW was being maintained after the above improvement works. The AOH works were completed from 26.07.11 to 21.08.11 and **a load of around 50 MW is expected.**

3. In Unit-III, the load is restricted due to Chloride ingress and severe O₂ crash problem. The Unit is under forced shutdown since 23.03.11 due to High Turbine Vibration and the rectification works are under progress.

Complete replacement of 13600 Nos. of Condenser tubes with the same Aluminum Brass material and replacement of APH Tubes in 1A, IB & 2A, 2B passes are proposed for execution during this year 2011-12. **At present a load of around 55 MW is being maintained.**

4. In Unit-IV, the load is restricted due to O₂ crash, Low vacuum, Turbine Vibration due to aged Rotors, etc.

During the overhaul period in 2009, the following works were carried out:

To overcome O₂ crash problem partial replacement of Air preheater tubes have been carried out.

To improve the vacuum, leakage in the vacuum circuit had been arrested. **At present a load of around 50 MW is being maintained.**

5. In Unit-V, only partial R & M works had been carried out and the load is restricted due to partial shaving of LP rotor blades, Reheater pressure limitation, Boiler tube Leak, etc.

At present the load cannot be raised beyond 82 MW due to high HRH pressure. RLA study of Boiler has been carried out during the shutdown during Sep '09. Order has been placed on M/s BHEL to procure LP Rotor and the supply is expected during the year 2012. On receipt of Rotor and based on the recommendation in the RLA study, improvement works are to be carried out during the forthcoming Capital Overhaul. **Now a load of around 60 MW is being maintained.**

e. Views

The Oil Consumption in TTPS is much higher than the normative specific consumption from 2006-07. The TNEB (Now TANGEDCO) shall study the reasons and take corrective action to reduce the consumption to the normative level.

Action taken

Reasons for high Specific Oil Consumption at TTPS:

1. The Specific Oil Consumption in respect of Units IV & V during the years from 2006-07 to 2010-11 was within the TNERC norms of 2.0 ml/KWHr but in respect of Units I, II & III, it is higher mainly on account of Bunker choke up due to the Trapezoidal design of Coal Bunkers. During rainy days both at loading port & at TTPS, the choking up of Bunker is very acute and more Furnace oil has to be used in order to overcome this problem.

The furnace oil consumption during the years from 2007-08 to 2010-11 is also enclosed . From the above fuel oil consumption pattern, it is observed that

nearly 10,000 KL of furnace oil per year was used to overcome this problem upto 2009-10 and during the year 2010-11, nearly 20,000 KL of furnace oil has been utilized.

2. The Units I, II & III Boilers of TTPS are designed for 5950 KCals of coal with Ash content of around 19% and since they are fed with much inferior quality of coal i.e. with very high Ash content of more than 40%, full load could not be achieved even after maximum loading of 5 mills. This necessitated additional Fuel oil firing to improve the generation to meet out Grid demand. Nearly 3000 to 5000 KL of furnace oil per year has been used in Units I, II & III to overcome this problem. The above problem is much less in Units IV & V Boilers since they are designed for low Calorific Value of coal.

3. More quantity of Vizag coal which has low GCV with high ash & moisture content is received at TTPS which causes Boiler Tube punctures at an average of 24 Nos. per year which also leads to higher furnace oil consumption.

4. The ID Fan Impellers in Unit III are getting eroded frequently and need replacement due to non availability of 7 Nos. ESP fields since Jan '09 resulting in partial load operations & Unit tripping which in turn increases furnace oil consumption.

5. The designed milling capacity of Coal mills installed in the Units I, II & III is 33.8 T/Hr with 7.5% moisture and 19% ash. When the mills are fed with coal moisture content >10% and ash content > 35%, the milling capacity gets reduced and also the wear & tear of mills are on higher side causing frequent outages of mills and higher Fuel oil consumption.

6. The Specific Oil Consumption during the year 2010-11 is 5.44 ml/KWHR which is very high mainly due to peculiar, sticky and slushy coal received during the months of Nov '10 & Dec '10 which has never happened at TTPS before. Removal of this choke up was very tough, time consuming, risky and laborious. Great efforts were put forth with very much difficulty to feed this type of coal and to keep the Units I, II & III in service. Each bunker took nearly 4 to 5 days for complete removal of this choke up. This was made possible only due to cutting in lieu of oil guns or otherwise it would have taken nearly one month to clear the mill choke up in Units I, II & III which would have led to shutdown of the Units I, II & III thereby affecting the Grid critically.

7. Excluding the Fuel oil used due to poor quality of coal, wet coal (sticky nature) /Bunker choke ups and coal feeding problems, the Specific Oil Consumption would be as below:

Year	Specific Oil Consumption (ml/KWHR)
2007-08	1.21
2008-09	1.43
2009-10	1.88
2010-11	1.33

Action taken to control the excess fuel oil consumption are detailed as follows:

- The Chief Engineer/Tuticorin Thermal Power Station has to take up the issue with M/s Coal India Ltd. regarding supply of good quality of coal and to make necessary arrangement to build up adequate coal stock especially during rainy days. Coal supply in the ratio of Haldia-23.3 %, Paradeep 23.3 % & Vizag 33.3%(i.e. Indigenous coal) and 20 %Imported coal respectively is to be ensured at TTPS.
- Due to the receipt of improved quality of coal at TTPS during the recent months, the Specific Oil Consumption has reduced and the details from Jan '11 to Jul '11 are furnished below:

Months	Specific Oil Consumption (ml/KWHR)
Jan '11	1.71
Feb '11	1.74
Mar '11	0.81
Apr '11	2.49
May '11	1.65
Jun '11	2.06
Jul '11	1.30

It is observed that the Specific Oil Consumption is within the TNERC norms of 2.0 ml/KWHR from Jan '11 to Jul '11 except in Apr '11 & Jun '11 due to 10 Nos. & 9 Nos. of light up activities respectively.

- During the forthcoming Capital Overhaul of Unit III in Oct '11 to Dec '11, it is proposed to carry out the complete revamping of ESP and thereby the furnace oil consumption due to frequent replacements of ID Fan Impellers owing to the non availability of 7 Nos. ESP fields can be reduced considerably.
- Whenever wet coal is used, additional man power will be provided in the Bunkers for cleaning the sticky coal for ensuring free flow of coal.

f. Views

The tariff now considered for new stations are only estimates and shall be provisional. The TNEB (Now TANGEDCO) shall file a separate petition in each of the above case at an appropriate time in accordance with the Commission's tariff regulation in force.

Action taken

The TANGEDCO will file a separate petition for new generating stations as directed.

III .QUALITY OF SUPPLY

g. Views

Adequate transformation will have to be created depending on the requirement. HT / LT ratio needs to be improved.

Action taken

Tender has been awarded for implementation of High Voltage Distribution System (ie. Improvement of HT / LT Ratio) for two

feeders namely 22 KV chemical feeder fed off from 110 / 22 KV Sankari SS and 11 KV Thondamanur feeder fed off from 33/11 KV Kottaiyur SS as pilot projects. The scheme is under implementation.

Further, under R-APDRP Part B schemes, about 24822 small capacity Distribution Transformers under HVDS are proposed to be installed over a period of 3 years.

h. Views

The distribution transformers are to be metered to get the profile of the voltage, down time as well as the energy.

Action taken

In 110 towns of Tamil Nadu, where population is more than 30,000 as per census 2001, under R-APDRP schemes, the distribution transformers in the project area due to be metered to get among other parameter the profile of the voltage, down time as well as the energy. 35,276 Nos. Distribution Transformer meters are to be installed in 110 towns of R-APDRP project area and the work is to be completed by March 2012.

IV. Metering and Energy Audit

a. Views

A time bound programme for 100% metering needs to be worked out by TNEB (Now TANGEDCO) and submitted to the Commission. This shall be done within six months of the issue of this Order

Action taken

As on date **2,12,76,264 Nos.** of consumers are available in Tamil Nadu

HT consumers

7336 Nos. are already provided with TOD Meters.

LT CONSUMERS

Out of the total **2,12,68,928 Nos.** of LT consumers, Agriculture and Hut service consumers are numbering to **32,83,987 Nos.** who are un-metered consumers. The Hon'ble commission has given a time limit of up to 30-09-2012 for fixing the meters in the above said Agriculture and Hut services.

Government of Tamil Nadu has been advised for fixing of meters in the above services.

b. Views

To meter all the feeders and the distribution transformers and the meters shall have the facility for remote reading.

Action taken

In 110 towns of R-APDRP schemes, all the feeders and the distribution transformers will have the Automatic Meter Reading (AMR) facility.

For this purpose 2689 Nos. feeder meters having (AMR) facility have been procured. The installation works are under progress . Further 35,276 Nos. Distribution Transformer meters having (AMR) facility will be installed by March 2012. It is also proposed that GPRS based Remote AMR using Data Concentrator Unit (DCU) for each ss (329 Data Concentrator Unit's capable of controlling 8 feeders on an average) covering all the feeder meters. Similarly, the DT meter data will also be transferred to Data Centre over GPRS. On completion, metering in further DT's will be taken up in phased manner.

c. Views

TNEB (Now TANGEDCO) is directed to submit the programme for carrying out the Study for Assessment of Transmission and Distribution (T&D) losses.

Action taken

TANGEDCO is as of now estimating the T&D loss with some computed values based on sample metering in the absence of 100 % metering in all feeders up to consumer point To measure T& D loss nearer to the actuals it was proposed to achieve 100% metering up to the level of DTs at least. As on 30.06.2011 only 45.35% of the total Distribution Transformers (DTs) erected have been metered. Even with 100% metering of DTs, due to dearth of man power, it is not feasible to take readings from all the meters at the same point of time which is essential for necessary accurate assessment of T& D loss.

In order to arrive at proper estimate of T& D loss, as a pilot study with the above arrangements in Gopi, Bhavani, Sathya mangalam under R-APDRP scheme, modems are fixed in the DT meters to enable AMR facility. The DT meters will be connected to the data centre through necessary hardware and soft ware. The work is ex expected to be completed by 2012 January for the pilot towns. On completion of the pilot Project, and Data capturing, the Energy Accounting / Auditing can be completed in the pilot area.

d. Views

To install Availability Based Tariff (ABT) compliant meters for the purpose of measurement of real power and reactive power at interface points in intervals of 15 minutes.

Action taken

128 Nos. ABT meters have been provided in all the IPPs and CPPs, Co-Gen and Bio-Mass Generation Plants who have been permitted for Short Term Open Access. The balance Generation-Transmission-Distribution interfaces is being assessed for provision of ABT meters. Assessment of Feeders, Specification of ABT meters and actual installation of meters is under progress.

e. Views

The ABT compliant meters are essential for the purpose of proper grid management, sending commercial signals for ramping up / backing down of generations and increase / decrease of load.

Action taken

i). At present invariably all the private power producers who have availed open access and are in the process of selling their surplus generation directly to the HT consumers and traders other than to TNEB are provided with ABT compliance Interface Meters as per CEA Regulation 2006 in the interconnection points with the facilities to communicate the real time data to the nearest State Sub Load Despatch Centres (SSLDC).

(ii). Necessary infrastructure for online monitoring of the power flow from the above generators and online downloading the real time data for accounting the generated energy in the grid from the above interface meters is yet to be made available at the SLDC Chennai and the same is under process.

(iii). Necessary steps are being initiated for the provision of interface meters as per CEA Regulation 2006 at the interconnection points for the generators in the Transmission and Distribution System.

V. DEMAND SIDE MANAGEMENT

a.Views

TNEB (Now TANGEDCO) to create awareness among the consumers about Energy Conservation – Use of Star Labelled appliances, CFL etc.

Action taken

DSM Activities:

- ❖ For adoption of BEE star labeled domestic appliances, Bureau of Energy Efficiency (BEE) is creating awareness among public. TANGEDCO is also emphasizing the need for use of the star labeled appliances in all its seminars / training programmes.
- ❖ The Govt. of Tamil Nadu has issued G.O.126 dt 10.11.08 on the energy conservation in Govt./PSU departments. All heads of department have been addressed to follow the guidelines given in the GO and monitored by TANGEDCO.
- ❖ Regular meetings are conducted with Public Works Department, Chennai Metropolitan Water Supply & Sewerage Board and Chennai Corporation and other Corporations for review of implementation of Demand side management measures in their departments.
- ❖ The Govt. of Tamil Nadu has issued another G.O 75 dt. 20.08.10 to ban the usage of Incandescent Bulbs (ICBs) in all Govt. Departments, Public Sector Undertakings, Boards, Societies and Local Bodies. All District

collectors have been addressed for issuance of instructions to their officers for adherence of the G.O.

- ❖ The energy conservation reports in respect of Govt./Public Sector Understanding buildings are collected from the Regions/Circles and reviewed/monitored periodically at Head Quarters to assess the energy savings.
- ❖ The energy conservation measures in respect of TANGEDCO buildings are also monitored periodically and savings assessed.
- ❖ Energy conservation day is celebrated every year on 14th December and Energy conservation week during 14th December to 20th December.
- ❖ Energy conservation awareness programmes are conducted for schools, Colleges and Public regularly through training wing of TANGEDCO.
- ❖ The Ministry of Power, Government of India through the Bureau of Energy Efficiency (BEE) has formulated "Bachat Lamp Yojana" (BLY) scheme in domestic sector.
- ❖ The Energy Department has also issued G.O. Ms. No. 87 Energy (C2) Department dated 14.09.2010 for the implementation of this scheme in TamilNadu.
- ❖ Implementation of the BLY scheme in Tamil Nadu may account to the peak load relief of approx. 500-600 MW.

- ❖ TANGEDCO has awarded the contract for implementing the BLY scheme in Tamil Nadu with 60% of the project areas in 22 Electricity Distribution Circle (EDCs).

b. Views

Minimising energy spent in piping and pump sets in agricultural sector.

Action taken

Instructions were issued to the field to effect new agricultural service connection with star rated energy efficient pump sets with effect from 1.11.2010.

The Government of Tamil Nadu has issued GO NO.7 dt 04.02.2011 for the replacement of existing inefficient pumpsets by Energy Efficient pumpsets to save energy and 242 nos of Energy Efficient pumpsets have been issued to the willing farmers.

c. Views

To conduct Energy Audit in industrial sector.

Action taken

The registering of Energy Auditors and review of energy audit reports are dispensed by TANGEDCO as the Tamil Nadu Electrical Inspectorate (TNEI), the State Designated Agency (SDA) to cooperate, regulate and enforce the provision of Energy Conservation Act, 2001 in Tamil Nadu.

VI. EMPLOYEE COST- Terminal Benefits

a. Views

TNEB (Now TANGEDCO) to conduct an actuarial study, assess the probable amount of pension liability and submit a report at an early date. In most cases, a Corpus is created for meeting the terminal benefits of employees. For this purpose, an actuarial study may have to be carried out to decide the amount to be credited in the corpus. The TNEB (Now TANGEDCO) is directed to examine this issue and submit a proposal for the same to the Commission. This exercise should be carried out within a period of six months.

Action taken

1.0 The transfer scheme transferring the properties and personnel of the erstwhile TNEB was notified by the Government of Tamil Nadu vide G.O (Ms) No.100 dated 19.10.2010.

2.0 As per the G.O., All personnel of the Board (excluding Chairman and Director of the Board) shall stand transferred to and absorbed in TANGEDCO on a provisional basis, subject to finalization of Employee Transfer scheme by the State Government in consultation with the Chairman of TNEB Limited (Clause No. 6 (2)).

3.0. The personnel of the Board shall stand assigned to the services of the relevant Transferee, on deputation basis, on "as-is-where-is" basis, namely, that they will continue to serve in the place where they are posted on the date of transfer (Clause No. 6(5)).

4.0. As per clause 6 (17) of the Government Order, till finalization of transfer of personnel to TANTRANSCO, the payment of terminal benefits to existing pensioners will be continued to be met from the cash flow of the operations of the TANGEDCO and TANTRANSCO would reimburse its proportionate share.

5.0. The more accurate and realistic assessment of the probable amount of pension liability could be made, only when employee transfer is finalized. Hence the process of assessment of liability and creation of corpus fund could be started, by the successor entities once the employee transfer is finalized.

B. Actions To Be Taken for the Implementation of National Electricity Policy

a. Views

*Declaring the results of **Energy Accounting** for every defined unit..*

Action taken

1.0. Under R-APDRP Part- A, it is proposed deploy GPRS based Remote AMR using Data Concentrator Unit for each ss (329 DCU's capable of controlling 8 feeders on an average) covering all the feeder meters.

2.0. Under Part –A of R-APDRP it is proposed to install Remote AMR based Data Logging system in all the DT's (29994 Nos.) of the 110 project Areas using IEC 62056 open protocol complaint AMR meters.

3.0. Under R-APDRP schemes in 87 Towns, about 43.24 lakhs of electronic Tamper Proof LT meters are proposed to be installed.

On completion, above works, defined units will be identified for declaring energy audit results of the energy accounting.

b. Views

*Drawing up a time-bound programme for segregation of **technical and commercial losses.***

Action taken

The Technical loss contains Transmission & Distribution loss. The transmission loss in TANGEDCO as per the actual readings in all the meters is within the limit suggested by the Central Electricity Authority (CEA) and the same is furnished to the Honorable TNERC every quarter. In the case of Distribution loss, accurate measurement is possible only through 100% metering with AMR , ADL based meters, fixed in all the levels from HT feeders down to the LT consumers. Billing and collection efficiency are major deciding factor for commercial loss . Due to Computerized Billing, collection and disconnecting mechanism the Collection efficiency in TANGEDCO is high and the same will be ensured all the time. The Commercial loss due to theft / pilferage of energy is controlled effectively in TANGEDCO by the Enforcement wing. Converting LVDS in to HVDS will reduce the commercial loss.

Enforcement wing is effectively undertaking remedial measures for reduction of commercial losses. The details are furnished below:

Remedial Measures to Curb Theft of Energy:

In Tamil Nadu Generation and Distribution Corporation Limited, 17 Enforcement Squads and 1 Flying squad/Chennai are functioning under the direct control of Inspector General of Police/Vigilance to curtail theft of energy.

Activities carried out to curb misuse and theft of Electricity:-

- 1) Frequent inspections are being carried out in industries availing HT supply.
- 2) Surprise inspections on suspected Industries are being carried out during night hours and on holidays.
- 3) If the consumption pattern suddenly drops or boosts by 20%, then the respective service connections are being inspected.
- 4) Routine inspections are being carried out in HT & LT service connections.
- 5) Inspections are also being conducted based on petitions and secret informations received.
- 6) Wide publicity on theft of energy is being carried out to create awareness on theft/misuse of Electricity among the public through bills pasted on the notice boards in all the section/sub-division/division offices etc., and through advertisements in leading news papers.
- 7) To detect un-accounted energy, studies are being carried out on the HT feeders.

A target of Rs.200 crores has been fixed for the year 2011-12. To achieve this target, intensive inspections have been carried out and 19 Nos. of

power thefts in HT service connections and 3015 Nos. of power thefts in LT service connections have been detected as on 31.08.2011, and a sum of Rs.19.42 crores has been levied as provisional assessment and Rs.2.22 crores has been collected as compounding charges.

As the network of TANGEDCO is very large, with 2,25,50,752 nos of consumers, deciding a time frame for segregation of technical & Commercial loss in the absence of 100 % metering would be difficult.

Similarly as mentioned above, declaring the results of energy accounting is too possible only after completion of 100% metering.

However all efforts are being taken to achieve 100% metering up to the level of DTs at least, covering part of areas under RAPDRP scheme and balance in phased manner, for declaring the Energy accounting.

c. Views

Submission of metering plans and introduction of pre-paid meters.

Action taken

For Prepaid meters the main requirements are digital metering and centralized server with GSM Control over the meters. The meters must have slotted provision to accommodate the prepaid cards or it can be controlled through a server. This provision should be available in the meters. Hence it is in the initial stages, which is to be done in phased manner.

d. Views

Introduction of TOD meters for bulk/HT consumers.

Action taken

TOD meters are provided for bulk/HT consumers.

e. views

Implementation of HVDS, SCADA and Data-Base Management.

Action taken

Tender has been awarded for implementation of HVDS (ie. Improvement of HT / LT Ratio) for two feeders namely 22 KV chemical feeder fed off from 110 / 22 KV Sankari SS and 11 KV Thondamanur feeder fed off from 33/11 KV Kottaiyur SS as pilot projects. The scheme is under implementation. Further, under R-APDRP Part B schemes, about 24822 small capacity Distribution Transformers under HVDS are proposed to be installed over a period of 3 years.

Actions to be taken for the implementation of National Tariff Policy

Views

Renewable Purchase obligation achieved during the current financial year

Action taken

Total generation injected into the grid

(April 11 to August'11) : 34439 MU

Total generation as on 31.08.2011

Wind	:	5768 MU (Wheeling units: 2404.50 MU, Sale to TANGEDCO : 3363.50 MU)
Co-generation	:	644 MU
Bio-Mass	:	197 MU
Solar	:	<u>0004 MU</u>
Total		4208.5 MU

Renewable Energy Purchase: 12.22% (as on 31.08.11)

GENERAL

Views

Conversion of over head lines to UG Cables – Provision of aerial bunched cables – Avoidance of accidents.

Action taken

The instructions issued for conversion of Over Head to Under Ground cable conversion in five Municipalities Viz.,Trichy, Madurai, Tirunelveli, Salem and Coimbatore have been revoked vide B.P.19 dt.13.12.2010. Aerial bunched cables are not procured at present. Under R-APDRP Part B about 463 Kms of HT OH Line and 800 Kms of LT OH line are proposed to be converted into UG Cable in Chennai, Coimbatore and Salem Project Areas.

To avoid accidents, instructions are issued to replace the All Aluminium Conductors, and copper conductors and reviewed periodically for implementation of TNERC Standards of Performance. Further a special committee has been formed for study and recommend to avoid/reduce accidents. The committee has submitted the

study report in English and Safety manual in Tamil and the same is forwarded to the field for recommendations. Based on the recommendations and suggestions, new/modification in the safety manual will be formulated.

Views

Establishment of Computer Based Power Failure Redressal System in respect of the Corporations, townships and Municipalities.

Action taken

Call centers are already available in the major towns / Cities. However these are computerized without the base line data. Now in R-APDRP for 110 towns, the base line data is to be collected through Differential Global Positioning System (DGPS) Survey and will be uploaded to the data centre proposed to be situated at Chennai which will have all the details of feeding up to the LT consumers from the SS along with Network analysis. By this, consumers can be informed about the general outages, the possible restoration time etc. Besides the above, the Consumer Care Centre which is proposed to be located at Chennai under Part-A of R-APDRP will have the additional facilities of services in respect of LT billing for the entire Tamil Nadu.

Views

TANGEDCO shall furnish half yearly status on Generation Planning.

Action taken

General planning is being submitted to Honb'le Commission .The details of new commissioning plants are as follows:

Annexure - G

Capacity addition during 2011-12 to 2016-17

Sl. No.	Name of the Projects	Type	Sector	Installed capacity/ Share	Availability	Targetted date of Commissioning
A	2011-2012					
1	Neyveli TS-II Units - I & II (2x250MW)	Thermal	Central	230	195.5	Unit 1 synchronised on 27.6.11 Jan-12 for Unit 2
2	Bhavani Kattalai Barrage - II (2x15MW)	Hyd	State	30		Unit -1 synchronised on 28.7.11, Unit - 2 synchronised on 29.9.11
3	Simhadhri Stage -2, Units - 3 & 4 (2x500MW)	Thermal	Central	190	161.5	Unit - 3 commissioned on 16.9.2011 Jan-12 for Unit 4
4	Periyar vaigai SHEP -II (2.5MW)	Hyd	State	2.5		Dec - 11
5	Kudankulam APS (Unit 1 -1000MW)	Nuclear	Central	462	392.7	Dec - 11
6	Periyar vaigai SHEP -IV (2.5MW)	Hyd	State	2.5		Jan - 12
7	Bhavani Barrage - II (2x5MW)	Hyd	State	10		Mar - 12
8	NTPC-TNEB at Vallur Stage - I (2x 500MW)	Thermal	JV	694	589.9	Dec-11(Unit -1), Mar-12 (Unit-2)
9	Periyar vaigai SHEP -III (2x2MW)	Hyd	State	4		Mar - 2012
10	Bhavani Kattalai Barrage - III (2x15MW)	Hyd	State	30		Feb-12(unit-1) Mar-

						12(unit-2)
11	North Chennai TPS Stage- 2 (600MW) Unit 2	Thermal	State	600	510.0	Mar - 12
12	Mettur TPS Stage - 3 (1x600MW)	Thermal	State	600	510.0	300 MW by 1.1.2012 and full load (600MW) by Mar-12
	Total A			2855	2359.6	
B	2012-13					
1	Bhavani Barrage - I (2x5MW)	Hyd	State	10		May-12
2	PFBR Kalpakkam (1x500MW)	Nuclear	Central	167	142.0	May-12
3	North Chennai TPS Stage- 2 (600MW) Unit 1	Thermal	State	600	510.0	Jul - 12
4	Modification of 12 Sugar Mills	Thermal	State	183	155.6	Jul/Aug - 12
5	Kudankulam APS (Unit 2 -1000MW)	Nuclear	Central	463	393.6	Aug -12
6	NTPC-TNEB at Vallur Stage II (500MW)	Thermal	JV	347	295.0	Oct - 12
7	NLC-TNEB at Tuticorin (2x500MW)	Thermal	JV	387	329.0	Feb - 13 (unit-1) Jan - 13 (unit-2)
	Total B			2157	1825	
C	2015-16					
1	ETPS Annexe (1x600MW)	Thermal	State	600	510.0	2015-16
2	Kundah Pumped Storage Scheme (4x125 MW)	Hydro	State	500	437.5	2015-16

3	M/s Cuddalore Power Project	Thermal	IPP	1320	1122.0	2015-16
Total C				2420	2069.5	
D	2016-17					
1	North Chennai TPS Stage-3 STPS	Thermal	State	800	680.0	2016-17
2	TNEB-BHEL JV at Udangudi (1600MW)	Thermal	JV	1600	1360.0	Oct-2016 (Unit 1) Mar-2017 (Unit 2)
3	North Chennai TPS Stage-4 STPS	Thermal	State	1600	1360.0	June-16(Unit 1) Dec-16(Unit 2)
4	Tamil Nadu at Cheyyur (4000 MW)	Thermal	UMPP	1600	1360.0	2016-17
5	TTPS Stage 4	Thermal	State	800	680.0	2016-17
6	Uppur TPP at Ramanathapuram District (2x800MW)	Thermal	Tariff based competitive bidding	1600	1360.0	2016-17
7	Udangudi Expansion Stage II	Thermal	State	800	680.0	2016-17
8	Replacement of existing Ennore TPS	Thermal	State	600	510.0	2016-17
Total D				9400	7990	

Note: Apart from the above additions, medium term purchase of 900 MW each year also is planned through case 1 bidding. This also can be considered as a capacity addition.

Views

TANGEDCO shall furnish the status on improvements made in billing and collection system.

Action taken

1. HT Billing (Consumer Base : 7300)

Billing: The HT Billing Software has been developed in Client – Server Technology with Oracle as Backend and Developer 2000 as front end and loaded in all the 39 Distribution Circles from 2001 onwards. As and when the instructions are received from the Accounts wing regarding the modifications in Procedure, necessary modifications are carried out in all the 40 circles.

Collection: The HT Collections are being done in all the 40 Distribution Circles through the HT Collection module. The facility of ECS Payment for HT Consumers of Chennai Regions was introduced from February 2009 onwards. The same has been extended throughout the State from 01.12.2010. Payment through RTGS/NEFT through IDBI Bank is under pilot study in Kovai and Chennai North region. The same will be extended to other regions when the pilot study is over.

2. LT Billing: (Consumer Base : 2.2 Crores approxi.) Billing:

1. 30 Days Assessment and Collection:

The 30 days assessment and collection facility has been introduced in Chennai-North Region to facilitate the consumers by giving 20 days time period for making their payments so as to reduce the peak days crowd at the collection counters by evenly distributing due dates for making payment throughout the month.

This scheme was implemented throughout the state in a phased manner.

2. All Account Head Collection: Presently consumers can make their current consumption charges only at the Assessor counter and if any other payment is due (for eg. either Additional Current Consumption Deposit or miscellaneous arrears), he has to pay at the Inspector of Assessment /Revenue Supervisor Counters. The consumer has to stand in one queue for paying the regular CC Charges and then on to the next queue for paying other charges.

With a view to mitigate this problem, the consumers can now make any payment (Current Consumption Charges or arrears or miscellaneous payment) at any counter (Assessor/IA/RS). This facility has been implemented in all regions in a phased manner.

3. Hand Held Devices: The firmware in the Hand Held Devices has been modified to suit the 30 days assessment and Collection methodology. This facility is under testing in selected section offices and will be expanded shortly to other areas. Provision has been made in the software to facilitate the cheque collection during the assessment process itself.

Collection:

1.Collection through Any Time Payment:Collection through Any Time Payment Machines are available at 4 locations in Chennai.(TANGEDCO HQ, TNagar, Wallajah Road and Sowcarpet). Through this facility consumers can pay their Current Consumption charges 24 hrs a day.

1. Collection through Internet: The consumer can make their payments (Current Consumption Charges or arrears or miscellaneous payment or advance amount) through internet by using the Payment Gateway (M/s. Axis, M/s. ICICI), through Net banking (M/s. Axis, M/s. ICICI, M/s. Indian Bank, M/s. Indian Overseas Bank, M/s. City Union Bank, M/s IDBI, M/s Bank of Baroda, M/s Karur Vysya Bank) and through Debit card (M/s. Indian Bank, M/s Indian Overseas Bank, M/s. Canara Bank), through Bank Counters (M/s City Union Bank). This facility has been extended throughout the state since 1.12.2010.
2. Collection through Post Offices: The LT electricity bill collection (Current Consumption Charges or arrears or miscellaneous payment) was introduced through 2 Nos Post Offices in Chennai from 01.03.2010 and was later expanded to 50 post offices in Chennai from 01.06.2010. This facility has been expanded to selected post offices across the State from January 2011.
3. Collection through HHD's with Printers: Camp Collection was hitherto done using manual Pre-receipts. This will henceforth be done through HHD's with printers and printed receipts will be issued to consumers when the collection is done at Camp Collection Centers. The system is under test in few sections and will be implemented throughout the State.
4. Under Progress:

- i) LT Bill collection through Bank ATMs.
- ii) Collection through Common Service Centre.
- iii) Interfacing Software development work for the internet payment for Bank of Baroda (*Credit card Payment Gateway, Debit card, ATM*), State Bank of India (*credit card Payment Gateway, Net Banking, Debit card, ATM*), Indian Overseas Bank (*credit card Payment Gateway*), HDFC Bank (*Net Banking*), IDBI Bank (*credit card Payment Gateway*) are under progress.

Views

*TANGEDCO shall furnish quarterly report on **Performance***

Assessment of Distribution Circles

Action taken

Quarterly report on performance Assessment of Distribution circles is being sent to Hon'ble Tamil Nadu Electricity Regulatory Commission.

Views

*TNEB (Now TANGEDCO) shall **maintain consumption and revenue data** strictly as per the slab-wise tariff categories.*

Action taken

Consumption and Revenue details slabwise Tariff wise is maintained in LT Billing Package.

3 Performance of TANGEDCO during FY 2009-10 to FY 2012-13

The detailed break-up of revenue and expenditure for FY 2009-10 to FY 2012-13 are given below.

Table 1

Particulars	2009-10	Previous	Current	Ensuing
--------------------	----------------	-----------------	----------------	----------------

	<i>(Audited)</i>	<i>Year 2010-11</i>	<i>Year 2011-12 (estimated)</i>	<i>Year 2012-13 (estimated)</i>
Expenses	Rs lakhs			
Generation	567537	611778	746651	1020674
Distribution	2146292	2468954	2958147	2909660
Transmission Charges Payable to TANTRANSCO	197054	233290	260793	278183
Aggregate Revenue Requirement	2910883	3314022	3965590	4208517
Less:				
Revenue from Sale of Power at the existing Tariff including Tariff Subsidy	1796312	2046901	2418751	2667633
Non Tariff Revenue	44011	52204	62412	74648
Other Income	26959	27530	28906	5668
Other Income for Generation	6973	6971	5868	5868
Other Income for trading	7164	7116	0	0
Balance ARR proposed to be met with new Tariff	1029464	1173300	1449654	1454700

3.1 Treatment of revenue shortfall

Due to various reasons, erstwhile TNEB was not able to recover all the cost from operations. The accumulated losses up to 31.03.2009 of erstwhile Board are as follows:

(Rs. In Crores)

Financial Year	Deficit
Up to 31.03.2003	1295.63
2003-04	1110.13
2004-05	1176.77
2005-06	1328.99
2006-07	1218.94
2007-08	3512.08
2008-09 (Preliminary)	7131.94
Total Accumulated Losses	16774.48

3.1.1 Treatment of Accumulated Losses up to 31.03.2009 - Tariff

Petition 2010 & Restructuring of erstwhile TNEB

In para no. 3.1 (Treatment of Revenue Shortfall) of the Tariff Petition filed by the TNEB 18.01.2010, the erstwhile Board has prayed for the approval of the Commission to treat the accumulated losses to the tune of Rs. 16774.47

Crores at the end of 31.03.09 as "Regulatory Assets" for the future years, taking in to account the following factors viz.,

- The existing Tariff revision procedure does not allow the recovery of shortfalls either automatically by the Board or through a mid-year tariff revision by the Commission.
- The recovery of the entire shortfall in one financial year would put heavy burden on consumers.
- It is also proposed to recover this shortfall through equal installments in future years.

However, in Para 9.15.3. (9) of the Tariff Order dated 31.07.2010, the Hon'ble Commission has not accepted the claim of TNEB for the creation of "Regulatory Asset" for the accumulated losses up to 31.03.2009 saying that **"Restructuring of the TNEB is expected to address the accumulated losses of previous years"**.

As per the Transfer scheme notified by the Government of Tamilnadu vide G.O. Ms. 100 dated 19.10.2010, transferring the assets and liabilities of erstwhile TNEB to successor entities (i.e. TANGEDCO, TANTRANSCO and TNEB Limited) the accumulated losses of Rs. 16774.46 Crores was given the following treatment:

Sl. No.	Description	Amount(Rs. In Crs.)	Amount (Rs. In Crs.)
1	Accumulated Losses as on 31.03.09		-16774.46
2	Less: Accounts to be written off	114.54	
3	Less: Consumer Contribution and Reserves to be adjusted	6488.61	
4	Less: Land Revaluation Reserve	6868.70	13471.85
	Balance Loss to be carried forward		-3302.61

The Balance loss was transferred to TANTRANSCO and TANGEDCO in the ratio of Gross Fixed Assets.

The losses accumulated from 1.4.2009 to 31.10.2010 are as follows:

(Rs. In crores)

Financial Year	Deficit
2008-09 (difference between preliminary and final loss)	639.45
2009-10	10294.64
2010-up to 31.10.2010	6273.21
Total Losses	17207.30

This loss has to be addressed in final transfer scheme through financial restructuring.

3.1.2 Treatment of 2010-11 Losses in Tariff Petition 2010

In paragraph 9.15.3 (9) in the Tariff Order Hon'ble Commission has stated that "Since a huge gap exists even after the proposed tariff hike, the Commission has no choice but to treat the remaining portion as regulatory asset".

Projected Revenue Gap of 2010-11 (as determined by Commission)	Rs.	9555.86 Crores
Gap to be filled by tariff revision	Rs.	1650.46 Crores

Balance to be treated as Regulatory Asset	Rs.	7905.40 Crores

Since the actual figures for the financial year 2010-11 is not yet ready, a preliminary true up figures are arrived, based on which the GAP for the year 2010-11 works out to Rs.11873.88 Crores. It is prayed that Hon'ble Commission may treat the same as Regulatory asset with necessary allowance on Regulatory Asset and allow to be adjusted in future years.

3.1.3 Prayer for Regulatory Asset for 2011-12 and 2012-13

The estimated revenue gap for the financial years 2011-12 and 2012-13 has been worked out to Rs.14496.53 Crores and 14547.00 Crores respectively. It is prayed that the Hon'ble Commission may after adjusting the revenue increase with the proposed new tariff, allow the remaining unadjusted losses for the financial year 2011-12 and 2012-13 as Regulatory assets, as the recovery of the entire shortfall in one financial year would put heavy burden on consumers. The Hon'ble Commission may also as a special case allow TANGEDCO to recover the unadjusted losses with necessary allowance on Regulatory Asset in the 5 financial years .

4 SALE OF POWER

Consumer categories

The Board currently has its consumers categorised as follows:

a. Based on their voltage of use

The consumers are identified as Low Tension (LT) consumers and High Tension (HT) consumers.

b. Based on their usage pattern

Under the above there are currently 18 broad consumer categories, within the LT and HT voltage groups. These are further sub-classified as residential, commercial, agricultural, industrial etc based on the purposes for which electricity is used by them.

LT category consists of the following consumers:

- Domestic, hand loom etc.
- Huts.
- Bulk supply for railway colonies. Defence colonies, police quarters etc.
- Public lighting, Public water works and Public Sewerage system.
- Government aided educational institutions Govt. hospitals, research institutes etc.
- Private educational institutions
- Places of Public worship
- Cottage & tiny industries
- Power looms
- LT Industries
- Agricultural and Government seed farms
- LT Commercial & others
- Temporary supply power

EHT/HT Category receiving supply at 11/22/33/110/230 KV has following categories of consumers:

- Registered factories, Tea Estates, Textiles, Fertilisers, Steel Plants, Heavy water plants, Caustic soda, Railway Traction etc
- Government aided educational institutions, Govt. Hospitals, primary health centres, public libraries, water works, Public lighting etc.
- Private educational institutions
- Places of Public worship
- Commercial and others
- Lift irrigation Co-operative Societies for Agriculture

c. Based on their level of consumption

Some categories of consumers are further classified into various energy slabs depending on their level of consumption. The tariff slabs occur in the LT category of consumers. The last six years category-wise consumption are tabulated below:

Table 1 Consumption for the period FY 2009-10 to FY 2012-2013.

Category	MU			
	2009-10	2010-11	2011-12	2012-13
HT Industries,(Railways for the year 2009-10)	14468	16817	19155	21645
Railways	No separate tariff	485	494	549
Edu. Insts Etc. (HT)	954	903	911	929
Cinema theatre & Pvt.Edu. Insti.	No separate tariff	155	157	163
Places of Public Workshop,	4	3	3	3
Commercial and other HT	1600	1906	2211	2498

Category	2009-10	2010-11	2011-12	2012-13
Lift irrigation and co-ops (HT)	8	7	8	8
HT others	485	413	413	425
Domestic	15361	16249	17550	18603
Huts,	285	350	385	424
Defense colonies etc	10	10	10	11
Public lighting & water works	1494	1597	1709	1829
Recognized Education. Institution.	509	219	221	223
Pvt. Edu. Insi & Cinema Theatre	No separate tariff	149	150	152
places of public worship (LT)	91	98	106	114
Cottage, Tiny	605	122	125	128
Power Loom	805	822	873	925
Industries	3979	4418	4529	4891
Agriculture & Govt seed farm	12745	10417	10903	11546
Commercial and other	4137	4592	4914	5258
Temporary	35	16	17	18
Total Consumption	57776	59750	64843	70342

^The load forecast takes into account underlying economic growth and other forces that affect electricity consumption in the major categories of load. An attempt has been made to refine the forecasts in the wake of economic outlook for the state and check that they are consistent with the likely movements of the principle macroeconomic parameters of demand. The basic parameters underlying load forecast are:-

- Sales data up to FY 2010 has been used for analysis
- Managing agricultural demand and
- Rationalisation of tariffs which include incentive structure for HT consumers, increase in tariffs at inflationary level for subsidising categories and increase in tariffs for subsidised categories including agriculture.

The approach for development of the load forecast for each category is explained below.

- (a) **Domestic or Residential:** The domestic load growth is expected to grow with the increase in population as well as growth in per capita income. The past trend shows an increasing demand in this category. Though there seems to be an imminent saturation in the number of domestic consumers, the growth trend is expected to continue as the quality of life increases, thereby increasing energy requirements as well. Further, a lot of consumers from huts category would shift to domestic category.
- (b) **Commercial:** The commercial load growth is expected to grow again with the increase in population as well as increased spending. Tamil Nadu primarily being a service economy (to a large extent), commercial demand growth is expected to continue growing during the projection period.
- (c) **Industrial Load (Low, Medium, High):** The load would depend upon the capital formation as well as the growth in manufacturing sector. The effect of captive generation is also a major parameter in determining the future demand growth in industrial HT sector. Past trends have shown small increase YOY growth rate in industrial HT demand, though Industrial LT demand has shown reasonable growth. With measures to retain HT clients and neutralise the impact of

captive generation, HT demand is expected to grow at a low YOY rate.

(d) **Public Lighting, water works, etc:** The load growth is expected to depend upon the spending of Government for social services. During the past, YOY growth rate has shown a significant increase in load growth. The previous year rates have been taken as an indicative benchmark for projecting growth in this category.

(e) **Agriculture:** Agricultural consumption has been 100% un-metered in the past with no tariff. The latest tariff order provides a minimal tariff rate for agriculture. The TNEB has nearly 20 lakh agricultural consumers with a connected load of 103.30 lakh HP. There is an estimated increase of 40000 agricultural connections per year.

Based on the growth rate, the projected sales for the years FY 2010-11, FY 2011-12 and FY 2012-13 are as under:-

Table 4 Category-wise sales (MU)

		FY 2010-11		FY 2011-12		FY 2012-13	
Tariff	Category	No. of Consumers	Estimat ed Consum ption	No. of Consumers	Estimated Consumpti on	No. of Consumers	Estimat ed Consum ption
			(MU)		(MU)		(MU)
	High Tension						
I-A	Industries	5359	16817	5413	19155	5521	21645
I-B	Railway Traction	21	485	21	494	23	549
II-A	Recognised Education Inst. Etc.	643	903	643	911	649	929
II-B	Cinema Thetrre & Pvt Edu. Inst	212	155	212	157	214	163
II-C	Places of Public	6	3	6	3	7	3

		FY 2010-11		FY 2011-12		FY 2012-13	
	worship						
III	Commercial and others	1470	1906	1544	2211	1621	2498
IV	Lift Irrigation societies	12	7	12	8	13	8
	Supply to other states		413		413		425
	Low Tension						
I-A	Domestic	15061518	16249	15739286	17550	16445796	18610
I-B	Huts	1420109	350	1519517	385	1625883	424
I-C	Defense colonies etc	715	10	794	10	894	13
II-A	St. Lights and Water supply	439348	1597	477722	1709	497216	1942
II-B 1	Recognised Education Inst. Etc.	42000	219	43050	221	44520	223
II B-2	Prv. Edu Insti. & Cinema Theatre	74054	149	75905	150	78591	300
II-C	Places of Public worship	131869	98	138462	106	145386	114
III-A(1)	Cottage Industries	72370	122	79607	125	87568	128
III-A(2)	Power looms	124026	822	131468	873	139356	925
III-B	Industries	276513	4418	363123	4529	372201	4891
IV	Agriculture	1922400	10417	1949164	10903	1973528	11546
V	Commercial and others	2252596	4592	2760421	4914	2870838	5258
VI	Temporary supply	3450	16	3700	17	4200	18
	TOTAL	21848691	59750	23290069	64843	24292341	70342

5.Generation

The TANGEDCO's generating capacity comprises a mix of coal and gas based thermal, hydro and wind power stations. Around 52% of the installed capacity of the Board (State sector) is thermal, while 38% is based on hydro sources. The remaining share comprises gas and wind based sources

5.1 Thermal Generation (Including Gas Thermal)

The TANGEDCO has about 2970 MW of coal based thermal capacity consisting of four stations at Ennore (ETPS), Tuticorin (TTPS), Mettur (MTPS) and North Chennai (NCTPS). Also, Tamil Nadu Electricity Board has four gas based stations namely Basin Bridge GTPS, Kovilkalappal GTPS, Valathur GTPS I&II & Kuttalam GTPS.

The Generation plan is an integrated exercise with the energy requirement estimation and provides detailed analysis of the Generation requirements, investments, necessary financial costs of generation and preferred despatch order. However, the Generation plan is based on broad level assumptions with respect to investments. It also takes into account the demand (peak and normal). The whole demand supply balance rests on the premise of estimated availability of energy from the new plants. Any deviations from the forecast due to delay/non-availability of energy as estimated would affect not only the demand supply balance but would also the overall financial position of the TANGEDCO.

The load despatch has been considered on hourly despatch based on Merit Order principles. Thus, the load profile of different consumers as well as that of the system would be crucial in determining the overall supply. Estimates regarding cost of power from new plants have been based on their fixed and variable cost assumptions. Actual cost of power purchased from these plants may however vary from the assumptions made. Any major variation in the cost structure also would affect the merit order despatch schedule for the future and ultimately overall cost of supply.

The assumptions regarding the PLFs are discussed here below:

- TTPS, MTPS ETPS and NCTPS have achieved PLF levels around 79.79 %, 92.701%, 29.04% and 92.70% respectively during the year 2011-12. The PLF levels are expected to improve further on completion of statutory overhaul works.
- Regarding ETPS, the PLF levels are expected to improve further on completion of R&M works.

Table 1 Installed capacity of coal based thermal stations

Source	Unit	Installed Capacity (MW)	Date of Commissioning
Ennore T.P.S.	Unit I	60	31.03.70
	Unit II	60	14.02.71
	Unit III	110	17.05.72
	Unit IV	110	26.05.73
	Unit V	110	02.12.75
Sub-total		450	
Tuticorn T.P.S.	Unit I	210	09.07.79
	Unit II	210	17.12.80
	Unit III	210	16.04.82
	Unit IV	210	11.02.92
	Unit V	210	31.03.91

Sub-total		1050	
Mettur T.P.S.	Unit I	210	07.01.87
	Unit II	210	01.12.87
	Unit III	210	22.03.89
	Unit IV	210	27.03.90
Sub-total		840	
North Chennai	Unit I	210	25.10.94
T.P.S.	Unit II	210	27.03.95
	Unit III	210	24.02.96
Sub-total		630	
TOTAL		2970	

Table 2 Installed capacity of gas based thermal stations

Source	Unit	Installed capacity (MW)	Date of commissioning
Basin Bridge GTPS	Unit. I	30	12.02.96
	Unit. II	30	25.02.96
	Unit. III	30	26.03.96
	Unit. IV	30	31.03.96
Sub Total		120	
Kovilkalappal GTPS	Unit. I	107.88	30.03.2001 (CC)
Valuthur GTPS I	Unit. I	95	13.03.2003 (CC)
Kuttalam GTPS	Unit. I	101	24.03.2004 (CC)
Valuthur GTPS II	Unit. I	92.0	31.03.2008 (CC)
Total		515.88	

5.1.1 PROJECTION OF GENERATION

The station wise projection of the generation from the individual stations has been estimated based on their annual maintenance plan and the historical efficiency levels of individual stations.

Table 3 Projection of capacity (*figures in MW*)

Capacity (MW)	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	450	450	450	450
TTTPS	1050	1050	1050	1050
MTPS	840	840	840	840
NCTPS	630	630	630	640
Kuttalam GTTP	101	101	101	101
Basin Bridge GTTP	120	120	120	120
Kovilkallappal GTTP	107	107	107	107
Valuthur GTTP	95	95	95	95
Valuthur GTTP- Additional	92	92	92	9
NCTPS Stage II Unit I	-	-	-	600
NCTPS Stage II Unit 1I	-	-	-	600
MTPS Stage III	-	-	600	600

The plant load factor for FY 2009-10 to FY 2012 -13 is given below.

Table 4 Projections on Plant Load Factor (PLF)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	38.05%	35.42%	29.04%	20.8%
TTPS	77.91%	77.33%	79.79%	82.25%
MTPS	86.85%	82.42%	92.70%	89.01%
NCTPS	87.43%	81.74%	92.70%	86.17%
Kuttalam GTTP	75.58%	19.29 %	46.80%	71.20%
Basin Bridge GTTP	7.78%	4.93%	8.63%	11.60%
Kovilkallappal GTP	56.99%	68.74%	69.25%	65.71%
Valuthur GTTP I	82.52%	67.54%	77.16%	78.50%
Valuthur GTTP II	35.32 %	0	57.20 %	78.30%

Based on the above projections of plant load factor, the energy generation for the current and ensuing year is as set out in the table below..

Table 5 Energy generated (figures in MU)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	1500	1396	1032	1492
TTPS	7166	7113	7655	7565
MTPS	6390	6064	6791	6550
NCTPS	4825	4510	5035	4590
Kuttalam GTTP	646	169	414	630
Basin Bridge GTTP	81	51	90	121
Kovilkallappal GTTP	834.04	649	654	621
Valuthur GTTP I	687	561	642	652
Valuthur GTTP II	377	0	462	632
NCTPS Stage II Unit I &II	-	-	-	2130
MTPS Stage III	-	-	259	3118

1.3.1 ASSESSMENT OF COST OF FUEL (COAL / GAS)

Out of the total installed capacity of is 5690 MW of the Board 2970 MW is thermal using coal as its primary fuel and oil as a secondary fuel. Further additional capacities of 600 MW during 2011-12 and 1200 MW capacity during 2012-13 are expected to be added. The fuel cost has been separately estimated for coal and oil. Due to locational factors, the Board uses multimode transport (rail- cum- sea- cum- rail route) to transport coal to its stations located in the state which results in increased cost on account of transportation of coal. Additional costs are also borne by the Board to meet the Ministry of Environment and Forest stipulations on environmental pollution as well as the disposal of fly ash. This has resulted in high variable cost of operation of the thermal stations. Specific consumption of Coal, Furnace Oil, gas and other Oils for Tamil Nadu Electricity Board 's own stations are assumed based on performance of FY 2010-11. It is also assumed that the consumption levels would be maintained over the period through regular maintenance. The cost of fuel has been escalated at the inflationary levels. The oil costs have been estimated as per the contracts for supply of oil, with necessary escalation to also account for the inflation. The projections related to fuel expenses are given below.

Table 8 Projection on specific coal consumption (*figures in Kg/kWh*)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	1.011	1.130	1.170	1.170
TTTPS	0.748	0.783	0.756	0.756
MTPS	0.699	0.746	0.693	0.693
NCTPS	0.696	0.729	0.652	0.652

Table 9 Projection on Specific HFO consumption (figures in ML/kWh)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	5.98	11.65	10.33	10.33
TTTPS	4.08	5.369	2.00	2.00
MTPS	0.34	0.934	0.546	1.89
NCTPS	0.59	0.977	0.439	0.44

Table 10 Projection on specific HSD/LDO consumption (figures in ML/kWh)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimate d)
ETPS	0.632	0.505	0.57	0.57
TTTPS	0.053	0.071	0.05	0.05
MTPS	0.02	0.05	0.03	0.10
NCTPS	0.11	0.11	0.10	0.10
Basin Bridge GTTP	0.90	0.90	0.90	0.90

Table 11 Projection on consumption of gas (figures in ml/kWh)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
Kuttalam GTTP	0.198	0.20	0.192	0.185
Kovilkallappal GTTP	0.192	0.19	0.20	0.185
Valuthur GTTP I	0.205	0.200	0.200	0.200
Valuthur GTTP II	0.207	0	0.2	0.185

Table 12 Projection on consumption of naphtha (figures in ML/kwh)

	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
Basin Bridge GTTP	0.418	0.422	0.433	0.433

The projections on price of fuels have been based on inflationary trends projected over the year. The price of coal estimated for the current year and projected over the ensuing year is as set out in the table below:-

Table 13 Projection on price of coal (figures in Rs/MT)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	1919	2278	2112	2217
TTPS (Indian)	2485	2658	3180	3340
TTPS (Imported)	5334	4970	6188	6497
MTPS (Indian)	2256	2700	2480	2603
MTPS (Imported)	5423	5532	6567	6895
NCTPS (Indian)	1851	2208	2040	2141
NCTPS (Imported)	5018	5113	6127	6433

Table 14 Projection on price of HFO (figures in Rs/ KL)

Sources	2009-10 (previous year)	2010-11 (previous year)	2011-12 (current year)	2012-13 (estimated)
ETPS	27007	30174	39650	41633
TTPS	26004	29839	39309	41274
MTPS	22610	28988	37330	31959
NCTPS	27186	29753	39423	41394

Table 15 Projection on price of HSD/LDO (figures in Rs/KL)

	<i>2009-10 (previous year)</i>	<i>2010-11 (previous year)</i>	<i>2011-12 (current year)</i>	<i>2012-13 (estimated)</i>
ETPS	44232	51963	65374	68643
TTPS	33472	38259	42428	44549
MTPS	34648	38715	43542	42684
NCTPS	32837	39040	44688	46922
Basin Bridge GTTP	34640	37601	82465	43104

Table 16 Projection on price of gas (figures in Rs/ 1000 m³)

	<i>2009-10 (previous year)</i>	<i>2010-11 (previous year)</i>	<i>2011-12 (current year)</i>	<i>2012-13 (estimated)</i>
Kuttalam GTTP	3461	8547	8547	8547
Kovilkallappal GTTP	3536	8547	8547	8547
Valuthur GTTP I	3520 & 8722	8547	8547 & 9811	8547 & 9829
Valuthur GTTP II	3520 & 8722	-----	8547 & 9811	8547 & 9829

Table 17 Projection on price of Naptha (Figures in Rs/ KL)

	<i>2009-10 (previous year)</i>	<i>2010-11 (previous year)</i>	<i>2011-12 (current year)</i>	<i>2012-13 (estimated)</i>
Basin Bridge GTTP	23422	33437	40442	40442

5.2 Hydro based generation

The Board has nearly 36 small hydro stations of total capacity at 6531.290 MW (2010-11). Most of the stations except power stations located in the Nilgiris are irrigation tied. The state has almost utilised its available hydro generation potential.

5.2.1 PROJECTION OF GENERATION

The hydel generation for FY 2010-11 is 5108 MU (Gross). However if for the reasons beyond control hydel generation is significantly different then it would affect the over all generation as well as purchase requirements and consequently the financial position of the Board.

Table 18 Projection of capacity (figures in MW)

Capacity (MW)	FY 2009-10	FY 2010-11
Existing Hydro	2187	2187
Bhavani Barrage – I & II		20
Periyar Vaigai I to IV	-	13
Bhavani Kattalai Barrage – II	-	30
Bhavani Kattalai Barrage – III	-	30
TOTAL	2187	2280

Table 19 Projection of available energy (*figures in MU*)

Available Net Energy (MU)	20 09-10	2010-11	2011-12	2012-13
Overall Hydro	5612.653	5085.127	5561	6025

5.3 Wind based generation

Tamil Nadu is a pioneer among the State Electricity utilities in India in promoting Renewable Energy programmes. The 1st Wind mill with 50 kW capacity was erected by TNEB during the year 1985 and commissioned in January 1986. Subsequently, 17.555 MW of demonstration wind farm projects were commissioned during 1990`s.

- The total installed capacity of Wind power projects in Tamil Nadu is aggregated 5887.165 MW as on 31.03.2011.
- Tamil nadu's contribution is around 60 % of the country's total installed capacity of wind mill power projects.

WIND MILL CAP/GENERATION AS ON 31-03-2011 (BOARD & PRIVATE)

Table 20

Sl. No.	Year	Installed Capacity in MW		Generation in Million Units
		During Year	Cum Total	
1	Upto 1997	0.000	676.155	1485.372
2	1997-1998	31.140	707.295	765.854
3	1998-1999	17.765	725.060	928.865
4	1999-2000	45.675	770.735	1156.593
5	2000-2001	41.895	812.630	1094.175
6	2001-2002	44.035	856.665	1257.110
7	2002-2003	133.600	990.265	1305.703
8	2003-2004	371.225	1361.490	1714.475
Sl. No.	Year	Installed Capacity in MW		Generation in Million Units
		During Year	Cum Total	
9	2004-2005	678.735	2040.225	2260.732
10	2005-2006	857.555	2897.780	3444.281
11	2006-2007	577.910	3475.690	5268.982

12	2007-2008	381.075	3856.765	6066.646
13	2008-2009	430.975	4287.740	6655.150
14	2009-2010	602.025	4889.765	8145.508
15	2010-2011 (upto 03/09)	997.400	5887.165	8720.046
	TOTAL	5887.165		50269.492

Table 19 Projection of available energy (figures in MU)

Available Net Energy (MU)	20 09-10	2010-11	2011-12	2012-13
Wind	8145.50	8720.046	9265	10009

The total fuel cost of generation station wise is as below. The cost includes cost of coal, HFO, HSD/LDO , gas and naphtha wherever applicable.

Table 24 Projected fuel cost (coal, oil , gas and naphtha water lubricants other fuel cost) station-wise (figures in Rs Crores)

Sources	2009-10 (current year)	2010-11	2011-12 (estimated)	2012-13 (estimated)
ETPS	329.81	424.65	303.25	467.74
TTPS	1716.52	1864.75	2235.60	2378.64
MTPS (12-13 MTPSIII)	1175.05	1414.48	1561.93 & 64.89	1647.32 & 973.33
NCTPS (12-13 NCTPS II)	755.92	864.27	946.43	927.27 & 472.06
Kuttalam GTP	51.29	313.34	73.85	106.96
Basin Bridge GTP	176.90	78.54	157.48	216.83
Kovilkallappal GTP	41.52	98.02	109.58	100.21
Valuthur GTP I	105.658	90.22	195.23	111.47
Valuthur GTP II	3.58	0.00		104.47
Total	4356	4866	5648	7506

Table 25 Cost of fuel (*figures in Rs Crores*)

Component	2009-10	2010-11	2011-12 (estimated)	2012-13 (estimated)
Cost of coal	3825	4289.2	4955.3	6654.8
Cost of Oil	123	202	135	193
Cost of gas	201.75	273.32	378.13	422.7
Cost of naphtha	173.49	77.81	154.42	211.09
Other fuel related cost	32.65	24.64	26	24.48
Total Cost	4356	4866	5648	7506

6 . Power Purchase

The State sources its power from central sector stations of Ramagundam of NTPC, NLC I & II, NLC Expansion, Madras Atomic Power Station (MAPS) at Kalpakkam ,Kaiga Atomic Power Station (KAPS), Talcher, Kayankulam, Eastern region and Power Exchanges etc. Apart from this the state also has a number of private captive, cogeneration and wind energy projects, which supply power to the Board. The State also has seven Independent power projects namely the GMR, PPN, Samalpatti, Madurai Power Corporation, STCMS, Aban Power Co. and Penna Ltd. Besides the above sources power is also procured from traders.

The Tamil Nadu grid is connected to Karnataka, Andhra Pradesh and Kerala grids through the 400 KV and 230 KV transmission lines. The 400 KV inter-state lines are utilized to transfer the power generated at Central sector generating stations to the respective beneficiaries. The Southern Regional Load despatch centre at Bangalore co-ordinates the inter-state power flows over the 400 KV and 230 KV lines.

Central sector power

6.1.1

EXPECTED PURCHASE FROM CENTRAL SECTOR STATIONS

Energy availability from existing Central stations has been assumed to remain unchanged in the ensuing financial years also. The commissioning schedule and

the share of TNEB as notified by GOI have been taken into account while formulating the projection of the power purchase from new CGS stations.

location of power from central sector stations for TNEB as per the GOI notification as indicated below:-

Table 2 Capacity allocation from different stations

Central sector power station	State in which located	Installed capacity (MW)	Allocation to TNEB (in MW)
Kaiga APS	Karnataka	880	195
NTPC (SR) (Ramangundam STPS)	Andhra Pradesh	2600	588
M APS	Tamil Nadu	440	327
Neyveli Lignite Corp– I	Tamil Nadu	600	475
Neyveli Lignite Corp– II	Tamil Nadu	1470	441
Neyveli Expansion TS I	Tamil Nadu	420	193
NTPC-Kayankulam,	Kerala.	360	0
NTPC-Talcher-Stage-II	Orissa	2000	477

6.1.1 BASIS OF FORECASTING ENERGY PROCUREMENT PLAN

The power purchase plan for FY11-12 and FY 12-13 are based on detailed station wise analysis of monthly Energy Sent Out (ESO) and the consequent energy availability from the generating stations during the above financial years. As discussed earlier, only the share notified by GOI for the central generating

stations for Tamil Nadu has been taken into account for forecasting the energy procurement for the ensuing years.

Sl. No.	Name of the Projects	Type	Sector	Installed capacity/Share
1	Neyveli TS-II Units - I & II (2x250MW)	Thermal	Central	230
2	Simhadhri Stage -2, Units - 3 & 4 (2x500MW)	Thermal	Central	190
3	Kudankulam APS (Unit 1 -1000MW)	Nuclear	Central	462
4	NTPC-TNEB at Vallur Stage - I (2x 500MW)	Thermal	JV	694
5	PFBR Kalpakkam (1x500MW)	Nuclear	Central	167

6.1.1.POWER PURCHASE EXPENSES FROM CENTRAL SECTOR STATIONS

The Power purchase expenditure for FY 2009-10 and 10-11 is based on the actual expenditure during the year. The projection of the purchase cost during the current year has been made based on the availability of power during FY 2009-10 and FY 2010-11 from these stations. The energy availability for the ensuing years from the central sector stations is as given under.

Table 1.Power purchase (Central sector stations) (figures in MU)

Sources	Purchase during FY 2009-10 (MU)	Purchase during FY 2010-11 (MU)	Purchase during FY 2011-12 (MU)	Estimated purchase during FY 2012-13 (MU)
Neyveli Lignite Corp– I	3269	3066	3066	3066
Neyveli Lignite Corp– II	3001	3042	3242	3272
Neyveli-TS-I Expansion	1486	1509	1609	1624
M APS	1259	1398	1498	1508
Kaiga APS	720	860	1107	1178
NTPC (ER)	497	735	885	897
NTPC (SR)	4091	4039	4139	4164
Traders	6953	10483	12500	5365
NTPC –SR Stage III	1101	1024	1105	1125
NTPC kayankulam	1229	854	250	0

NTPC Talcher Stage -II	3802	3664	3690	3705
PGCIL – SR & ER				
PGCIL - ABT	922	1441	750	145
Kudankulam (proposed)			333	3245
Kalpakkam (proposed)				256
NTPC - Tamil Nadu Electricity Board JV at Vallur(proposed)				3465
NLC Stage –II Expansion (Proposed)			1295	2135
Simhadri (proposed)			328	925

Table 2 Cost of power purchase (figures in Rs. Crores)

Sources	Purchase during FY 2009-10 (in Crores)	Purchase during FY 2010-11 (in Crores)	Purchase during FY 2011-12 (in Crores)	Estimated purchase during FY 2012-13 (in Crores)
Neyveli Lignite Corp– I	696.86	629.75	676.20	692.22
Neyveli Lignite Corp– II	515.30	532.06	679.32	707.62
Neyveli-TS-I Expansion	468.88	452.80	483.91	493.83
M APS	244.09	276.62	305.85	321.14
Kaiga APS	218.79	262.90	346.64	363.98
NTPC (ER)	126.31	223.72	323.47	339.93

NTPC (SR)	763.73	806.07	897.16	932.46
Traders	3775.51	5527.96	6789.15	3059.60
NTPC –SR Stage III	242.89	262.17	301.51	310.82
NTPC kayankulam	935.04	785.83	368.74	0
NTPC Talcher Stage -II	742.65	909.32	1044.97	1060.70
PGCIL – SR & ER	447.46	457.28	480.15	504.16
PGCIL - ABT	569.11	471.95	270.11	60.05
Kudankulam			99.90	1022.18
Kalpakkam (Exp)				76.80
NTPC - Tamil Nadu Electricity Board JV at Vallur				1004.85
NLC Stage –II Expansion			259	427
Simhadri			95.12	268.25

6.2 Captive/Cogeneration and Wind sources

The Board has entered into agreements with some of the private energy generators owning captive generating sources and co-generation sources, which pump their surplus power into the TNEB grid. In addition, private wind power producers also sell their power to TNEB based on option exercised by them. The estimation of the quantity of power likely to be made available for sale is based on prevailing trends.

Table 3 Projected Energy procurement (figures in MU)

Sources	Purchase during FY 2009-10 (MU)	Purchase during FY 2010-11 (MU)	Purchase during FY 2011-12 (MU)	Estimated purchase during FY 2012-13 (MU)
Captive	655	460	575	580
Cogeneration & Bio Mass	887	1107	1250	1589
Wind	8134	8707	9245	9988
Solar and Solar (RPSSGP)		2	10.431	10.50

Table 4 Cost of power purchase (figures in Rs. Crores)

Sources	Purchase during FY 2009-10 (in Crores)	Purchase during FY 2010-11 (in Crores)	Purchase during FY 2011-12 (in Crores)	Estimated purchase during FY 2012-13 (in Crores)
Captive	246.80	160.80	243.23	257.61
Cogeneration & Bio Mass	310.9	400.08	460.81	612.52
Wind	2500.69	2944.28	3124.81	3375.94
Solar and Solar (RPSSGP)		0.93	4.87	5.14

6.2 Independent power producers

The Board has entered into power purchase agreements with several independent power producers for taking electricity.

The procurement from various sources is expected to be lower in the wake of planned procurement from the less expensive sources like Talcher, Southern Region., Eastern Region.

Table 3 Projected power purchase (*figures in MU*)

Sources	Purchase during FY 2009-10 (MU)	Purchase during FY 2010-11 (MU)	Purchase during FY 2011-12 (MU)	Estimated purchase during FY 2012-13 (MU)
GMR PCPL	1145	875	795	495
Samalpatti	481	378	575	575
Pillaiperumaln allur	2258	2494	2375	2395
ST-CMS	1654	1652	1780	1795
Madurai Power Corpn	467	353	575	575
Aban	677	820	801	810
Penna	339	370	365	375

The purchase price from these sources is governed by the applicable power purchase agreements entered into with these projects. The tariff payments to the IPPs are based on the fixed and variable charge incurred. The table below describes the various tariff elements and the variables on which these are computed.

Table 4 Station-wise fixed cost (figures in Rs. Crores)

Sources	Purchase during FY 2009-10 (in Crores)	Purchase during FY 2010-11 (in Crores)	Purchase during FY 2011-12 (in Crores)	Estimated purchase during FY 2012-13 (in Crores)
GMR PCPL	182.26	153.23	145.44	154.32
Samalpatti	99.97	99.78	117.32	93.76
Pillaiperumalnallur	343.12	336.38	328.23	308.81
Madurai Power Corpn	105.52	106.70	132.26	139.79
ST-CMS	309.85	302.60	309.60	316.55
Aban	57.24	116.16	114.56	110.48
Penna	55.16	59.38	60.97	59.54

Table 5 Variable Cost for the sources

Sources	Purchase during FY 2009-10 (in Crores)	Estimated purchase during FY 2010-11 (in Crores)	Estimated purchase during FY 2011-12 (in Crores)	Estimated purchase during FY 2012-13 (in Crores)
GMR PCPL	705.10	625.69	757.00	537.65
Samalpatti	299.71	284.84	560.63	644.72
PPN	1147.82	865.66	1448.75	1963.90
Madurai Power Corpn	273.87	263.48	576.18	691.42
ST-CMS	248.64	329.90	389.82	452.07
Tanjore Lanco	100.84	129.56	141.78	150.54
Pioneer	36.65	58.90	63.88	68.91

Table 6 Cost of power purchase (figures in Rs. Crores)

Sources	Purchase during FY 2009-10 (in Crores)	Purchase during FY 2010-11 (in Crores)	Purchase during FY 2011-12 (in Crores)	Estimated purchase during FY 2012-13 (in Crores)
GMR PCPL	887.36	778.93	902.44	691.97
Samalpatti	399.69	384.62	677.94	738.48
Pillaiperumalnallur	1490.94	1202.04	1776.98	2272.71

Madurai Power Corpn	379.39	370.18	708.44	831.21
ST-CMS	558.48	632.50	699.42	768.62
Tanjore Lanco	158.08	245.72	256.34	261.01
Pioneer	91.80	118.28	124.84	128.44

6.3 Total power purchase cost

The total power purchase units and cost from the various sources for the years 2009-10 to 2012-13 are as follow

Table 7 Total power purchase units and cost

	Purchase during FY 2009-10	Purchase during FY 2010-11	Purchase during FY 2011-12	Estimated purchase during FY 2012-13
Units (Figures in million units)	45027	49335	54143	55263
Cost (Figures in Rs. Crores)	17052.70	19224.15	22931.99	22316.26
Weighted Average Cost per unit in Rs.	3.79	3.90	4.24	4.04

Hence the total power purchase cost during FY 2011-12 is expected to be Rs 23592.24 Crores, while for FY 2012-13 is expected to be Rs.23368.97Crores.

Fuel Price Adjustment Charge (FPAC) Formula

a). As per section 62 (4) of the Electricity Act 2003, no tariff or part of any tariff may ordinarily be amended more frequently, than once in a financial year except in any respect of any change expressly permitted under the terms of any fuel surcharge formula as may be specified.

The increase in fuel price is one of the major risks faced by the

a) distribution licensees which may affect their financial position adversely. As per the Act, in order to recover the additional burden on account of changes in fuel price, a fuel surcharge formula is to be specified.

b) Further provision 5.3(4) of the Tariff policy provides as follows:

“Uncontrollable costs should be recovered speedily to ensure that future consumers are not burdened with past costs. Uncontrollable costs would include (but not limited to) fuel costs, costs on account of inflation, taxes and cess, variations in power purchase unit costs including on account of hydro thermal mix in case of adverse natural events,”

c) As power purchase/generation cost is the major expenditure, it is proposed to suggest a formula for fuel price adjustment in this tariff petition.

d) The fuel price adjustment charge formula enables the TANGEDCO to recover the actual cost of the fuel incurred and the actual cost of the power purchase if the same deviates from the figures approved by the H'onble Commission in the tariff order. The various aspects considered while designing the formula are submitted as below:

(i) How is the fuel surcharge adjustment to be collected from the consumers and the interval at which the same is to be collected?

(ii) Who are the consumers from whom the fuel surcharge adjustment is to be collected i.e. is it to be collected from

all the consumers or whether certain categories of consumers are to be excluded?

(iii) The time frame for filing the details of fuel surcharge adjustment before the Commission?

- e) The Fuel Price Adjustment Charge may be recovered on a quarterly basis by including to the current consumption charges bill.
- f) The Fuel Price Adjustment charge can be collected from all the categories of the consumers including subsidized consumers and the amount can be included to the subsidy to be collected from GOTN.
- g) The time frame for furnishing the details may kindly be prescribed by the Hon"ble Commission.
- h) The base data to be used for arriving at the Fuel Price Adjustment are the figures approved by the Commission in its Tariff Order.
- i) The fuel price adjustment is to be sought both for own generation as well as power purchase.
- j) The variation in the fuel cost is to be recovered from the units sold to the consumers during the adjustment period.
- k) The formula proposed for fuel price adjustment and adjustment for Power Purchase Cost is given below:

$$\frac{Q_a \times (ARC - APRC) + Q_o (ARO-APRO) + PP (AR - APR)}{E}$$

E

- (i) Qa – Actual quantity of fuel consumed during the period of adjustment.

- (ii) ARC – Actual weighted average rate of the fuel used during the period of adjustment.
- (iii) APRC – Weighted average rate of the fuel approved by the Commission.
- (iv) Qo – Quantity of oil used during the adjustment period (Gross generation X specific oil consumption approved by the Commission).
- (v) ARO - Actual weighted average rate of the oil.
- (vi) APRO – Weighted average rate of the oil approved by the Commission.
- (vii) PP – Units purchased during the period of adjustment.
- (viii) AR – Actual Average rate of power purchased during the period of adjustment.
- (ix) APR – Average rate of power purchase approved by the Commission.
- (x) E – Energy billed for retail sale during the period.

Note:

The station heat rate as approved by the Commission is to be adopted for arriving at the consumption of fuel.

It is submitted that above formula or any other suitable formula deemed to fit may kindly be approved after making necessary amendments in the Tariff Regulations and hearing views from the stake holders.

7. Energy Balance and efforts towards system improvement

The energy balance for the current year and ensuing financial year has been formulated after considering all the factors relating to demand and energy requirement. . A T&D loss level has been arrived at on the basis of energy input into the system and total output from the system for the year 2009-10 and 2010-11 as per balance sheet and AT&C loss has been adopted for the year 2011-12 and 2012-12.

Table 8 Energy Balance

Particulars	<i>2010-11 (Previous year)</i>	<i>2011-12 (estimated)</i>	<i>2012-13 (estimated)</i>
Total Generation and power purchase	72513	80192	86564
Energy Sale			
HT sale	20689	23351	26220
LT sale	39061	41492	44121
Total sale	59750	64843	70342
Energy Loss in the system	12762	15349	16222
AT&C loss %	17.60% (T&D)	19.14%	18.74%

1.4 Assessment of the T&D loss levels

TANGEDCO is as of now estimating the AT&C loss and T&D loss with some computed values based on sample metering in the absence of 100 % metering in all feeders up to consumer point To measure T& D loss nearer to the actuals it was proposed to achieve 100% metering up to the level of DTs at least. As on 30.06.2011 only 45.35% of the total Distribution Transformers (DTs) erected have been metered. Even with 100% metering of DTs, due to dearth of man power, it is not feasible to take readings from all the meters at the

same point of time which is essential for necessary accurate assessment of AT&C and T& D loss.

In order to arrive at proper estimate of AT & C and T& D loss, as a pilot study with the above arrangements in Gopi, Bhavani, Sathya mangalam (UA) under R-APDRP scheme, modems are fixed in the DT meters to enable Automatic Meter Reading facility. The DT meters will be connected to the data centre through necessary hardware and soft ware. The work is expected to be completed by 2012 January. On completion of the pilot Project, and Data capturing, the Energy Accounting / Auditing can be completed in the pilot area. Based on that sample data, AT& C loss can be evaluated for the pilot area.

Further, Anna University has been approached for scientific measurement of T&D loss and measurement of unmetered Agricultural consumption and finalization of the same is under progress. Further Government of Tamil Nadu has addressed for provision of meters in Agriculture service connection. TANGEDCO is also carrying out some other following works to reduce losses to the maximum extent possible level.

Reduction of HT:LT ratio by erecting more High Tension lines and erecting new distribution transformers.

- Establishment of new substations
- Strengthening of HT line conductors
- Installation of HT shunt capacitors at substation end
- Installation of LT fixed capacitors at LT side of Distribution Transformers
- Erection of link lines & Re-routing of feeders

Aggregate Transmission and Commercial loss (AT&C)

T&D loss is purely technical in nature and is assessed considering the energy fed in to the grid and the energy billed.

The AT&C losses on the other hand is assessed considering the energy fed in to the grid and the energy for which revenue realized which accounts for the collection efficiency also.

Data for AT & C Losses during 2010-11			
Sl.No.	Item	Unit	
1	Total Input Energy (A)	MU	72512
2	Power Sold (B)	MU	59750
3	Revenue from sale of power(C)	Rs.in Crores.	18760.88
4	Change in Debtors from Sale of power(D)	MU	441.38
5	Revenue Realized E = (C-D)	MU	18319.5
6	Collection Efficiency (%) (F)=(E/C) X 100		98
7	Energy units Realized (G)=(B*F)*100	MU	58344
8	AT & C losses (%) (H)=(A-G)/A* 100		19.54

.TNERC has fixed the following year wise target of AT&C losses to be achieved by TNEB up to 2012:

Year	2008-09	2009-10	2010-11	2011-12
Percentage of AT&C losses	19.30%	18.90%	18.50%	18.10%
Reduction by	---	0.4%	0.4%	0.4%
Actuals	---	21.53%	19.54%	19.14%

- AT & C loss for the year 2009-10 is high ,since the collection efficiency was 94 %,due to the levy of Peak hour penal charges in 2009- 10 on installment basis, but was collected subsequently in 2010-11.
- Steps are being taken to reduce the losses as per the directions of TNERC.

1.4.1 DETECTION OF THEFTS OF ELECTRICITY

7.1.1.1 Enforcement wing

Enforcement wing consists of 17 Squads each headed by an Assistant Executive Engineer/Electrical are functioning throughout the State under the control of Executive Engineers in 4 divisions i.e. Chennai, Coimbatore, Madurai and Trichy. In addition to these Enforcement Squads, one more squad known as Flying Squad/Chennai is also functioning in the Enforcement wing. All these 18 Squads are supervised by the Superintending Engineer/Enforcement/Chennai with overall control of Additional Director General of Police/Vigilance/TANGEDCO.

7.1.1.2 PREVENTIVE ACTIONS TAKEN TO CURB ENERGY THEFTS

1. Ensuring the installation of metering points in the HT services near the approach road so as to enable easy inspection by Enforcement officials.
2. Provision of Check Meters outside the factory premises in respect of select HT/LT services for comparing the consumption pattern with the Main Meter and prevention of revenue leakage.
3. Ensuring numbered seals in all HT and LT services by the concerned O&M officials.

4. Ensuring the provision of Terminal Cover Seals (TCS) in all LT services by the concerned O&M officials.
5. Ensuring the installation of Electronic Meters in all HT/LTCT services for display of tamper indications, if any, and to enable downloading of data, through Common Meter Reading Instrument (CMRI), for detection of energy theft.
6. Conduct Energy audit in HT feeders to ascertain as to whether energy sent in the feeder is billed and collected leaving technical losses.
7. Create deterrence among power offenders by publishing in the press about the energy theft cases detected.
8. creating awards scheme up to a maximum of Rs.20,000/- for the informers who give information about theft of energy.

7.1.1.3 DETECTION OF ENERGY THEFTS THROUGH SCIENTIFIC PLANNING OF INSPECTION OF SERVICE CONNECTIONS

The following plan of action is being adopted for inspection of service connections extended to various consumers:

1. Frequent/surprise inspection of Industries identified as being vulnerable to energy thefts.
2. Inspection of Seasonal Industries like Ice factories, Ice plants, Sago Mills etc. during the respective seasons.
3. All HT service connections extended to specialized industries are inspected once in a year and other live HT service connections are inspected once in two years and all LTCT service connections are inspected once in three years.
4. Consumers whose consumption
 - (i) drop suddenly and

- (ii) whose consumption dose not commensurate with their connected load.
5. Disconnected service connections.
 6. Inspection of service connections using intelligence report / source reports / public information / media information.
 7. By assisting and participating Circle level mass inspection of Domestic services
 8. All Assistant Executive Engineers and Assistant Engineers / Junior Engineer I Grade of all Enforcement squads have been provided with a cell phone to receive messages regarding theft of energy and seeking and providing support, in case of need.
 9. All the four Enforcement divisions have been provided with a laptop and a CMRI for studying the load curve in HT service connections for eliciting information about possible energy theft.

7.1.1.3 RECENT TECO – MANAGERIAL SOLUTIONS FOR PREVENTION OF THEFT/ DETECTION / REVENUE COLLECTION

1. CHECK METERS:

Check meters have been provided out side the factory premises in respect of HT / LT services for assessing the consumption as part of an on –going exercise for detection of energy theft and prevention of revenue leakage. Provision of check meters in steel industries, plastic industries etc., has been institutionalized to prevent the potential offenders from committing energy theft offences, even by way of tricky and totally novel methods. The check meters are monitored once in three months by Enforcement wing.

2. AUTOMATIC VOICE RECORDING SYSTEM:

A separate P&T phone, with voice recording facility has been installed at Chennai, Coimbatore, Trichy and Madurai Enforcement Division offices for

receiving information about energy theft from the informants or lay public. Extensive publicity is being given about this measure to the public.

3. CASH REWARD SCHEME TO THE INFORMER:

The cash reward scheme envisages payment of cash reward to the TANGEDCO Employees who are not in-charge of detection of theft of energy and also to members of public.

i) Quantum of Cash award:

The amount of cash reward will be 10% of the extra levy realized or Rs.20,000/- (Rupees twenty thousand only) which ever is less. The award shall be given after the revenue become final, settled and collected.

METHODS PROPOSED TO BE ADOPTED:

In addition to the existing methods being pursued, the following procedures are also proposed to be adopted :-

1. Collection of information from HT, LT Billing Websites and from Websites on peak load data of HT Consumers.
2. Analysis of CMRI data of Commercial/Industrial consumers prone to energy theft like Ice and cold storage, Steel and Fabricating industries, Carbide industries etc.,
3. Cultivation of sources/contacts to elicit information on High value energy theft in industrial/commercial establishment and wide spread misuse of energy in Government sponsored schemes/Subsides.
4. Create wide publicity on the role and responsibility of the Flying squad as an Enforcement unit.
5. Financial viability, and feasibility of replacement of existing lead sealing by Hologram seals is under study. The same will be implemented in a phased manner.

3. CHECK LISTS FOR POLICE / TECHNICAL PERSONNEL

A well researched document (Booklet) with 23 standard formats and check lists has been designed to ensure fool-proof action on the part of O&M officials in filing FIR in energy theft cases and for police officials in proper and prompt investigation as also disposal of these cases. On approval of DGP of the state, Director prosecution and Chairman / TNEB these booklets have been circulated to all police officers, APPs and Sub-division level TNEB officials of the state. Arguments in criminal cases, with case laws, have been nearly standardized and made available to prosecuting staff to ensure speedy and successful prosecution of energy theft cases.

7.1.1.5 SUPERVISION AND MONITORING OF ENERGY THEFT CASES

A computerized system of all energy theft cases has been created and is maintained and operated at head quarters level. For senior supervisor officials (SEs / EEs) of TNEB, comprehensive checklists have been designed to help them monitor especially high value energy theft case. One major benefit is to ensure avoidance of prolonged litigation of court case through personal intervention of senior officials

7.1.1.7 INTRODUCTION OF SYSTEM OF COMPOUNDING OF OFFENCES AND FUNCTIONING OF "ELECTRICITY ADALAT"

The provisions in Section 50 B of the I.E. Act, 1910 and Section 152 of the Electricity Act, 2003 help in compounding of offence in theft of electricity. An amendment to the rates of compounding as per provisions in Section 152 have been issued in G.O. Ms. No.78, dt. 26.6.2008.

The Electricity Adalat was inaugurated on 17.4.2002. Theft of energy cases pending in City Civil Court were taken up for settlement in the Adalat at the first instant. Then the same was extended to cases pending in various Courts and Districts and at High Court/Madras. 383 cases have been settled so far in the Adalat.

STATISTICS PERFORMANCE OF ENFORCEMENT WING BY TNEB

Details	2007-2008	2008-2009	2009 - 2010	2010-2011	2011-12 up to Aug 2011
Number of services Inspected	123251	127717	149767	152532	71409
Number of Energy theft cases detected	3746	4425	6230	6544	3034
Provisional amount assessed (Rs.in lakhs)	1245.15	1548.59	4446.45	4474	1941.7
Compounding amount Assessed (Rs.in lakhs)	155.84	201.34	365.26	596.65	221.76
TOTAL	1400.99	1749.92594	4811.708	5070.65	2163.46
Provisional Assessment Collected Amount (Rs.in lakhs)	1069.2	1366.998	2546	2980.789	1475.53
Compounding amount collected (Rs.in lakhs)	155.84	201.34	365.26	596.65	221.76
TOTAL	1225.04	1568.338	2911.26	3577.439	1697.29
Balance Amount to be Collected	175.95	181.58794	1900.448	1493.211	466.17

7.2 Steps for providing efficient service to consumers

7.2.1 ENERGY AUDIT:

TNEB has an excellent record of billing and collection of CC charges from consumers. It has around 98% level of collection efficiency which is the highest among the various power utilities in the country. The Board has an effective meter replacement program wherein the defective meter replacement is carried out on a priority basis.

Mandatory energy audit programmes for HT industrial and commercial establishments were taken up in phased manner by TNEB and energy auditors were registered with TNEB for this purpose.

However, mandatory energy audit programmes were not legally enforceable after the enactment of Electricity Act 2003. After enactment of the Energy Conservation Act 2001, the Bureau of Energy Efficiency (BEE), Ministry of Power, GoI was formed to implement the provisions of the Act and the Tamilnadu Electrical Inspectorate has been appointed as the State Designated Agency by the Govt. of Tamil Nadu for implementing the provisions of the Act in the State of Tamil Nadu. As per the Act, the energy intensive industries / Designated Consumers have to take up energy audit only by engaging energy auditors accredited by the BEE.

7.2.2 SYSTEMS IMPROVEMENTS:

The Board had constituted a committee to study the problem of low voltage prevailing in some of the areas. Based on the committee's recommendations, the generating machines were loaded for VAR generation to their capability limits wherever required to maintain voltage profile near to their rated value in their buses. The minimum and maximum voltage levels and VAR generation in 230KV and 110KV buses are monitored on daily basis and it is ensured that voltage variation is within limits.

As an experimental measure, LT fixed capacitors were provided at the LV terminals of distribution transformers for about 10% compensation with 1x9

MVAR for 63 MVA transformers and 2x9 MVAR for 100 MVA transformers. This has resulted in reduction of the reactive loading and the consumer were advised to take up energy efficient lighting for the mutual benefit. Further a study undertaken to propose similar measure in the educational institutes.

The system improvement measures in terms of addition of infrastructure arrangements are detailed below:-

Table 4 Additional Sub stations, lines & cables energised

Year	No. of SS	Length of EHT lines in Km.	Length of cables in Km.
2005-06	42	857.18	0.5
2006-07	54	734.21	NIL
2007-08	78	1516.00	41.30
2008-09	73	1206.56	0.06
2009-10	78	1487.40	22.05
2010-11	42	915.804	25.16
2011-12 (To be Programmed)	55	2480.00	20.00

Table 5. Capacitor banks ordered for the year 2011-12 & 2012-13

Rating	Capacity / Total Nos.	Total Capacity
11 KV	2.4 MVAR × 35 Nos.	84 MVAR
22 KV	2.4 MVAR × 35 Nos.	84 MVAR

Table No.6.

ABSTRACT FOR TENTATIVE SUBSTATION SCHEMES TO BE EXECUTED DURING 12TH PLAN							
SUBSTATION VOLTAGE	2012-13	2013-14	2014-15	2015-16	2016-17	SCHEMES UNDER STUDY	TOTAL
400 KV	9	5	1				15
230 KV	16	16	3	6		14	55
110 KV	81	39	30	20	14	16	200
TOTAL	106	60	34	26	14	30	270

The Board has also developed an index to regularly monitor the performance of its sub-stations and feeders. An index for feeder tripping has been developed, wherein the field data is regularly analysed viz, regular maintenance of the distribution transformers, earthing of transformers, tree clearance and restringing of the lines are monitored. The internal benchmarks help the Board improve upon its performance.

7.2.3 EFFICIENT SERVICE TO CONSUMERS

The Board is also committed to render the highest standards of service to its consumers based on standards as set out by the Honourable Commission in the "Standards of Performance Regulations" for the various services to be provided to the consumers. The Board has been maintaining an impressive record for redressal of consumer complaints, correction of faults, providing service connections, faulty meter replacement, complaints of Billing. Meter reading, payment etc. Hence the Board is making its best efforts to provide efficient, reliable and prompt service to its consumers. A computer based power failure redressal centre has been set up in Chennai, Madurai, Coimbatore, Trichy, Vellore, Erode, Salem, Tirunelveli, Nagercoil and Tirupur. The consumers who were earlier facing difficulty in contacting "fuse off call centres", can now directly contact the call centres using a computer based system, which will have multiple lines, queuing facility, automatic call distribution

system with multiple operators. In addition to the existing operator assistance, a new IVRS facility is in service with effect from 1.3.11. Using this upgraded version of call centre, the consumers are registering their complaints and on rectification of complaints, the feed back is being given to the consumers through SMS to mobile numbers and through IVRS to the land line numbers.

7.2.3.2 Same day service connection

The Board has initiated several schemes aimed at providing better service to the consumers. A 'same day service connection scheme' has been introduced for LT domestic, commercial and industrial consumers from 1.4.2000.

7.2.3.3 Training Programs.

In Department of Human Resource Development wing of TANGEDCO ,there are 4 major Training Institutes and 11 nos. centres are functioning namely:

- Hydro Training Institute (To cater Hydro Power Station)
- Thermal Training Institute (To cater Thermal Power Station)
- Transmission and Distribution Training and Development Institute (To cater Transmission &Distribution areas).
- Staff Training College(To cater Management Training needs of all the areas)
- 10 Nos. of Technical Training and Development Centres(To cater the needs of the Engineers/Staff in Distribution areas)

- One cable Jointing Training centre (To cater to the needs of Metro Engineers/SSStaff)

The following 3 Institutes have been recognized by CEA/Ministry of Power/New Delhi as Category –I Institutes:

- Transmission and Distribution Training and Development Institute, Madurai.
- Hydro Training Institute, Kuthiraikalmedu
- Thermal Training Institute, North Chennai.

Programmes for attitudinal changes and for equipping the personnel with updated knowledge are being conducted regularly. TANGEDCO (Subsidiary of TNEB) has come out with a declared training policy in line with National Training Policy communicated by the CEA. The Training policy has been documented and made open from 13.05.2003.

All employees will undergo training on various training programmes conducted by all the institutes/Centres in order to update their knowledge. A total of over 16127 employees have been benefited under regular Training programme during 2008-09 and 38761 employees during 2009-10 and 17829 employees to be imparted training programmes during 2011-12, Also number of special programmes have been conducted based on the needs of the employees.

7.2.4 IMPLEMENTATION OF APDRP SCHEMES:

TNEB has implemented APDRP programs in five EDCs viz. Coimbatore South, Pudukottai, Villupuram, Chengalpattu and Udumalpet, Chennai Metropolitan area covering four EDCs of Chennai and 19 towns in Coimbatore Metro, Salem, Erode,

Tirunelveli, Madurai Metro, Trichy Metro, Kancheepuram, Mettur and Cuddalore EDCs to improve the consumer satisfaction by establishing quality, reliable and stable power supply by carrying out system improvement works such as

- Establishment of new substations
- Erection of new distribution transformers
- Strengthening of existing lines
- Implementing the computerized billing for LT consumers to reduce the payment time.

7.2.5 REPLACEMENT OF METERS

TNEB has effective system for replacement of the defective meters. The Board has an action plan for speedy replacement of defective meters.

7.2.6 DEMAND SIDE MANAGEMENT

DSM Activities:

- ❖ The Ministry of Power, Government of India through the Bureau of Energy Efficiency (BEE) has formulated "Bachat Lamp Yojana" (BLY) scheme in domestic sector.
 - The Energy Department has also issued G.O. Ms. No. 87 Energy (C2) Department dated 14.09.2010 for the implementation of this scheme in TamilNadu.
 - Implementation of the BLY scheme in Tamil Nadu may account to the peak load relief of approx. 500-600 MW.
 - TANGEDCO has awarded the contract for implementing the BLY scheme in Tamil Nadu with 60% of the project areas in 22

Electricity Distribution Circle (EDCs) in Phase –I and in Phase II covers project areas in 17 Electricity Distribution Circle (EDCs) .

- A maximum of 4 numbers CFL's per household would be distributed @Rs.15/CFL.
- The difference in the CFL cost will be met through Clean Development Mechanism by Project Developers.
- ❖ For adoption of BEE star labeled domestic appliances, BEE is creating awareness among public. TANGEDCO is also emphasizing the need for use of the star labeled appliances in all its seminars / training programmes.
- ❖ The Govt. of Tamil Nadu has issued G.O.126 dt 10.11.08 on the energy conservation in Govt./PSU departments. All heads of department have been addressed to follow the guidelines given in the GO and monitored by TANGEDCO.
- ❖ Regular meetings are conducted with Public Works Department, Chennai Metropolitan Water Supply & Sewerage Board and Chennai Corporation and other Corporations for review of implementation of Demand side management measures in their departments.
- ❖ The Govt. of Tamil Nadu has issued another G.O 75 dt. 20.08.10 to ban the usage of Incandescent Bulbs (ICBs) in all Govt. Departments, Public Sector Undertakings, Boards, Societies and Local Bodies. All District collectors have been addressed for issuance of instructions to their officers for adherence of the G.O.

- ❖ The energy conservation reports in respect of Govt./PSU buildings are collected from the Regions/Circles and reviewed/monitored periodically at Head Quarters to assess the energy savings.
- ❖ The energy conservation measures in respect of TANGEDCO buildings are also monitored periodically and savings assessed.
- ❖ Energy conservation day is celebrated every year on 14th December and Energy conservation week during 14th December to 20th December.
- ❖ Energy conservation awareness programmes are conducted for schools, Colleges and Public regularly through training wing of TANGEDCO.
- ❖ The Government of Tamil Nadu has issued GO NO.7 dt 04.02.2011 for the replacement of existing inefficient pumpsets by Energy Efficient pumpsets to save energy and 242 nos of Energy Efficient pumpsets have been issued to the willing farmers.

8 Determination of the Annual Revenue Requirement - Distribution

Estimates of Operating Expenses

EMPLOYEE EXPENSES - DISTRIBUTION

The Projection of employee costs takes into account employees strength and salary profile of Tamil Nadu Generation and Distribution Corporation Ltd (TANGEDCO). While estimating the costs under this head, the average cost for previous 5 years and actual trend in the year 2009-10 have been considered. On an average 4% hike is proposed for most of the account heads in the current year 2011-12 & for the ensuing year 2012-13.

Table 1 Break-up of Employee costs : (Rs in Crores)

S. No	Details	Average for 5 years	Actuals 2009-10	Provisio	Estimate for	
				-nal	2011-12	2012-13
				2010-11		
1	Salary, DA, Bonus, etc	997.92	1351.11	1562.48	1624.98	1689.98
2	Medical expenses reimbursement	2.41	2.05	1.98	2.06	2.14
3	Leave Travel concession	0.50	0.36	0.32	0.34	0.35
4	Earned Leave encashment	81.86	92.11	112.54	117.04	121.72
5	Terminal benefits	668.44	880.89	1324.94	1377.94	1433.05
6	Staff welfare expenses & Board's Contribution to CPS	11.35	22.90	41.19	42.83	44.54
7	Thermal & Gas generation Incentives, etc	3.91	4.77	3.19	3.31	3.45
	Grand Total	1766.39	2354.20	3046.63	3168.50	3295.24
8	Less: Capitalisation	162.51	231.85	521.48	542.34	564.03
	Net Expenses	1603.87	2122.35	2525.15	2626.16	2731.21

The employees cost has been increased at higher rate subsequent to the wage revision effected from Dec'07. The revision of wages to the employees had been effected based on the VI pay commission pattern adopted by the Government of Tamil Nadu. There are fresh recruitment required to fill up the vacancies arises due to retirements. The number of employees has decreased over the past years. With some new recruitments assumed in the ensuing years, employee wages would show moderate increase.

Terminal benefits mainly include Gratuity & Commuted pension paid to the retiring employees. Terminal benefits have been growing over the past 5 years due to higher number of retiring personnel. Thus terminal benefits expenses are estimated to show an increasing trend over the years.

The TANGEDCO incurs expenses towards terminal benefits in the form of Pension and Gratuity. It creates a provision of 3.742% of the Basic Salary, Grade pay and Dearness Allowance during every financial year as reserve. However the reserve so created is insufficient to meet the actual expenditure on pension, hence TANGEDCO has assessed the actual commitment on account of pension and booked the same in the employees cost, instead of charging to the pension reserve account.

ADMINISTRATION AND GENERAL EXPENSES - DISTRIBUTION

Administration expenses mainly comprises of rent, telephone charges, Legal & professional charges, conveyance & traveling, Vehicle related expenses, etc.

Table 2 Administration and General Expenses:**(Rs. In Crores)**

S. No.	Details	Average of 5 years	Actuals 2009-10	Provisio	Estimate for	
				-nal	2010-11	2011-12
1	Rent, Rate & Taxes	6.65	8.28	7.73	8.04	8.37
2	Insurance	0.25	0.24	0.25	0.26	0.27
3	Telephone / Postage, etc	6.76	6.13	5.69	5.91	6.15
4	Audit fees / Consultancy / Legal, Tech. fee etc.	10.10	13.80	10.65	11.08	11.52
5	Conveyance & Travel	26.06	27.59	33.33	34.66	36.05
6	Miscellaneous Expenses - Tender Advt, Watch & Ward exp., etc	29.99	35.09	30.03	31.23	32.48
7	Freight charges	6.88	8.05	4.38	4.56	4.74
8	Other purchase related expenses	3.95	2.55	2.28	2.38	2.47
9	Total expenses	90.65	101.75	94.35	98.12	102.04
10	Less: Capitalisation	22.14	31.98	37.79	39.30	40.88
11	Net Expenses	68.51	69.76	56.55	58.81	61.17

While estimating the costs under Administration & General expenses head, the average cost for previous 5 years and actual trend in the year 2009-10 have been taken into account. On an average, 4% hike is proposed for most of the expenses in the current year 2011-12 & for the ensuing year 2012-13. Because of the severe cost control measures effected in TANGEDCO, is estimated to contain the administration & General expenses within the level proposed for the current year 2011-12 and ensuing financial year 2012-13.

REPAIRS AND MAINTENANCE - DISTRIBUTION

The Repairs and maintenance (R&M) expenses are routine in nature and being incurred in all the wings viz., Distribution, Generation. In order to maintain the existing efficiency and to maintain the fixed assets of Tamil Nadu Generation and Distribution Corporation Ltd, the expenses under this head is vital. Though the quantum of expenditure in Generation stations are more, there are certain portion of Repairs & Maintenance expenses incurred in Distribution network – on Transformers, lines & cables, office equipments, etc., in order to maintain the uninterrupted and quality power supply.

Table 3 : Repair and Maintenance expenses :

(Rs. In Crores)

S. No.	Details	Average for 5 years	Actuals 2009-10	Provisio	Estimate for	
				-nal	2010-11	2011-12
1	Plant & Machinery	12.30	14.11	12.93	13.45	13.98
2	Building	0.53	0.23	0.38	0.39	0.41
3	Civil Works	1.30	0.91	249	2.59	2.69
4	Hydraulic work	0.02	0.03	0.03	0.03	0.03
5	Lines & Cable network	14.73	17.53	22.96	23.88	24.83
6	Vehicles	1.16	1.05	1.56	1.62	1.68
7	Furniture & Fixtures	0.01	0.01	0.01	0.01	0.01
8	Office equipments	1.04	1.48	1.05	1.09	1.14
	Total Expenses	31.08	35.34	41.39	43.05	44.77
9	Less: Capitalisation	0.99	0.56	0.04	0.04	0.04
10	Net Repair & Maintenance expenses	30.10	34.78	41.36	43.01	44.73

The estimation for the current financial year 2011-12 & ensuing financial year 2012-13 towards the Repairs & Maintenance expenses are based on the value of Gross Fixed Assets of the Distribution wing.

PROVISION FOR BAD DEBTS :

A fixed percentage (2.5%) of dues from consumers shall be maintained as a provision for meeting bad debts. However, because of better collection efficiency of TANGEDCO and stringent measures being taken to augment the revenue, the bad debts would not be more than the above percentage

8.1.5 OTHER DEBITS:THE MISCELLANEOUS EXPENSES ON ACCOUNT OF RESEARCH & DEVELOPMENT EXPENSES, SUNDRY EXPENSES, AND MISCELLANEOUS LOSSES AND WRITE-OFF HAVE BEEN INCLUDED UNDER THE COST HEAD OTHER DEBITS.

Table 6 Other debits (Figures in Rs Crores)

Particulars	2009-10 (current year)	2010-11 (estimated)	2011-12 (estimated)	2012-13 (estimate d)
Material cost variance	4.58	0.46	0.47	0.48
Research & development expenses	0.11	0.11	0.11	0.11
Bed & Doubtful debts written off	18.03	26.38	26.91	27.45
Miscellaneous losses and write off	2.11	2.30	2.34	2.39
Extra Ordinary debits	0.07	0.11	0.11	0.11
Total	24.89	29.36	29.95	30.55
Less Capitalisation	4.49	1.34	1.37	1.40
Net expenses	20.40	28.02	28.58	29.15

Capital Related Expenses

The capital related expenses are derived from the assets of the Board and the funding of the same. Accordingly, the additions to fixed assets, and the borrowing program of the Board are discussed first, and the expenses chargeable to the revenue account are discussed subsequently.

9. REVENUE SUBSIDIES

Hon'ble Tamil Nadu Electricity Regulatory Commission vide its Tariff Order dated 31.07.2010 have notified the tariff applicable to all categories of consumers. As per Section 108 and 65 of the Electricity Act, 2003, the Government of Tamil Nadu (GOTN) have issued a policy direction to Hon'ble Tamil Nadu Electricity Regulatory Commission to extend free supply/Reduction in tariff rates to certain categories of consumers as detailed below:

Sl.No.	Details.	With effect from
1.	Reduction in Tariff rates to Domestic consumers.	16.6.2004.
2.	Free supply to Agricultural consumers (Normal)	1.4.2004.
3.	Free supply to Agricultural consumers (SFS)	1.4.2006
4.	Free supply to Hut.	1.4.2004.
5.	Reduction in Tariff rates to places of worship.	1.1.2006.
6.	Reduction in Tariff rates to Power Loom.	1.2.2006
7.	Free supply upto 500 units bi-monthly to Power Loom.	1.08.2006
8.	Free supply of 100 units bi-monthly to Hand Loom	1.8.2006
9.	Reduction in Tariff rates to Street light & OHT	12.4.2007.
10.	HT Lift Irrigation	01.12.2010

ii. The tariff rate as per Hon'ble Tamil Nadu Electricity Regulatory Commission (TNERC) Tariff Order dt 31.07.2010 and as per earlier subsidy of Government of Tamil Nadu are furnished below:

Sl.No	Category	Rate as per TNERC T.O. dt 31.07.2010 in Rs.	Rate as per policy directive of GOTN	
1.	Domestic- reduction		Below 100 units	Above 100 units
	0-50 units	110	65	75
	51-100 units	130	75	85
	101-200 units 201-600 units Above 600 units	260 350 575	150 220 405	
2.	Hut	Rs.10/Month/Service	Free supply	
3.	Agricultural consumers	Rs.250 HP/Annum	Free supply	
4.	Places of Worship			
	0-120 units Above 120 units	300 300	150 300	
5.	Power Loom Weavers: (Reduction)		Reduction	Free
	0-500 units	140	100	Free
	501-1000 units	225	100	100
	1001-1500 units	225	225	225
	Above 1501	250	250	250
6.	Local bodies			
	Village Panchayats	340	300	
	Town Panchayats	350	330	
	Municipalities and Corporations	350	330	
7.	Hand Loom Weavers: (Free and reduction)			
	0-50 units	110	Free	
	51-100 units	130	Free	
	101-200 units	260	150	
	201-600 units	350	220	
	Above 600 units	575	405	
8.	HT Lift Irrigation	0.50	Free	

iii. The tariff rate now proposed and proposed tariff subsidy by Government of Tamil Nadu (Commitment letter of Government of Tamil Nadu will be submitted shortly) are furnished below:

Category	Tariff rate now proposed in Paise /unit	Proposed per unit Tariff subsidy payable by GOTN paise /unit	Proposed tariff payable by the consumer paise / unit
A. LT Category			
Domestic including Hand Loom			
IA	I. Bi-Monthly Consumption less than 100 units		
	Domestic	300	150
	Hand loom	300	300 (Free)
	II. Bi-Monthly Consumption above 100 units and up to 200 units		
	0-200 units	300	100
	II. Bi-Monthly Consumption above 200 units and up to 500 units		
	0-200 units	300	Nil
	201-500 units	400	50
	III. Bi-Monthly Consumption above 500 units		
	0-200 units	300	Nil
	201-500 units	400	Nil
	Above 500 units	575	Nil
I B	Hut	Rs.60/M/Service	Rs.60/M/Service (Free supply to consumers)
IIA.	Street light and OHT Services – Tariff Subsidy to be Withdrawn		
	Village and Town Panchayat	550	Nil
	Municipality & Corporation	550	Nil

Category	Tariff rate now proposed in Paise /unit	Proposed per unit Tariff subsidy payable by GOTN paise /unit	Proposed tariff payable by the consumer paise / unit
II C	Places of Worship Bi-monthly Consumption		
	0-120 units	500	250
	Above 120 units	500	Nil
III A (2)	Power Loom Weavers Bi-monthly Consumption		
	0-500 units	450	450 (Free to the consumers)
	Above 500 units	500	100
IV.	Agricultural consumers	Rs.1750 / HP/Annum	Rs.1750/HP/Annum (Free supply)
	B. HT Lift Irrigation	350	350 (Free)

iii. The Hon'ble Commission has approved the proposal of the Government and directed to pay the tariff subsidy in order to compensate the revenue shortfall, in advance, due to the policy direction of the Government. As per the direction and schedule of the Hon'ble TNERC, the tariff subsidy is being paid by the Government from the year 2004-05 onwards which is tabulated below:

in Rs.Crs.

Categories	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12 (Approved)
Domestic	739.53	955.81	1031.57	1081.50	1185.81	1369.53	1249.01	1627.13
Agricultural (Normal)	200.85	201.18	203.96	205.97	210.16	213.39	218.77	234.19
Agricultural (SFS)	-	-	39.89	43.82	48.09	51.53	57.91	55.76
Hut	11.78	12.25	12.58	13.37	14.74	16.66	17.92	20.89
Places of Worship		1.26	5.49	5.45	5.57	5.99	5.79	6.92
Power Loom (Reduction)		5.12	27.39	26.432	26.91	27.45	31.47	28.56
Power Loom (Free)			16.31	25.254	25.41	28.05	30.06	33.93
Hand Loom			2.73	6.67	9.20	5.92	5.72	6.16
Local Bodies				30.05	40.33	47.46	35.78	57.42
HT Lift Irrigation							0.15	0.45
Total	952.16	1175.62	1339.92	1438.52	1566.22	1765.98	1652.58	2071.41

10 Total Revenue Requirement and Need for tariff increase

10.1 Revenue from non tariff income and other income:

^In addition to the revenue from sale of power, TANGEDCO also recovers additional revenue through miscellaneous services and charges approved in the last tariff order. Based on the estimate available. TANGEDCO is collecting and expects to collect Rs.913.18 Crores and Rs. 803.16 Crs as non-tariff and other income for the year 2011-12 and 2012-13 respectively.

Table 1 Details of Other income (figures in Rs. Crores)

Particulars	2009-10 (current year)	2010-11 (estimated)	2011-12 (estimate d)	2012-13 (estima ted)
Interest on staff loans and advances	6.39	6.45	6.78	7.12
Income from investments	0.01	0.01	0.01	0.01
Belated payment surcharges collected	25.73	28.93	30.38	31.90
Interest on advances to Suppliers/Contractors	1.97	4.38	4.60	4.83
Interest from banks	0.02	0.02	0.02	0.02
Rebate on power purchase bills	223.89	223.89	235.09	0
Income from hiring vehicles to employees and other staff welfare	0.12	0.12	0.12	0.13
Miscellaneous Receipts	11.47	11.49	12.07	12.67
Total –I	269.59	275.30	289.06	56.68
Non tariff Income	440.11	522.04	624.12	746.48

10.2. Revenue from existing and proposed tariffs

The table below describes the existing and proposed revenue from tariffs for the financial years 2010-11.

Revenue from existing and proposed tariffs

The table below describes the existing and proposed revenue from tariffs for the financial year 2011-12

A. Revenue from existing tariff from HT consumers (*figures in Rs.Crores*)

Consumer categories		Units In MU	Revenue from existing tariff 2011-12 (Rs Crores)
I-A	Industries	19155	10003.52
I-B	Railway Traction	494	258.10
II-A	Recognised Educational Institution etc	911	435.01
II-B	Cinema Theatre & Pvt.Edn.Instn.	157	92.82
II-C	Places of Public Worship, Religious Mutts etc.	3	1.24
III	Commercial	2211	1539.64
IV	Lift Irrigation Societies	8	0.45
V	Supply to others	413	141.48
VI	Supply to other states	-	-
	Total	23351	12472.27

B. Revenue from existing tariff from LT consumers (*figures in Rs. Crores*)

Consumer Categories		Units In MU	Revenue from existing tariff Fy – 2011-12
IA	Domestic	17550	4505.01
IB	Huts	385	20.89
IC	Defense colonies etc	10	4.00
IIA	Public Lighting/ Water Supply	1709	600.26
IIB(1)	Recognised Educ Institution	221	107.11
IIB(2)	Cinema Theatre	150	84.32
IIC	Places of Public Worship, Etc	106	32.88
IIIA(I)	1.Cottage/TinyIndustries	125	35.02
III A(2)	2.PowerLooms	873	206.56
IIIB	Industries	4529	2333.57
IV	Agricultural Government Seed Firm	10903	289.95
V	Commercial	4914	3476.50
VI	Temporary Supply and Lavish	17	19.16
	Total	41492	11715.23

Revenue from existing and proposed tariffs

The table below describes the existing and proposed revenue from tariffs for the financial years 2012-13

A. Revenue from existing & proposed tariff from HT consumers (figures in Rs.Crores)

Consumer categories		Units In MU	Revenue from existing tariff 2012-13 (Rs Crores)	Revenue from proposed tariff 2012-13 (Rs Crores)
I-A	Industries	21645	11649.56	13814.03
I-B	Railway Traction	549	285.51	349.15
II-A	Recognised Educational Institution etc	929	442.30	518.50
II-B (1)	Private Educational Institun.& Cinema Theatre	163	95.64	62.94
ii-B (2)	Cinema Theatre			55.59
II-C	Places of Public Worship, Religious Mutts etc.	3	1.27	20.3
III	Commercial	2498	1746.35	1896.98
IV	Lift Irrigation Societies	8	0.46	28.6
V	Supply to others	425	158.88	158.68
Total		26220	14379.77	16860.04

B Revenue from existing & proposed tariff from LT consumers (figures in Rs. Crores)

Consumer Categories		Units In MU	Revenue from existing tariff Fy – 2012-13	Revenue from proposed tariff Fy – 2012-13
IA	Domestic	18603	4817.58	6842.85
IB	Huts	424	23.40	117.60
IC	Defense colonies etc	11	4.32	43.20
IIA	Public Lighting/ Water Supply	1829	643.23	1016.75
IIB	Recognised Educl.	223	108.20	123.56
IIB(1)	Institution	82	46.25	60.96
IIB(2)	Private Educl.Institutions Cinema Theatre	70	39.22	58.49

IIC	Places of Public Worship, Etc	114	35.43	61.71
IIIA(I)	1.Cottage/TinyIndustries	128	35.95	64.82
III A(2)	2.PowerLooms	925	217.45	499.18
IIIB	Industries	4891	2511.54	4265.87
IV	Agricultural Government Seed Firm	11546	294.09	2025.18
V	Commercial	5258	3500.74	4395.47
VI	Temporary Supply and lavish	18	19.16	21.29
	Total	44121	12296.55	19557.31

10.4 Computation of net revenue requirement

After accounting for all the operational expenses and all the revenue sources the TANGEDCO would be left with an estimated deficit of Rs 14547.00 Cr if the currently applicable tariffs are not revised during the year 2012-13.

Table 9 Net Revenue Requirement (figures in Rs. Crores)

Sl.No.	Particulars	Previous Year (Prel.)	Current Year	Ensuing Year
		2010-11	2011-12	2012-13
1	Expenses in respect of Generation	6117.78	7466.51	10206.74
2	Expenses in respect of Distribution	24689.54	29581.47	29096.60
3	Annual Transmission Charges payable to TANTRANSCO	2332.90	2607.93	2781.83
4	Aggregate Revenue Requirement	33140.22	39655.90	42085.17

Sl.No.	Particulars	2010-11	2011-12	2012-13
	Less: (i). revenue from sale of power at existing tariff including tariff subsidy	20469.01	24187.51	26676.33
6	(ii) Non Tariff Revenue	522.04	624.12	746.48
7	(iii) Other Income	275.30	289.06	56.68
8	(iii) Other Income for Generation	69.71	58.68	58.68
9	(iii) Other Income for trading	71.16		
10	Deficit without tariff revision	11733.01	14496.53	14547.00
11	Additional revenue from the proposed tariffs			9741.01

11. Proposal for Revision of rates

11.1 Existing and proposed tariff for High Tension consumers

11.1.1. HIGH TENSION SUPPLY

General Provisions Applicable for High Tension Supply:-

- (i) Any High Tension Supply involving a sanctioned demand above 5000 KVA to 10000 KVA plus two per cent marginal adjustment shall be given supply only at 33 KV if available in the area or at EHT voltage.
- (ii) Any High Tension Supply involving a sanctioned demand above 10000 KVA plus two per cent marginal adjustment shall be given supply only at 110 KV or 230 KV at mutually agreed voltage.

(Submission)

It is submitted that at present there is no minimum ceiling limit of connected load for effecting High Tension Supply at 110 kV. By provision of these clauses, sanctioned demand above 10000 KVA will be effected in 110 KV or 230 KV at mutually agreed voltage and any High Tension Supply effected at 33 kV only and their request for 110 kV level will be avoided.

- (iii) In the case of existing High Tension consumers whose sanctioned demand exceeds 5000kVA and who do not avail themselves of supply at the voltage indicated in item (1) they shall be charged an extra levy of 10 paise per KWH over and above the normal tariff for the entire energy consumed. This

extra levy is applicable to all categories of HT consumers till they avail supply at the specified voltage.

- (iv) **Low Power Factor Surcharge:** In respect of High Tension service connections the average power factor of the consumers installation shall not be less than 0.90. Where the average power factor of High Tension service connection is less than the stipulated limit of 0.90 the following compensation charges will be levied.

Below 0.90 and up to 0.85	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.85	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.

- (v) **Billable Demand:** In case of two part tariffs, maximum Demand Charges for any month will be levied on the kVA demand actually recorded in that month or 90% of the sanctioned demand which ever is higher.

Provided, that whenever the restriction and control measures are in force, the billable demand in case of two part tariff for any month will be the actual recorded maximum demand or 90% of demand quota, as fixed from time to time through restriction and control measures, whichever is higher.

- (vi) In the case of supply under HT Tariff IA, IIA, IIB and III, the use of electricity for the bonafide purposes of lighting, heating and power loads in the residential quarters within the premises shall be metered separately by the consumers taking HT supply and paid to the Board at LT Tariff IC.

The units shall be deducted from the total number of units registered in the main meter of HT supply for billing purposes.

- (vii) In the case of supply under HT Tariff IA, IIA, IIB, IIC and III, the use of electricity for the construction purposes within the premises shall be metered separately by the consumers taking LT supply and paid to the Board at LT Tariff VI. The units shall be deducted from the total number of units registered in the main meter of HT supply for billing purposes
(Submission)

It is submitted that for adoption of appropriate tariff for the construction purposes within the premises of HT services, this new clause may be incorporated.

- (viii) If the HT consumer under HT Tariff IA, IIA, IIB and III, needs to extend LT supply within their area operation for any other purpose, they have to inform TNEB suitably and meter such a consumption separately and pay if the consumption for other purpose upto 1% of total HT consumption at respective HT Tariff and the other purpose consumption above 0.01% of HT consumption will be charged under LT Tariff V.

(Submission)

It is submitted that in the HT Services are being utilised for different kind of activities other than intended purposes such as Hospital, bank, schools, shops, Hostel, Training Institutes, Temple etc. for bonafide, other and commercial purposes .Since charging all these activities under LT Tariff V could not be done and fixing the meters at different places and charging different tariff in the HT services will be cumbersome and identification of the bonafide activities of HT services is also complicated, it is proposed to fix minimum of 1.0 % for other purposes to make the procedure simple for both assessment and billing. (For 1 lakhs of units by adopting 1.0% units for other purposes will come to 1000 units /Month which is supposed to be enough for catering bonafide activities).

11.1 HIGH TENSION TARIFF I A:

Comparison of existing and proposed tariffs for HT – IA

Tariff category	Existing Tariff		Proposed Tariff	
	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)
High Tension Tariff I A	300	400	300	500

1.0. This tariff is applicable to all industrial establishments and registered factories which includes Tea Estates, Textiles, Fertilizers, Salem Steel Plant, Heavy Water Plant, Chemical plant, common effluent treatment plant, Cold storage units, Industrial estates water works, Information Technology Services.

2.0. Information Technology Services as defined in the Information Communication Policy (ICT Policy) 2008 of Government of Tamil Nadu. The definition is reproduced below:

“IT services are broadly defined as systems integration, processing services, information services outsourcing, packaged software support and installation, hardware support and installation.”

3.0 Further, Government of Tamil Nadu has clarified that the following category of services will come under Information and Technology services.

- i) **Systems integration** includes
 - a) Network Management Services
 - b) Applications Integration
- ii) **Processing services** includes

- a) Outsourced Services in Banking, HR, finance, Technology and other areas
 - b) Outsourced Bank office support or Business transformation and Process Consulting Services.
- iii) **Information Services Outsourcing** includes
 - a) Outsourced Global Information Support Services
 - b) Knowledge Process Outsourcing
 - c) Outsourced Global Contact Centre Operations
 - d) Outsourced Process Consulting Services
- iv) **Packaged Software Support and Installation** includes
 - a) Software Design and Development, Support and Maintenance
 - b) Application installation, support and maintenance
 - c) Application testing.
- v) **Hardware Support and Installation** includes
 - a) Technical and network operations support
 - b) Hardware installation, administration and management
 - c) Hardware infrastructure maintenance and support

4.0 The HT Industrial consumers (HT IA) shall be billed at 20% extra on the energy charges for the energy recorded during peak hours. The duration of peak hours shall be 6.00 A.M to 9.00 A.M and 6.00 P.M to 11.00.P.M.

(Submission)

It is submitted that duration of evening hours may be changed from 6.00 P.M to 9.P.M. to 6.00 P.M to 11.00.P.M based on the load conditions with necessary amendment in the tariff regulations.

5.0. The HT Industrial Consumers (HT I A) shall be allowed a reduction of 5% on the energy charges for the consumption during 11.00 P.M to 5.00 A.M as an incentive for night consumption.

6.0 The consumption of electrical energy by the HT Industrial Consumers under HT IA having Arc furnaces will be charged an additional energy charge of 15% on the HT IA tariff.

7.0 High Tension Industries under Tariff I-A having arc, induction furnaces or steel rolling process the integration period for arriving at the maximum demand in a month will be fifteen minutes.

11.1.3. HIGH TENSION TARIFF I B – Railway Traction

Comparison of existing and proposed tariffs for HT – IB

Tariff category	Existing Tariff		Proposed Tariff	
	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)
High Tension Tariff I B	250	400	300	500

1.0. This tariff is applicable to railway traction.

2.0. The railway traction is exempted from the extra charges @ 20% on the peak hours between 6.00 A.M to 9.00 A.M and 6.00 P.M to 10.00.P.M.and the reduction of 5% on the energy charges for the consumption during 10.00 P.M to 5.00 A.M as an incentive for night consumption stands withdrawn for railway traction.

11.2 11.1.4 HIGH TENSION TARIFF II-A

Comparison of existing and proposed tariffs for HT – IIA

Tariff	Existing Tariff	Proposed Tariff
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category	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)
High Tension Tariff II A	200	400	300	450

1.0. The tariff is applicable to Government and aided educational institutions, Hostels run by such educational institutions, Government Hospitals, Hospitals under the control of Panchayat Unions, Municipalities or Corporations, Veterinary Hospitals, Leprosy Sub-Centres, Primary Health Centres. Health Sub-Centres, Orphanages, Public Libraries, Water works, Public Lighting, , Public Sewerage Works by Government/local Bodies, Housing complexes and senior citizens communities, Public Water Supply by New Tirupur Area Development Corporation, Electric crematorium by local bodies, Laboratories, Research institutions, Ministry of defence and Avadi CRPF establishment, Hospitals, Government Dairy units , Rehabilitation centres run by charitable trusts which offers totally free treatment for all categories of patients on par with government hospitals Desalination plant at Kudankulam Nuclear power plant. Government Art Galleries and Minjor Desalination plant of Chennai water Desalination Ltd.

(Submission)

Housing complexes and senior citizens communities *may also be classified under this tariff category.*

2.0 The HT consumers (HT IIA) shall be billed at 20% extra on the energy charges for the energy recorded during peak hours. The duration of peak hours shall be 6.00 A.M to 9.00 A.M and 6.00 P.M to 11.00.P.M.

- 3.0 The HT Consumers (HT II A) shall be allowed a reduction of 5% on the energy charges for the consumption during 11.00 P.M to 5.00 A.M as an incentive for night consumption.

(Submission)

Time of day (ToD) tariff may be incorporated for this tariff category.

11.3 11.1.5. HIGH TENSION TARIFF II – B (I) AND II – B (II)

Comparison of existing and proposed tariffs for HT – IIB

Tariff category	Existing Tariff		Proposed Tariff	
	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)
High Tension Tariff II B (i) Private educational institutions and hostels run by them	200	450	300	550
High Tension Tariff II B (ii) Studios, Cinema Theatres	200	450	300	680

- 1.0. The tariff is applicable to Private educational institutions and hostels run by them, Studios, Cinema Theatres.
- 2.0. The HT consumers (HT II B) shall be billed at 20% extra on the energy charges for the energy recorded during peak hours. The duration of peak hours shall be 6.00 A.M to 9.00 A.M and 6.00 P.M to 11.00.P.M.
- 3.0. The HT Consumers (HT II B) shall be allowed a reduction of 5% on the energy charges for the consumption during 11.00 P.M to 5.00 A.M as an incentive for night consumption.

(Submission)

Time of day (ToD) tariff may be incorporated for this tariff category.

11.4 HIGH TENSION TARIFF II-C

Comparison of existing and proposed tariffs for HT – IIC

Tariff category	Existing Tariff		Proposed Tariff	
	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)
High Tension Tariff II C	125	280	300	450

- 1.0 This tariff is applicable to actual places of public worship, mutts, and religious institutions.
- 2.0 The HT consumers (HT II C) shall be billed at 20% extra on the energy charges for the energy recorded during peak hours. The duration of peak hours shall be 6.00 A.M to 9.00 A.M and 6.00 P.M to 11.00.P.M.
- 3.0 The HT consumers (HT II C) shall be allowed a reduction of 5% on the energy charges for the consumption during 11.00 P.M to 5.00 A.M as an incentive for night consumption.

(Submission)

Time of day (ToD) tariff may be incorporated for this tariff category.

11.5 HIGH TENSION TARIFF III

Comparison of existing and proposed tariffs for HT – III

Tariff	Existing Tariff	Proposed Tariff
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category	Demand Charge in Rs/KVA/ month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/ month	Energy charge in Paise per kWh(unit)
High Tension Tariff III	300	580	300	680

1.0 This tariff is applicable to all Commercial Establishments and other categories of consumers not covered under High Tension Tariff IA, IB IIA, IIB, IIC and IV.

2.0 Private communication providers will be charged under this tariff.

3.0 The initial HT supply for the construction period for all HT applicants shall be charged under this tariff during construction period.

(Submission)

It is submitted that for adoption of appropriate tariff for the construction purposes in respect of all new HT applicants before HT services, modification in the existing clause has been proposed.

4.0 The HT consumers (HT III) shall be billed at 20% extra on the energy charges for the energy recorded during peak hours. The duration of peak hours shall be 6.00 A.M to 9.00 A.M and 6.00 P.M to 11.00.P.M.

5.0 The HT Consumers (HT III) shall be allowed a reduction of 5% on the energy charges for the consumption during 11.00 P.M to 5.00 A.M as an incentive for night consumption.

(Submission)

Time of day (ToD) tariff may be incorporated for this tariff category.

11.6 HIGH TENSION TARIFF IV

Comparison of existing and proposed tariffs for HT – IV

Tariff categor	Existing Tariff	Proposed Tariff	As per Government Subsidy from 1.12.10
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y	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh (unit)	Demand Charge in Rs/KVA/month	Energy charge in Paise per kWh(unit)
High Tension Tariff IV	NIL	50	NIL	350	NIL	

- 1.0 This tariff is applicable to the Lift Irrigation Societies for Agriculture registered under Co-operative Societies or under any other Act.
- 2.0 The HT consumers (HT IV) shall be billed at 20% extra on the energy charges for the energy recorded during peak hours. The duration of peak hours shall be 6.00 A.M to 9.00 A.M and 6.00 P.M to 11.00.P.M.
- 3.0 The HT Consumers (HT IV) shall be allowed a reduction of 5% on the energy charges for the consumption during 11.00 P.M to 5.00 A.M as an incentive for night consumption.

(Submission)

Time of meter (ToD) tariff may be incorporated for this tariff category.

11.7 TARIFF FOR LOW TENSION CONSUMERS

11.8 LOW TENSION TARIFF I-A:

Comparison of existing and proposed tariffs for LT I-A

Tariff Category	Existing	Proposed
LT Tariff IA		
Fixed Charges		
1. For consumption up to 50 kWh per month / 100 kWh for two months.	No fixed charges	Rs. 20 per month or Rs.40for two months.

Tariff Category	Existing	Proposed
LT Tariff IA		
2.Others	Rs. 5 per month or Rs.10 for two months.	Rs. 20 per month or Rs.40 for two months.
3.LT CT services	Rs. 5 per month.	Rs 120/kW/ Month
Energy Charges		
From 0 to 25 units per month (or) 0 to 50 units for two months	110 paise per kWhr	300 paise per kWhr
From 26 to 51 units per month / 51 to 100 units for two months	130 paise per kWhr	
From 51 to 100 units per month / 101 to 200 units for two months	260 paise per kWhr	
From 101 to 250 units per month / 201 to 500 units for two months (slab revised)	350 paise per kWhr	400 paise per kWhr
From 251 to 300 units per month / 501 to 600 units for two months (slab revised)	350 paise per kWhr	575 paise per kWhr
From 301 units and above per month / 601 units and above for two months	575 paise per kWhr	575 paise per kWhr
Minimum monthly charges	Rs. 20 per month (or) Rs. 40 for Two month	Rs. 55 per month (or) Rs. 110 for Two month
LT CT services	As above	500 paise per kWhr

Tariff as per Government of Tamil Nadu subsidy

Tariff Category	
LT Tariff IA	
Fixed Charges	
1. For consumption up to 50 kWh per month / 100 kWh for two months.	Rs. 20 per month or Rs. 40 for two months.
2.Others	Rs. 20 per month or Rs. 40 for two months.
3.LT CT services	Rs 120/kW/Month
Energy Charges	
For consumers who consume upto 50 units per month or 100 units for 2 months;	
From 0 to 50 units per month (or) 0 to 100 units for two months	150 paise per kWhr
For consumers who consume 51 units to 100 units per month or 101 units to 200 units for 2 months;	
From 0 to 100 units per month (or) 0 to 200 units for two months	200 paise per kWhr
For consumers who consume 101 units to 250 units per month or 201 units to 500 units for 2 months	
From 0 to 100 units per month (or) 0 to 200 units for two months	300 paise per kWhr
From 101 to 250 units per month / 201 to 500 units for two months	350 paise per kWhr
For consumers who consume above 250 units per month or 500 units for 2 months.	
From 0 to 100 units per month (or) 0 to 200 units for two months	300 paise per kWhr
From 101 to 250 units per month / 201 to 500 units for two months	400 paise per kWhr
From 251 units and above per month / 501 units and above for two months	575 paise per kWhr
Minimum monthly charges	Rs. 55 per month (or) Rs. 110 for Two months
LT CT services	Rs 575/unit

This tariff is applicable generally for domestic purposes of lights and fans including radio/TV and other home appliances. The tariff is also applicable to the following category of services.

- (1) Handlooms in residences of handloom weavers (regardless of the fact whether outside labour is employed or not) and to handlooms in sheds erected where energy is availed of only for lighting and fans.
- (2) Public conveniences maintained and run by the local bodies and by such other organisations ,Integrated woman sanitary Complexes by self Help groups.
- (3) Community Nutrition Centres and Block Offices of Tamil Nadu Integrated Nutrition Projects.
- (4) Anganwadi Centres, Nutritious Meal Centres and School Buildings associated with the Government Welfare Schemes and Electric crematorium by local bodies.
- (5) Old Age Home, Leprosy Centre run by charitable institutions rendering free service.
- (6) Consulting Rooms of any professionals attached to the residences of such professionals provided no trading is undertaken or no motive power is used in the Consulting Room.
- (7) *in respect of residential complexes used for domestic, common utilities such as common lighting to houses, water supply motor to houses,, lift to houses alone will be charged under this tariff.*

(Submission)

It is submitted that at present residential complexes, common utilities used for residential purpose alone may be included in the tariff.

- (8) *in respect of multi-storied buildings/residential complexes having both domestic/ commercial utility and in the event the number of*

Tenements/Flats utilized for commercial purposes does not exceed 25% of total Tenements/Flats, in such cases the LT services relating to common utilities such as common lighting to houses, water supply motor to houses,, lift to houses alone will be charged under this tariff..

(Submission)

It is submitted that the procedure followed at present for the benefit of the consumers may be included in the tariff schedule.

(9) The additional service connections requested by the owners for their multi tenants (Group Houses) as on 01.07.2003 will be given without collecting development charges and service connection charges and all other conditions applicable for giving such multiple services will be followed except that more than one services is permitted in the same door no.

(10) All consumers under this category, shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked) Non compliance shall invite compensation charges as per TNERC regulations.

(11) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from

	0.90
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(Submission)

It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.

11.9 LOW TENSION TARIFF I-B:

Comparison of existing and proposed tariffs for LT I-B :

Tariff Category	Existing	Proposed
LT Tariff IB		
Fixed Charges	Nil	Nil
Energy Charges		
Till installation of Energy Meter	Rs 10 / Month	Rs 60 / Month
On installation of Energy Meter	50 paise per kWhr	250 paise per kWhr
Minimum monthly charges	Rs. 10 per month (or) Rs. 20 for Two months	Rs. 60 per month (or) Rs. 120 for Two months

Tariff as per Government of Tamil Nadu Government policy direction

Tariff Category	
LT Tariff IB	
Fixed Charges	Nil
Energy Charges	
Free from 01.04.2004	

This tariff is applicable to huts in Village Panchayats and special grade panchayats, houses constructed under Jawahar Velai Vaiipu Thittam, TAHDCO Kamarajar Adi Dravidar housing schemes ,huts in Nilgiris District and hut with concrete well in the schemes of state and central Governments.

This tariff is applicable subject to following conditions

- (1) Hut means a living place not exceeding 250 square feet area with mud wall and the thatched roof / tiles / asbestos / metal sheets like corrugated G.I.sheets for roofing/ concrete Roof and concrete wall with specification of square feet as approved in the schemes of state and central Governments.

(Submission)

It is submitted that the huts with concrete wall in the schemes of state and central Governments may be classified under this tariff category.

- (2) Only one light not exceeding 40 watts shall be permitted per hut.
- (3) Wherever, Colour TV ,fan, Mixie, Grinder and Laptop has been supplied by the Government to BPL family, one light not exceeding 40 Watts, one fan not exceeding 70 Watts, one Mixie not exceeding 750 Watts, one Table top Grinder not exceeding 150 Watts, one laptop not exceeding 40

Watts and one 14" colour TV not exceeding 70 Watts (Total 1120 watts) shall be permitted per hut.

- (4) Whenever the norms prescribed in (1) to (3) above are violated, the service category shall be immediately brought under Low Tension Tariff I-A and billed accordingly .

11.10 LOW TENSION TARIFF I-C:

Comparison of existing and proposed tariffs for LT I-C :

Tariff Category	Existing	Proposed
LT Tariff IC		
Fixed Charges	Nil	Nil
LT CT services	Nil	50/kW/Month
Energy Charges		
	400 paise per kWhr	400 paise per kWhr
LTCT services	400 paise per kWhr	400 paise per kWhr
Minimum monthly charges	Rs. 50 per month (or) Rs. 100 for Two months	Rs. 200 per month (or) Rs. 400 for Two months

- (1) This tariff is applicable to the LT bulk supply for railway colonies, plantation worker colonies, defence colonies, Police Quarters, Residential quarters of Koodankulum Nuclear power project.
- (2) All consumers under this category shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non compliance shall invite compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.
- (3) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the

average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

- (3) *It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.*

11.11 LOW TENSION TARIFF II-A:

Comparison of existing and proposed tariffs for LT II-A :

Tariff Category	Existing	Proposed
LT Tariff II A		
Fixed Charges	Nil	Nil
LT CT services	Nil	120 /kW/ Month
Energy Charges		
Village /Town Panchayats	340 paise per kWhr	550 paise per kWhr

Tariff Category	Existing	Proposed
LT Tariff II A		
Municipality/Corporation	350 paise per kWhr	550 paise per kWhr
Minimum monthly charges	Rs. 50 per month (or) Rs. 100 for Two month	Rs. 80 per month (or) Rs. 160 for Two month
LT CT services	As above.	550 paise per kWhr

Tariff as per Government of Tamil Nadu policy directive

Government of Tamil Nadu has withdrawn subsidy for this category.

- (1) This tariff is applicable to Public Lighting, Public Water Supply and Public Sewerage System belonging to village/Town Panchayats Township areas, Municipalities, Municipal Corporations, Railway level crossing, TWAD Board, private agriculture wells hired by CMWSSB, village/Town Panchayats Township areas, Municipalities, Municipal Corporations and TWAD Board to draw water for public distribution, Public Water Supply by New Tirupur Area Development Corporation Public Water Supply by plantations and separate service connection for streetlight in SIDCO and other Industries Department.
- (2) All consumers under this category shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non-compliance shall invite compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.

- (3) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

- (4) *It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.*

11.12 LOW TENSION TARIFF II-B (1)

Comparison of existing and proposed tariffs for LT II-B (1)

Tariff Category	Existing	Proposed
LT Tariff II B (1)		
Fixed Charges	Rs. 20 per month or Rs. 40 for two months.	Rs. 50 / kW /month Or Rs. 100/ kW / Two months
LT CT services	Rs. 20 per month	Rs. 120/ kW / month
Energy Charges	480 paise per kWhr	500 paise per kWhr
LT CT services	480 paise per kWhr	500 paise per kWhr
Minimum monthly charges	Rs. 50 per month (or) Rs. 100 for Two months	Rs. 55 per month (or) Rs. 110 for Two months

- (1) This tariff is applicable to Government and Government aided Educational Institutions, Hostels run by such Educational Institutions, Hostels run by Adi-Dravidar and Tribal Welfare, Backward Class Welfare Department and other Government agencies, Government Youth Hostels, Scouts camps, schools run for Ex-service man children to enlist in the army and other suitable jobs, Government Hospitals, Hospitals under the Control of the Panchayat Unions, Municipalities and Corporations, Veterinary Hospitals, Leprosy Sub-Centers, Primary Health Centers, Health Sub-Centers, Laboratories, Dispensaries, creches and recreation centers run by plantations, Research Institutes, Orphanages and its agriculture services requested out of priority , Public Libraries and Libraries run at free of cost by trusts , Homes for Destitute and Old people, Flood Lighting arrangements in the Rock Fort Temple, its environs and the roads and pathways leading to temple at Tiruchillapalli, Emergency accident Relief centers on highway, Terminal cancer care centre giving free treatment, Hospitals,

Rehabilitation centres for mentally ill and blind centres and dispensaries run by charitable trusts which offers totally free treatment for all categories of patients on par with government hospitals, Free Student Hostel and Hospital at Tribal areas, Institutes runs for /by the physically challenged at free of cost, Government Art Galleries and Private Art Galleries and museum for service motives , Government Elephant Health camp, State Udhavui Maiyum, Emergency Accident Relief Centre set up along the National and state Highways.

- (2) All consumers under this category, shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked) Non compliance shall invite compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.
- (12) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

- (3) *It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.*

11.13 LOW TENSION TARIFF II-B (2) (I) AND II-B (2) (II)

Comparison of existing and proposed tariffs for LT II-B (2)

Tariff Category	Existing	Proposed
LT Tariff II B (2)		
Fixed Charges	Rs. 50 per month or Rs. 100 for two months.	Rs. 50 / kW /month Or Rs. 100/ kW / Two months
LT CT services	Rs. 50 per month	Rs. 120/ kW / month
Energy Charges		
Private educational institutions and hostels run by them II-B (2) (i)	550 paise per kWhr	650 paise per kWhr
Studios, Cinema Theatres II-B (2) (ii)	550 paise per kWhr	700 paise per kWhr
Monthly Minimum Charges		

Tariff Category	Existing	Proposed
LT Tariff II B (2)		
Private educational institutions and hostels run by them II-B (2) (i)	Rs. 50 per month (or) Rs. 100 for Two months	Rs. 60 per month (or) Rs. 120 for Two months
Monthly minimum charges		
Studios, Cinema Theatres II-B (2) (ii)	Rs. 50 per month (or) Rs. 100 for Two months	Rs. 65 per month (or) Rs. 130 for Two months
LT CT services (Energy Charges)		
Private educational institutions and hostels run by them II-B (2) (i)	550 paise per kWhr	650 paise per kWhr
Studios, Cinema Theatres II-B (2) (ii)	550 paise per kWhr	750 paise per kWhr

- (1) This tariff is applicable to Studios, Cinema Theatres, Private educational institutions and hostels run by them
(Submission)
Hostels run by Private educational institutions may be classified under this tariff
- (2) All consumers under this category, shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked) Non compliance shall invite

compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.

- (13) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

- (3) *It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.*

11.14 LOW TENSION TARIFF II-C:

Comparison of existing and proposed tariffs for LT II- C

Tariff Category	Existing	Proposed
LT Tariff II C		

Tariff Category	Existing	Proposed
LT Tariff II C		
Fixed Charges	Rs. 10 per month or Rs. 20 for two months.	Rs. 50 /kW /month Or Rs. 100/ kW / Two months
LT CT services	Rs. 10 per month	Rs. 120/ kW / month

Energy Charges	300 paise per kWhr	500 paise per kWhr
LT CT services	300 paise per kWhr	500 paise per kWhr
Minimum monthly charges	Rs. 50 per month (or) Rs. 100 for Two months	Rs. 85 per month (or) Rs. 170 for Two months

Tariff as per Government of Tamil Nadu policy directive

Tariff Category	
LT Tariff II C	
Fixed Charges	Rs. 50 /kW /month Or Rs. 100/ kW / Two months
LT CT services	Rs. 120/ kW / month
Energy Charges	
From 0 to 60 units per month (or) 0 to 120 units for two months	250 paise per kWhr

Tariff Category	
LT Tariff II C	
Above 60 units per month (or) Above 120 units for two months	500 paise per kWhr
Minimum monthly charges	Rs. 85 per month (or) Rs. 170 for Two months
LT CT services	500 paise per kWhr

(1) This tariff is applicable to actual places of public worship, religious mutts, religious institutions, Goshalas run by charitable trusts, Idols safety centre at temple

(2) The existing concessions to the actual places of worship as already notified by the Government of Tamil Nadu having annual income less than Rs 1000 shall be continued under the same terms and conditions
(Submission)

The existing concessions to the actual places of worship as already notified by the Government of Tamil Nadu having annual income less than Rs 1000 will be continued.

(3) All consumers under this category shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non-compliance shall invite compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.

- (4) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

- (5) *It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.*

11.15 LOW TENSION TARIFF III-A (1):

Comparison of existing and proposed tariffs for LT III-A (Cottage / Tiny industries)

Tariff Category	Existing	Proposed
LT Tariff III-A (1)		
1. Fixed Charges	Rs. 30 per month or Rs. 60 for two months	Rs. 50 /kW /month Or Rs. 100/ kW / Two months
	Existing (Paise/ kWhr)	Proposed (Paise/ kWhr)
2. Energy Charges		
From 0 to 250 units per month (or) 0 to 500 units for two months	180 paise per kWhr	350 paise per kWhr

From 251 to 750 units per month (or) 501 to 1500 units for two months	270 paise per kWhr	400 paise per kWhr
From 751 and above per month (or) 1501 and above for two months	350 paise per kWhr	
Minimum monthly charges	Rs. 60 per month or Rs. 120 for two months	Rs. 140 per month or Rs. 280 for two months

- (1) This tariff is applicable to cottage and tiny industries, micro enterprises engaged in the manufacture or production of goods pertaining to any industries specified in the first schedule to Industries (Development and Regulations) Act 1951 (Central Act 65 of 1951)..
- (2) The intending consumers applying for service connection under LT Tariff III A (1) claiming to have established the micro enterprise engaged in the manufacture or production of goods (with connected load not exceeding 10 HP) shall produce the cottage industries certificates from the industrial department /acknowledgement issued by the District Industries Center under the Micro Small and Medium Enterprises Development Act, 2006 (Act 27 of 2006) as proof for having filed Entrepreneurs Memorandum for setting up of Micro Enterprises for manufacture or production of goods with District Industries Center under whose jurisdiction the Enterprise is located.
- (3) The existing consumers who are classified under LT Tariff III A (1) based on the SSI / Tiny Industries Certificate may be continued to be charged under the same tariff.

Submission

The existing benefits to the consumers will be got continued by deleting the words "till next tariff revision "in tariff order dated No 3. dated 31.07.2010.

- (4) The intending consumers applying for service connection under LT Tariff III A (1) claiming to have established the cottage industries engaged in the manufacture or production of goods (with connected load not exceeding 10 HP) shall produce the certificate as cottage industries from the industrial department.

(Submission)

It is submitted that the procedures followed at present for the benefit of the consumers and proper identification of industrial activities may be included in the tariff schedule.

- (5) This tariff is also applicable to small gem cutting units, sericulture, floriculture, Dairy units, horticulture (raising of fruits, fodder and nursery) Waste land development ,Mushroom culture, Fish culture, Common effluent treatment plants where the connected load does not exceed 10 HP
- (6) Supply to welding sets has to be classified under Low Tension Tariff IIIB.
- (7) All consumers under this category shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non-compliance shall invite compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.

11.16 LOW TENSION TARIFF III-A (2):

Comparison of existing and proposed tariffs for LT III- A (2)

Tariff Category	Existing	Proposed
LT Tariff III-A (2)		
1. Fixed Charges	Rs. 30 per month or Rs. 60 for two months	Rs. 50 /kW /month Or Rs. 100/ kW / Two months

	Existing (Paise/ kWhr)	Proposed (Paise/ kWhr)
2. Energy Charges		
From 0 to 250 units per month (or) 0 to 500 units for two months	140 paise per kWhr	450 paise per kWhr
From 251 to 750 units per month (or) 501 to 1000 units for two months	225 paise per kWhr	500 paise per kWhr
From 751 units and above per month (or) 1501 units and above for two months	250 paise per kWhr	
Minimum monthly charges	Rs. 60 per month or Rs. 120 for two months	Rs. 195 per month or Rs.390 for two months

**Tariff as per Government of Tamil Nadu's policy directives from
01.02.2006 and 01.08.2006**

Tariff Category	
LT Tariff III-A (2)	
1. Fixed Charges	Rs. 50 /kW /month Or Rs. 100/ kW / Two months
	(Paise/ kWhr)
2. Energy Charges	
From 0 to 250 units per month (or) 0 to 500 units for two months	Free.
From 501 and above per month (or) 1001 units and above for two months	400 paise per kWhr
Minimum monthly charges	Rs. 195 per month or Rs.390 for two months

- (1) The tariff is applicable to power looms, Braided Cords Manufacturers, related ancillary tiny industries engaged in warping, twisting, and winding.
- (2) The connected load shall not exceed 10 HP under this category.
- (3) All consumers under this category shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non-compliance shall invite

compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.

11.17 LOW TENSION TARIFF III-B:

Comparison of existing and proposed tariffs for LT III-B

Tariff Category	Existing	Proposed
LT Tariff III- B		
1. Fixed Charges	Rs. 30 per month or Rs. 60 for two months	Rs. 100 /kW /month Or Rs. 200/ kW / Two months
2.LT CT services	Rs. 30 per month or Rs. 60 for two months	Rs. 120 /kW /month Or Rs. 240/ kW / Two months

	Existing (Paise/ kWhr)	Proposed (Paise/ kWhr)

2. Energy Charges		
From 0 to 750 units per month or 0 to 1500 units for two months	400 paise per kWhr	550 paise per kWhr
From 751 and above for one month (or) 1501 and above for two months	500 paise per kWhr	
Minimum monthly charges	Rs.40 per Kw or part there of the contracted load per month or Rs.80 per Kw or part there of the contracted load for two months.	Rs. 100 /kW /month or part there of the contracted load per month Or Rs. 200/ kW / Two months or part there of the contracted load per month
2.LT CT services	As above	600 paise per kWhr

- (1) This tariff is applicable to all industries not covered under LT Tariff III A (1) and III-A (2), Common effluent treatment plants, Dairy units, Coffee grinding, Ice factory, body building units, saw mill, rice mills, flour Mills, prawn farming, poultry farms, fish culture, battery charging units , Integrated Agro projects and Information Technology Services
Information Technology Services as defined in the Information Communication Policy (ICT Policy) 2008 of Government of Tamil Nadu.
The definition is reproduced below:

"IT services are broadly defined as systems integration, processing services, information services outsourcing, packaged software support and installation, hardware support and installation."

Further, Government of Tamil Nadu has clarified that the following category of services will come under Information and Technology services.

- 1) **Systems integration** includes
 - a) Network Management Services
 - b) Applications Integration
-) **Processing services** includes
 - a) Outsourced Services in Banking, HR, finance, Technology and other areas
 - b) Outsourced Bank office support or Business transformation and Process Consulting Services.
- 3) **Information Services Outsourcing** includes
 - a) Outsourced Global Information Support Services
 - b) Knowledge Process Outsourcing
 - c) Outsourced Global Contact Centre Operations
 - d) Outsourced Process Consulting Services
- 4) **Packaged Software Support and Installation** includes
 - a) Software Design and Development, Support and Maintenance
 - b) Application installation, support and maintenance
 - c) Application testing.
- 5) **Hardware Support and Installation** includes
 - a) Technical and network operations support
 - b) Hardware installation, administration and management
 - c) Hardware infrastructure maintenance and support
- (2) Supply to welding sets shall be charged 15% extra.
- (3) The intending consumers applying for service connection under LT Tariff III B claiming to have established the industries engaged in the manufacture or production of goods shall produce Small scale industries (SSI) certificate from the District Industries centre the District industries.

(Submission)

It is submitted that the procedures followed at present for the benefit of the consumers and proper identification of industrial activities may be included in the tariff schedule.

- (4) All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.75	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.

- (5) All consumers under this category, shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non compliance shall invite compensation charges as per Tamil Nadu Electricity Regulatory Commission regulations.

(Submission)

It is submitted that specific orders for the collection of compensation charges under LT Tariff III (B) may be incorporated.

11.18 LOW TENSION TARIFF IV:

Comparison of existing and proposed tariffs for LT IV

Tariff Category	Existing	Proposed
LT Tariff IV		
Fixed Charges	Nil	Nil
LT CT services	Nil	Rs 120/kW/ Month
Energy Charges		
Till installation of Energy Meter	Rs 250 per HP per Annum	Rs 1750 per HP per Annum
On installation of Energy Meter	20 paise per Kwhr	130 paise per Kwhr
Minimum monthly charges	Rs. 25 per month (or) Rs. 50 for Two month	Rs. 165 per month (or) Rs. 330 for two month
LT CT services	20 paise per Kwhr	400 paise per Kwhr

Tariff as per Government of Tamil Nadu's policy directives from 01.04.2004 for normal categories and from 01.04.2006 for SFS categories

Tariff Category	
LT Tariff IV	
Fixed Charges	NIL
LT CT services	Rs 120/kW/ Month
Energy Charges	
Normal category FREE From 1.4.2004 SFS category FREE-FROM 1.4.2006	
LT CT services	400 paise per Kwhr

- (1) This tariff is applicable to Agriculture (Raising food crops, vegetables, seeds, coconut) and the Government Seed Farms, pump sets of Tamil Nadu Agriculture university, pump sets of Research centres of Tamil Nadu Agriculture university and Tamil Nadu Forest department, Pump sets of Government coconut nurseries, Pump sets of Government coil seed farms Pumping of drainage water for the purpose of recycling and using that water for agriculture.
- (2) This tariff is applicable irrespective of ownership of land if the usage of electricity is for agriculture and the usage is restricted to the owned/leased area
- (3) All the new services under this category shall have ISI marked motors and power factor compensation capacitors to qualify for the supply. All the existing services should be provided with power factor compensation capacitors within one year. Non-compliance to provide the capacitors shall invite compensation charges as per the Tamil Nadu Electricity Regulatory Commission regulations.
- (4) The services under this tariff shall be permitted to have lighting loads up to 50 watts per 1000 watts of power connected subject to a maximum of 150 watts inclusive of wattage of pilot lamps. Lighting the farm or the field around the pump sets should be through energy saving compact fluorescent lamps only. Extra lighting over and above the limit and for uses other than lighting shall be through a separate service under LT Tariff V only.
- (5) Agriculturists shall be permitted to use the water pumped from the well and stored in overhead tanks for bonafide domestic purposes in the farmhouse. The farmhouse shall be in close proximity not exceeding 50 meters from the well.
- (6) Sugar cane crushing motors and allied equipments shall be permitted to be connected and operated only when the respective agricultural services

are provided with energy meters. When such services are not provided with meters; the consumer shall immediately opt for the metering.

11.19 LOW TENSION TARIFF V:

Comparison of existing and proposed tariffs for LT V.

Tariff Category	Existing	Proposed
LT Tariff V		
1. Fixed Charges	Rs. 30 per month or Rs. 60 for two months	Rs. 100 /kW /month Or Rs. 200/ kW / Two months
2.LT CT services	Rs. 30 per month or Rs. 60 for two months	Rs. 120 /kW /month
2. Energy Charges		
From 0 to 50 units per month (or) 0 to 100 units for two months	430 paise per Kwhr	700 paise per Kwhr
From 0 to 100 units per month (or) 0 to 200 units for two months	530 paise per Kwhr	
From 101 and above for one month (or) 201 and above for two months	580 paise per Kwhr	
Minimum monthly charges	Rs. 40 per month or Rs. 80 for two months	Rs. 65 per month or Rs. 130 for two months
LT CT services	As above	750 paise per Kwhr

This tariff is applicable to all Commercial establishments and consumers not categorized under LT IA, IB, IC, IIA, IIB (1), II B (2), IIC, IIIA (I), III A (2), IIIB, and IV.

The intending consumers producing service activity certificate from the District Industries centre will be charged under this tariff.

(Submission)

It is submitted that the procedures followed at present for the benefit of the consumers and proper identification of commercial activities other than industrial activities may be included in the tariff schedule.

Private communication providers will be charged under this tariff.

All consumers under this category shall have ISI marked motor and motor loads of 3 HP and more shall install adequate power factor improvement capacitors (ISI marked). Non-compliance shall invite compensation charges as per TNEB's terms and conditions. The services having a connected load of 25 HP and above shall be covered under the power factor penalty system as in (5) below.

"The tariff is also applicable for L.T. supply for construction activities of residential building/complex till the completion of construction activities".

In respect of multi-storeyed buildings/residential complexes where the number of flats/Tenements utilized for commercial purposes exceeds 25% of the total number of Tenements/Flats the L.T. services relating to common utilities such as common lighting to houses, water supply motor to houses,, lift to houses will also be charged under this tariff.

(Submission)

It is submitted that the procedure followed at present for the benefit of the consumers may be included in the tariff.

In respect of residential complexes used for domestic where the L.T. services relating to common utilities mentioned except such as Street lights, Gym, swimming pool , recreation clubs, indoor stadiums and grounds , indoor and community halls, ampi theatres, shops etc will be charged under this tariff

(Submission)

It is submitted that at present multi-storeyed buildings/residential complexes are comprised with above luxury common utilities and they may be classified under this tariff.

(8) *Piecemeal Sales done at manufacturing places will be charged under this tariff.*

(9) .All Services under this category with a connected load of 18 Kw and above should maintain a power factor of not less than 0.85. Where the average power factor of Low Tension Service connection is less than the stipulated limit of 0.85 the following compensation charges will be levied.

Below 0.85 and up to 0.75	One per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90
Below 0.85	Two per cent of the current consumption charges for every reduction of 0.01 in power factor from 0.90

(Submission)

It is submitted that the existing three slabs of the power penalty may be reduced to two slabs as per Gujarat state tariff order to maintain high power factor by providing adequate rating of capacitors by the consumers.

11.20 LOW TENSION TARIFF VI:

Comparison of existing and proposed tariffs for LT VI

Tariff Category	Existing	Proposed
LT Tariff VI		
	Existing (Paise/ kWhr)	Proposed (Paise/ kWhr)
2. Energy Charges		

Supply to temporary activities and construction activities other than Residential building/Residential Complexes for combined lighting and Power load.	1050 paise per Kwhr	1050 paise per Kwhr
Minimum charges	Rs 50 per KW or part thereof per day.	Rs 100 per KW or part thereof per day.
Lavish illumination.	1050 paise per Kwhr	1050 paise per Kwhr
Monthly Minimum Charges	NIL	Rs. 250 per month or Rs. 500 for two months
LT CT services		
Fixed charges	NIL	Rs 120 per KW
Energy charges	1050 paise per Kwhr	1050 paise per Kwhr

- (i) The LT tariff VI is applicable for the requirements of a temporary supply during the construction stage. The temporary supply shall be converted into the respective regular category after the completion and compliance to the respective terms and conditions.
- (ii) This Tariff is also applicable for lavish illumination to weddings, garden parties and other private functions where the illumination is obtained through bulbs fastened in outer surfaces of walls of buildings on trees and poles inside the compound and in pandals, etc., outside the main building. All other cases of illumination, obtained through bulbs intended on outer surface of walls of buildings on trees and poles inside the compound and in pandals etc., outside the main building shall be charged as for Temporary Supply.
- (iii) In respect of temporary activities and construction activities, minimum charges are applicable and in respect of lavish illumination, monthly minimum charges are applicable.

(Submission)

It is submitted that due to huge charges by adopting minimum charges in KW/day, consumers using lavish illumination suffers heavily and reluctant to avail temporary supply. In order to safe guard the interest of both the consumers and TANGEDCO and to get the actual consumption charges for lavish illumination, this new clause has been introduced. General conditions.

11.21. General.

11.21.1. The above tariff shall be read with the General Terms and Conditions of Supply Code and Distribution code specified by the Tamil Nadu Electricity Regulatory Commission.

Determination of Wheeling Charges, Cross Subsidy Surcharge, Grid Availability Charges, Additional Charges and Restoration Charges

1. The Electricity Act 2003 (the Act) allows non- discriminatory Open Access to the network of a Licensee on payment of applicable charges.
2. The proposed Wheeling charges, Cross Subsidy Surcharge, Additional Surcharge, Grid Availability charges and Restoration Charges are detailed here.

2. Issues:

As the transfer of Assets has not yet been finalized, it has considered various assumptions while apportioning the total expenses and revenue for each function. Further, the TNERC has provisionally approved all the expenses and based on that the Annual Distribution Charges has been arrived at.

2.1. Apportionment of total expenses in to Generation and T&D

The Board maintains separate Balance Sheet for its generation function. Hence the balance figures out of total revenue and expenditure has been taken for Transmission and Distribution function.

2.2. Apportionment of T&D expenses into Transmission and Distribution function

The following points details the approach adopted for apportioning the expenses in Transmission and Distribution.

i. Distribution assets and depreciation has been considered as per the Board's Annual Statement of Accounts for the year 2009-10.

ii. Based on Employee cost approved by the Commission in it's T.O.dt 31.07.2010, the Employee cost have been apportioned on the basis of number of employees.

iii. The A & G Expenses has been apportioned on the basis of number of employees.

iv. R&M expenses for the Distribution System have been arrived at on the basis of Gross Fixed Asset.

v. Similarly, the Interest and financing charges have been apportioned.

3. Expenses of the Board

The following section details the expenses for Distribution function, to be recovered as transmission charges from all beneficiaries.

3.1. Interest on Loan

The interest on loan for the distribution function during the control period of 2010-11, 2011-12 and 2012-13 as below:
Rs. Lakhs

Description	2009-10	2010-11	2011-12	2012-13
Interest on loan	153066	165135.16	315020	335459

(from form 1)

The same has been taken into account for the calculation of Annual Distribution charges.

3.2. Operating Expenses

The operating expenses mainly comprise of expenses under the heads of employee, repair and maintenance and administrative and general expenses.

R & M expenses: R&M expenses have been arrived at on the basis of Gross Fixed Asset.

Employee Cost: The Employee cost for the year 2009-10 and 2010-11 has been apportioned to Transmission and Distribution based on the number of employees.

2 A & G Expenses: A&G expenses have been apportioned on the basis of number of employees.

Operating expenses for Distribution Function (Rs Lakh)

S. No.	Particular	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
1	Net R&M Expenses	3478	4136	4301	4473
2	Net Employee Expenses	212235	252515	262616	273121
3	Net A&G Expenses	6976	5655	5881	6117
4	Total Operating Expenses	222689	262306	272799	283711

(FROM FORM 7)

3 3.3. Gross Block and Depreciation

Distribution assets and depreciation has been considered based on the Board's Annual Statement of Accounts for the year 2009-10.

The following table details the Gross Block and Depreciation.

Gross Block and Depreciation (Rs Lakh)

S. No.	Particular	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
1	Gross Block at the Beginning of the Year	688321	781053	840755	948849
2	Gross Block at the end of the Year	781053	840754	948848	1059610
3	Deprecation during the year	46386	27826	30743	35161

3.4. Return on Equity:

In accordance with the TNERC (Terms and Conditions for Determination of Tariff) Regulations – 2005, licensee is allowed to earn return on equity @ 14% (post tax).

The Equity projected has been allocated to Distribution function based on Gross Fixed Assets and RoE at 14% arrived at as below:

Computation of Return on Equity for Distribution (Rs Lakh)

S. No	Particular	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
1	Equity	69687	109185	142139	148490
2	Return on Equity @ 14%	9756	15286	19900	20789

3.5. Other Debts:

The expenses like material cost variance, bad & doubtful debts, extra ordinary expenses, etc., are accounted under this head.

Out of this, material cost variance and miscellaneous losses have been allocated to all the three functions and the remaining functions are allocated to distribution functions as detailed below:

S. No.	Particulars	2009-10	2010-11	2011-12	2012-13
1	Research & Development expenses	11	11	11	11
2	Bad & Doubtful debts written off	1803	2638	2691	2745
3	Miscellaneous losses and written off/provided for	211	230	234	239
4	Material cost variance	458	46	47	48
5	Sundry expenses	0	0	0	0
6	Extra ordinary debits	7	11	11	11
	Total	2489	2936	2995	3055
	Less:Capitalisation	449	134	137	140
	Net expenses	2040	2802	2858	2915

4. The Total Annual Distribution Charges are as below:

Rs. Lakhs					
S. No	Particular	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
1	Net O&M Expenses	222688.76	262306.46	272798.72	283710.67
2	Interest on Loan	153066.08	165135.16	315020.26	335459.26
3	Depreciation	22018.31	27825.80	30742.92	35161.30
4	Return on equity	9756.22	15285.86	19899.51	20788.61
5	Other debits	2040.45	2801.54	2857.57	2914.72
	Prior Period Charges	31452	73185	23629	0
5	Annual Wheeling Charges	441021.92	546539.58	664947.85	678034.54
	Less: Interest on Security Deposit	23846	26377	29015	31916
	Nett Annual Distribution Charges	417176.10	520162.57	635933.14	646118.37

As the open access is allowed to HT consumers, the wheeling charges are to be determined on the cost of HT distribution network. Hence, the annual wheeling charges are required to be allocated between HT and LT in the ration of HT and LT network.

- (i) As on 31-03-2010, the length of HT and LT lines were in the ratio of 24:76 (1.69 lakh ckt kms :5.39 lakh ckt kms)
- (ii) The annual wheeling charges are allocated among HT and LT as below:

Rs. lakhs

	2010-11	2011-12	2012-13
HT	124839	152624	155068
LT	395324	483309	491050
Total	520163	635933	646118

5. The projected units sold through the distribution system during the control period and the wheeling charges for the control period shall be as below:

Sl. No	Details	2010-11	2011-12	2012-13
1	Projected energy fed into the grid (in MUs)	72513	80192	86564
2	Transmission loss upto 110 kV (in %)	2.95%	2.95%	2.95%
3	Energy sent out into distribution network (in MUs)	70374	77827	84010
4	Less: Energy consumed upto 110 kV (in MU)	3399	4458	5840
5	Energy fed into 33 kV and below (in MU)	66975	73369	78170
6	Annual wheeling charges (Rs.in Crores)	124839	152624	155068
7	Wheeling charges per unit (in paise)	18.64	20.80	19.84

6. Determination of Cross-Subsidy Surcharge

(i). The proviso under sub-section (2) of section 42 of Electricity Act 2003 stipulates the following:

“Provided that such open access shall be allowed on payment of a surcharge in addition to the charges for wheeling as may be determined by the State Commission

“Provided further that such surcharge shall be utilized to meet the requirements of current level of cross-subsidy within the area of supply of the distribution licensee”

(ii). 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.

3. (iii). As per Para 8.5 of the National Tariff Policy, the Cross Subsidy Surcharge will be,

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

(iv). Calculation for arriving at the Cross Subsidy Surcharge

- a. The quantum of 5% power purchase has been determined for the year 2010-11 as below:

Description	2010-11
Total Energy Requirement MU	72513
5% of the Total Energy MU	3626

b. Weighted Average Power Purchase Cost for 2010-11:

S.No.	Station	Units Purchased in MU	Total Cost Rs. In Lakhs	Rs./Unit
	Power Exchange IEX	302.964	35219	11.62
	Kayamkulam	118.798	12791	10.77
	Gujarat Unja	141.105	8744	6.20
	PPN	249	15285	6.15
	TATA	26	1531	6.00
	reliance	46	2706	5.93

	PTC Energy Charges	543.38	31774	5.85
	GMR ETL:	8.544	492	5.76
	JSW=PTCL	115.84	6571	5.67
	Global	14.457	792	5.48
	NVVN	13.67	595	4.35
	CPP	177.73	6164	3.47
	NLC _TSI exp	109.763	4027	3.67
	ST-CMS	241.539	8518	3.53
	Penna	44.096	1446	3.28
	ABT	172.797	8228	4.76
	Aban	75.638	2333	3.08
	ER	63.537	1869	2.94
	SR Stage III	91	2232	2.46
	NLC _TSI	240	5426	2.26
	NLC _TS2 st-1	112	2481	2.21
	Talcher 2	341	7732	2.27
	NLC _TS2 st-2	172	2697	1.57
1	SR	206	0.00136	0.66
	Total	3626	169653	4.68

Note:

- 1. The power purchase cost for the year 2010-11 has been taken into consideration for arriving the weighted average power purchase cost.*

The weighted average of power purchase cost of top 5% power at margin for 2010-11 is Rs.4.68 per unit.

Weighted Average Power Cost paise / unit
Wheeling Charges as arrived paise per unit

468
 18.64

©. The weighted average power purchase cost adjusted for average loss compensation plus wheeling charges for injection and drawal at different voltages as below:

Sl. No	Injection Voltage (in KV)	Drawal Voltage (in KV)	Total Loss (in %)	Weighted average power purchase cost (ps / unit)
1	22 KV	22 KV	6.45	$468(1+6.45/100)+18.64= 516.65$
2	22 KV	11 KV	6.70	$468 (1+6.70/100)+18.64= 517.82$
3	11 KV	11 KV	6.95	$468 (1+6.95/100)+18.64=518.99$
4	33 KV	22 KV	5.20	$468 (1+5.20/100)+18.64= 510.81$
5	33 KV	11 KV	5.45	$468 (1+5.45/100)+18.64= 511.98$
6	33 KV	33 KV	3.95	$468 (1+3.95/100)+18.64= 504.96$
7	110 KV	22 KV	4.45	$468 (1+4.45/100)+18.64= 507.30$
8	110 KV	11 KV	4.70	$468 (1+4.70/100)+18.64= 508.47$
9	110 KV	33 KV	3.20	$468 (1+3.20/100)+18.64= 501.45$
10	110 KV	110 KV	2.45	$468 (1+2.45/100)+18.64= 497.94$
11	230 KV	22 KV	3.70	$468 (1+3.70/100)+18.64= 503.79$
12	230 KV	11 KV	3.95	$468 (1+3.95/100)+18.64= 504.96$
13	230 KV	33 KV	2.45	$468 (1+2.45/100)+18.64= 497.94$
14	230 KV	110 KV	1.70	$468 (1+1.70/100)+18.64= 494.43$
15	230 KV	230 KV	0.95	$468 (1+0.95/100)+18.64= 490.92$

(d). The cross subsidy surcharge applicable to different categories of consumers for injection and drawal at different voltage levels has been arrived for the year 2010-11 as below:

Sl.NO.	Injection Voltage	Drawal Voltage	Total Loss %	Weighted Average Power Purchase Cost (paise / unit)	Cross Subsidy Surcharge		
					Industries ROR.496.70 paise / unit	Railway Traction 480.63 paise / unit	Govt. aided edu. Ins 464.46 paise / unit
1	22 KV	22 KV	6.45	516.65	-19.96	-36.03	-52.19
2	22 KV	11 KV	6.70	517.82	-21.13	-37.20	-53.36
3	11 KV	11 KV	6.95	518.99	-22.30	-38.37	-54.53
4	33 KV	22 KV	5.20	510.81	-14.11	-30.18	-46.35
5	33 KV	11 KV	5.45	511.98	-15.28	-31.35	-47.51
6	33 KV	33 KV	3.95	504.96	-8.26	-24.33	-40.50
7	110 KV	22 KV	4.45	507.30	-10.60	-26.67	-42.84
8	110 KV	11 KV	4.70	508.47	-11.77	-27.84	-44.01
9	110 KV	33 KV	3.20	501.45	-4.75	-20.82	-36.99
10	110 KV	110 KV	2.45	497.94	-1.25	-17.32	-33.48
11	230 KV	22 KV	3.70	503.79	-7.09	-23.16	-39.33
12	230 KV	11 KV	3.95	504.96	-8.26	-24.33	-40.50
13	230 KV	33 KV	2.45	497.94	-1.25	-17.32	-33.48
14	230 KV	110 KV	1.70	494.43	2.26	-13.81	-29.97
15	230 KV	230 KV	0.95	490.92	5.77	-10.30	-26.46

7. Additional Surcharge:

As per Tariff Policy, the additional Surcharge 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. Since, there is a shortage of available capacity, it is submitted that it is proposed not to claim the additional surcharge at present.

8. Grid Availability Charges.

These charges are levied for providing standby arrangements to open access customers in the following cases:

- i. In case of outages of Generator supplying to a open access consumer.
- ii. For start up power by generator
- iii. When the generation as per schedule is not maintained and when the drawal by the open access consumer is in excess of the schedule.

It is prayed to approve energy charges plus the energy equated demand charges applicable to HT Commercial tariff as grid Availability Charges for the categories I & ii above. For the category iii also, energy plus energy equated demand charges as Grid Availability Charges without Deemed demand benefit to the open access consumers since the Board has to maintain the grid in order to cater the load.

9. Restoration Charges:

It is prayed that the reconnection charges may also revised from Rs.3000/ per service to Rs.5000/- per service.

10. Voltage wise T&D Loss: The percentage of voltage wise loss level is submitted as per the T&D loss trajectory fixed by the Commission in T.O. dt 31.07.2010 for the consideration of Hon,ble TNERC.

% of loss during the control period 2010-11 to 2012-13			
Level	2010-11	2011-12	2012-13
230 KV	0.95	0.95	0.95
110 KV	1.5	1.5	1.5
33 KV	1.5	1.5	1.5
22 KV	2.5	2.5	2.5
11 KV	3.0	3.0	3.0
LT	8.15	7.75	7.35
Total	17.6	17.2	16.8

11. Prayer

It is prayed before the Hon'ble Commission for

1. To approve the annual wheeling charges requirement.
2. To approve the assumptions considered while determining Annual Wheeling Charges.
3. approval of the Annual Wheeling Charges, Cross Subsidy Surcharge, Grid Availability Charges and Restoration Charges.