



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

Order No.TNERC/M.O.3/E/Loss reduction dated 21.07.2009

**Present: Thiru S. Kabilan, Chairman
Thiru R. Rajupandi, Member**

In the matter of: Recommendations of FOR working group – Reduction of AT&C Losses by the Distribution Licensee - Orders issued.

1. Section 55 (1) of the Electricity Act, 2003 mandates the Distribution Licensee to supply electricity through installation of correct meters in accordance with the Central Electricity Authority (Installation and operation of meters) Regulation, 2006. Section 55 (2) specifies that the generating company or licensee may be directed to install meters by them at such stages of generation, transmission or distribution or trading of electricity and at such locations of generation, transmission or distribution or trading, as it may deem necessary for proper accounting and audit in the generation, transmission and distribution or trading of electricity.

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

“.....

(c) the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;

- (d) safeguarding of consumers' interest and at the same time, recovery of the cost of electricity in a reasonable manner;*
- (e) the principles rewarding efficiency in performance;*
- (f) multi year tariff principles;.....*
- (i) the National Electricity Policy and tariff policy.....”*

3. As per the Section 86(1) of the Act, the State Commission shall discharge the following functions, namely: -

“..... (i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees.....”

4. The following sections in the National Electricity Policy (NEP) emphasize the reduction of AT&C losses:

“5.4.4 Multi-Year Tariff (MYT) framework is an important structural incentive to minimize risks for utilities and consumers, promote efficiency and rapid reduction of system losses.....”

5.4.6 A time-bound programme should be drawn up by the State Electricity Regulatory Commissions (SERCs) for segregation of technical and commercial losses through energy audits. Energy accounting and declaration of its results in each defined unit, as determined by SERCs, should be mandatory not later than March 2007. An action plan for reduction of the losses with adequate investments and suitable improvements in governance should be drawn up. Standards for reliability and quality of supply as well as for loss levels shall also be specified, from time to time, so as to bring these in line with international practices by year 2012.

5.4.11 High Voltage Distribution System is an effective method for reduction of technical losses, prevention of theft, improved voltage profile and better consumer service. It should be promoted to reduce LT/HT ratio keeping in view the techno economic considerations.

5.6.1..... Application of IT has great potential in reducing technical & commercial losses in distribution and providing consumer friendly services.”

5. The Tariff Policy issued under the Act also provides a roadmap and suggests methodologies for factoring the Aggregate Technical and Commercial (AT&C) losses in computation of tariff. The relevant provisions of the Tariff Policy are reproduced below:

“8.2.1 The following aspects would need to be considered in determining tariffs:
(1) All power purchase costs need to be considered legitimate unless it is established that the merit order principle has been violated or power has been purchased at unreasonable

rates. The reduction of Aggregate Technical & Commercial (AT&C) losses needs to be brought about but not by denying revenues required for power purchase for 24 hours supply and necessary and reasonable O&M and investment for system upgradation. Consumers, particularly those who are ready to pay a tariff which reflects efficient costs have the right to get uninterrupted 24 hours supply of quality power. Actual level of retail sales should be grossed up by normative level of T&D losses as indicated in MYT trajectory for allowing power purchase cost subject to justifiable power purchase mix variation (for example, more energy may be purchased from thermal generation in the event of poor rainfall) and fuel surcharge adjustment as per regulations of the SERC.

(2) AT&C loss reduction should be incentivised by linking returns in a MYT framework to an achievable trajectory. Greater transparency and nurturing of consumer groups would be efficacious. For government owned utilities improving governance to achieve AT&C loss reduction is a more difficult and complex challenge for the SERCs. Prescription of a MYT dispensation with different levels of consumer tariffs in succeeding years linked to different AT&C loss levels aimed at covering full costs could generate the requisite political will for effective action to reduce theft as the alternative would be stiffer tariff increases. Third party verification of energy audit results for different areas/localities could be used to impose area/locality specific surcharge for greater AT&C loss levels and this in turn could generate local consensus for effective action for better governance. The SERCs may also encourage suitable local area based incentive and disincentive scheme for the staff of the utilities linked to reduction in losses.

The SERC shall undertake independent assessment of baseline data for various parameters for every distribution circle of the licensee and this exercise should be completed latest by March, 2007.

The SERC shall also institute a system of independent scrutiny of financial and technical data submitted by the licensees. As the metering is completed up to appropriate level in the distribution network, latest by March, 2007, it should be possible to segregate technical losses. Accordingly technical loss reduction under MYT framework should then be treated as distinct from commercial loss reduction which requires a different approach.”

6. In line with the above, the Forum of Regulators (FOR) established under Section 166(2) of the Electricity Act, 2003 has made certain recommendations on “AT&C loss reduction” to be implemented by all the Distribution Licensees.

7. Further, following provisions are made in the “Tamil Nadu Electricity Regulatory Commission (Terms and Conditions for the determination of Tariff) Regulations, 2005.”

“.....14(7) Target for reduction of technical and commercial losses during the control period shall be determined with reference to the loss level determined for the base year

and such level shall have the flexibility to accommodate changes due to completion of metering arrangement for accurate measurement of losses. The financial loss if any due to failure to achieve the target shall be borne by the licensee and gain if any shall be shared with the beneficiaries at the rate of 50 : 50.....

16. The licensee shall furnish a detailed Business Plan for five years for approval by the Commission. The Business Plan shall contain projections for all activities including loss reduction, effective and tamper proof metering and the criteria for projection.....

25(11) Any savings achieved by Generating Company or the licensee shall be allowed to be retained by them. When they exceed the normative expenses they shall bear the loss.....

60. The transmission loss shall be allocated to the users of the transmission system in proportion to the energy drawn through the system.....

69(2)(c) The Distribution licensee shall furnish the energy requirement detail with Aggregate Technical and Commercial loss and sources of procurement of power.....

73(1) The Distribution licensee shall endeavor to have proper metering arrangements for accurate measurement of transmission loss.....

73(2) Appropriate sample study with the approval of the Commission shall be conducted to estimate the consumption in unmetered services so that distribution losses are estimated fairly accurate.....

73(4) The Distribution licensee shall furnish the Transmission and Distribution losses during the previous year and the proposed target for the Current and Ensuing Year as well as for the next three years with the details of measures proposed to achieve the target in each year.....

73(5) The Commission shall fix target for reduction of losses in the next three years.....”

8. Following provisions are also made in the TNERC (Terms and Conditions for Determination of Tariff for Intra state Transmission / Distribution of Electricity under MYT Framework) Regulations, 2009.

“.....3(iv) Every licensee shall file a business plan for Commission’s approval along with MYT filing for the control period. The business plan shall contain projection for all activities including on going projects, new projects with the specific nature, loss reduction, effective and tamper-proof metering etc., The licensee shall also furnish the criteria adopted for projection.....

25. The Commission shall fix benchmarks for reduction of losses and the licensee shall achieve the target fixed for each year of the control period

The AT & C loss is a controllable item and the financial loss, if any, on account of failure to achieve the target shall be borne by the Distribution licensee. The gains, if any, on account of achieving the loss below the targeted level shall be shared with the consumers.

The Distribution licensee may arrange for third party verification of energy audit results for different areas / localities. They may propose to impose area / locality specific surcharge for greater AT & C loss levels which could generate local consensus for effective action for better governance.

The Distribution licensee may introduce local area based incentive and disincentive schemes to it's staff, linked to reduction in losses.....”

9. After careful consideration, the Commission decided to accept the recommendations of the FOR and issue the following directions to the Distribution Licensee in Tamil Nadu to achieve the AT&C loss reduction targets fixed by the Commission vide letter dated 06-11-2008.

1. The practice of clubbing Transmission and Distribution (T&D) losses needs to be immediately discontinued and should be dealt separately. The Distribution Licensee shall install meters with automatic data logging facility / remote metering facility starting from Extra High Voltage (EHV) feeders and upto Secondary side of the Distribution Transformers (DTs) to asses exact technical losses upto DT.
2. Distribution Licensee shall furnish the roadmap for installation of meters in Hut and Agricultural services including SFS category immediately and commence installing meters from 01.10.2009 as per the Commission's Order No T.O. 1-118 dated 22.05.2009.
3. Baseline data should be compiled for each electricity division by the Distribution Licensee to segregate the technical and non-technical losses.

4. AT&C loss should be calculated by subtracting the energy realized from the energy input where energy realized should be equal to the product of energy billed and collection efficiency. As suggested by CEA, while calculating the energy input, the energy traded should be excluded. Further, it should be ensured that the methodology for computing the AT&C loss figure should exclude disputed amounts (amounts which are disputed in any forum including courts etc.) from the demand raised for calculation of collection efficiency. In accordance with para 8.2.1 (iv) of the Tariff Policy, the collection efficiency should take into account provision for bad debts as per the policies developed and subject to the approval of the Commission.
5. To segregate the losses, the first step should be to compute the technical losses at the distribution network level. The technical losses so computed should be subtracted from the total energy loss at the distribution network (i.e. from AT&C loss) to derive the commercial loss. Technical losses could be computed by the bottoms up approach by computing losses - at EHV system, at 11 kV system and at the DT level.
6. 11kV feeders having no commercial losses consistently should be identified and technical losses in such feeders may be arrived at as the difference between the sending end energy and receiving end energy at the consumer end plus energy recorded at the LV side of DTs.
7. Energy audit has to start from DTs to 11kV feeders to 33/11kV substations and above of the entire area selected for auditing.
8. Suitable local area based incentive and disincentive schemes for the staff of the Distribution Licensee linked to reduction in losses, as stipulated in para 8.2.1(ii) of the Tariff Policy should be encouraged.

9. Payback period and life cycle cost analysis should be carried out by the Distribution Licensee for selecting the appropriate technological intervention aimed at reducing the technical losses.
10. High Voltage Distribution System (HVDS) will be more appropriate for areas where LT to HT ratio is poor, rural areas and areas having low connection density. In other areas LT Aerial Bunched Conductors (ABC) may be used for controlling theft. The cost of sophisticated metering should not be passed on to an individual consumer and the same should be recovered through ARR.
11. The Distribution Licensee may segregate the agricultural feeders separately as far as possible. In the case where it is not possible to segregate the agricultural feeders separately, the agricultural consumption may be assessed on the basis of scientific sampling and with the third party verification.
12. The Distribution Licensee should effectively use provisions to curb theft and pilferage of electricity.
13. The underachievement of the loss reduction target should be borne by the licensee and in case of achievement over and above the targets the gain to be shared between the licensee and the consumers in the ratio of 50:50 as fixed by the Commission in TNERC (Terms and Conditions for Determination of Tariff for Intra state Transmission / Distribution of Electricity under MYT Framework) Regulations, 2009.
14. Commission will monitor the capital expenditure and the corresponding loss reduction achieved by the licensee, project-wise and division-wise.
Commission may appoint one consultant for third party verification

to verify the technical and financial data submitted by the Distribution Licensee and to assess the actual loss levels.

15. Distribution Licensee shall furnish a report on various loss reduction strategies to the Commission by 30-08-2009 and send the status of action taken on quarterly basis.

(By order of the Commission)

**Secretary,
Tamil Nadu Electricity Regulatory Commission**

To

The Chairman, Tamil Nadu Electricity Board, Chennai 2.