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Briefing Note
Recovery of TANGEDCO's Fixed Costs for Generation, Distribution, and Transmission

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Purpose

To analyse to what extent TANGEDCO's fixed costs of the generation, distribution, and transmission functions are recovered from its fixed/demand charges levied on the consumers.

Tariff Categories used in this note

HT I-A	HT Industries
LT I-A	Domestic
LT II-A	Public Lighting, Public Water, Sewage, etc,
LT II-B	Government Educational Institutions
LT III B	LT Industries
LT V	Commercial

Key messages

In none of the years from FY 2011-12 up until FY 2018-19 was TANGEDCO able to recover its Aggregate Revenue Requirement (ARR). One of the reasons is the under-recovery of fixed costs through fixed/demand charges levied (Auroville Consulting 2020).

For the FY 2017-18[1], fixed costs incurred by TANGEDCO are estimated to be INR 192 /kW per month, while the average demand/fixed charges collected were INR 95 /kW per month (CEIC 2017) (TNERC 2017).

From FY 2011-12 up until 2018-19, fixed/demand charges recovered only 45% of the fixed costs (TNERC 2017).

The demand charges collected from HT consumers are more than the fixed costs incurred, while the fixed charges collected from LT consumers are lower than the actual fixed costs. In FY 2017-18, the fixed/demand charges recovered only 50% of the total fixed costs incurred (refer to Figure 1) (TNERC 2017).

Rationalizing the demand/fixed charges, in order to match the actual cost incurred, would improve TANGEDCO's financial performance.

[1] *Due to the availability of data on sanctioned load for the FY 2017-18, the recovery of fixed costs is analysed for that particular financial year.*

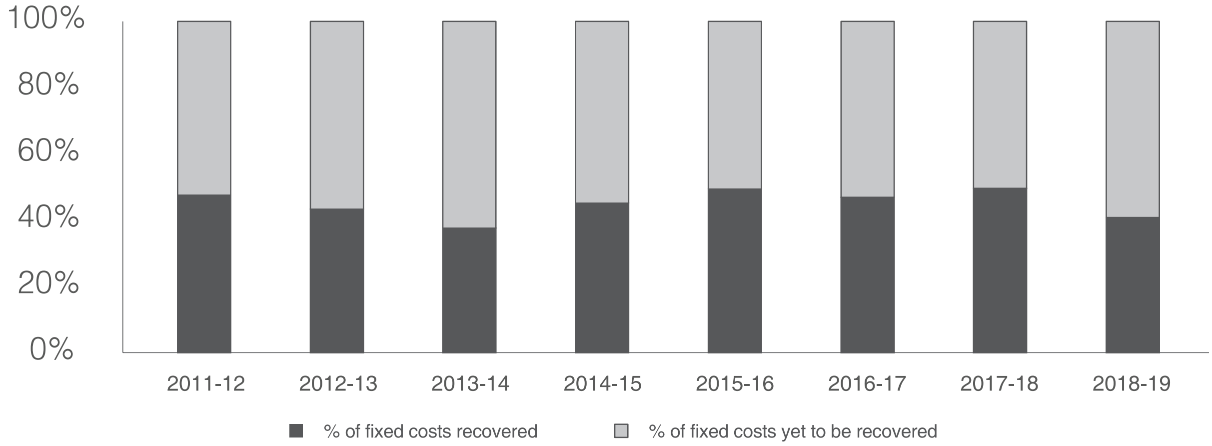
Background

The ARR is the total amount of revenue a utility must collect from its customers to cover its costs. The ARR comprises fixed and variable costs. The energy charges levied should recover the variable costs incurred. The demand/fixed charges levied should recover the fixed costs. Electricity consumer tariffs must be designed such that all costs (fixed and variable) are recovered. But that is the not case with existing tariff structures in Tamil Nadu.

From FY 2011-12 up until FY 2018-19 the variable charges are slightly under-recovered or on par. Only in FY 2017-18, the variable charges were over-recovered by 3%.

The fixed costs are under-recovered from FY 2011-12 up until FY 2018-19 (refer to Figure 1). On average, there is a shortfall of INR 6,917 crore every year on the recovery of fixed costs (TNERC 2017).

Figure 1: Trend in Recovery of Fixed Costs



The reason for the under-recovery of fixed costs inherently is tariff design. As per TNERC, the fixed costs form 50% of the net ARR, while the approved demand/fixed charges recover only 19% of the ARR. This leads to a shortfall of 31% of the net ARR every year. Hence there is a need for tariff rationalization such that fixed costs are fully recovered[2].

Research Methodology

1.Analysing the recovery of the fixed costs through demand/fixed charges

The total fixed costs divided by the total sanctioned load give the fixed costs per kW. Similarly, the total demand/fixed charges collected per kW are calculated (as per CEIC 2017). The difference between the fixed costs and demand/fixed charges gives the under-recovery.

2. Comparison of the average fixed cost incurred and the fixed charges levied for selected consumer categories

The average demand/fixed charges as per the tariff schedule are compared with the fixed cost (TNERC 2017). The fixed charges of LT fall short to recover the fixed cost. The demand charges of HT overrecover the fixed costs.

3. Comparison of the monthly billing

The monthly billing for various consumer categories is calculated with the existing tariff schedules. This total monthly billing has two parts, fixed charges and energy charges. If the fixed charges levied are increased to match the fixed costs per kW, it impacts the monthly billing. This impact on the consumer categories is analysed.

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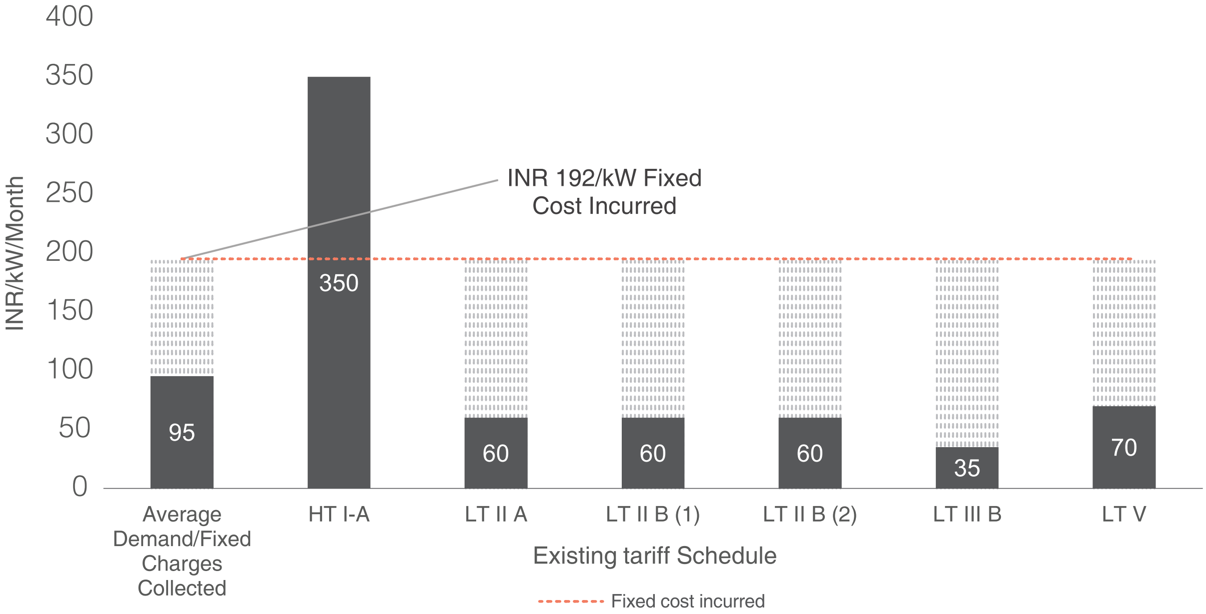
[2] *Note: It is beyond the scope of this paper to analyse whether the fixed costs claimed by TNERC are justifiable. This paper only analyses whether the demand/fixed charges recover the fixed costs as claimed by TANGEDCO in their ARR petitions / as approved by TNERC.*

Results

1. Analysing the recovery of the fixed costs through demand/fixed charges

The fixed cost incurred for FY 2017-18 is INR 192 per kW /month. The recovery of fixed cost or the demand/fixed charges collected is INR 95 per kW /month. The under-recovery is INR 97 per kW / month. This is due to the fixed charges of all LT consumer categories being lower than the fixed costs per kW (refer to Figure 2).

Figure 2: Comparison of the average fixed cost incurred and the fixed charges levied for selected consumer categories



2. Comparison of the average fixed cost incurred and the fixed charges levied for selected consumer categories

In the HT I-A category, there is an over-recovery of the fixed costs by 82%, while for all LT tariff categories there is under-recovery (refer to Table 1). It is INR 60 per kW /month for LT II-A (Public Lighting, Public Water, Sewage, etc,), LT II-B (1) (Government Educational Institutions), and LT II-B (2) (Private Educational Institutions). The fixed charges for the consumer categories LT III B (Industries) and LT V (Commercial) are INR 35 and 70 per kW /month. For LT I-A (Domestic)[3], it is a fixed amount per month per service connection, and not based on the sanctioned load.

Fixed charges collected from LT I-A domestic consumers divided by the total sanctioned load in the State result in a fixed charge of INR 5.10 per kW/month.

Table 1: Consumer Category Wise Under/Over Recovery of Fixed Costs

INR/kW/month %			
	Demand/Fixed Charges Collected	Fixed cost incurred	Under/Over Recovery
HT I-A	350	192	82%
LT I A	5.1	192	-97%
LT II A	60	192	-69%
LT II B (1)	60	192	-69%
LT II B (2)	60	192	-69%
LT III B	35	192	-82%
LT V	70	192	-64%

[3] *The fixed charges levied on LT I-A (Domestic) are subsidised by the State Government of Tamil Nadu. The payable amount of fixed charges after the subsidy is considered in the calculation.*

The demand/fixed charges of all consumer categories should be at par with the fixed costs. This would reduce the billing amount for all HT categories and increase the billing amount for LT categories (refer to Figure 2).

3. Comparison of the monthly billing

For domestic consumers, increasing the fixed charges results in an increased monthly billing by 120%. For other categories such as LT II-A, LT II-B (1), LT II-B (2), LT III-B, and LT V, the increase is 18%, 35%, 22%, 31%, and 14%.

The largest percentage increase is for the domestic tariff category, and the smallest percentage increase comes in the LT tariff V (general purpose including commercial) category (refer to Figure 3 and Table 2).

Figure 3: Comparison of the monthly billing

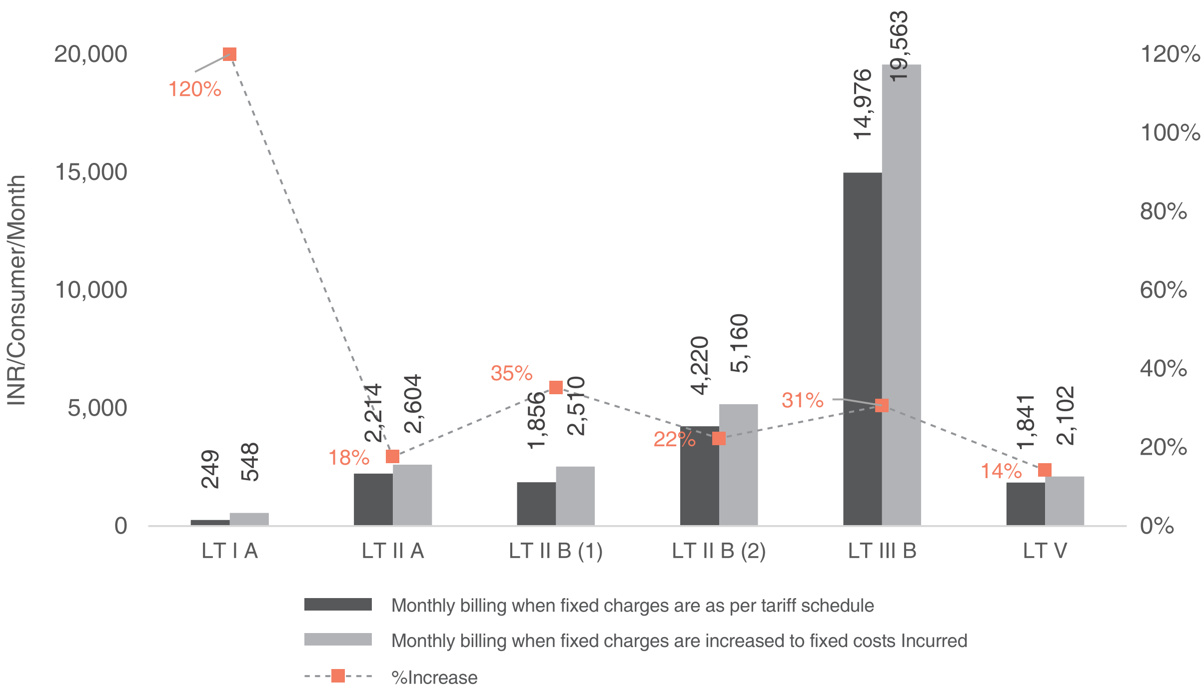


Table 2: Increase in monthly billing required to recover the fixed costs

	Monthly billing when fixed charges are as per tariff schedule	Monthly billing when fixed charges are increased to fixed costs Incurred	%Increase
	(INR/Consumer/month)		
LT I A	249	547	120%
LT II A	2,213	2,603	18%
LT II B (1)	1,856	2,510	35%
LT II B (2)	4,219	5,159	22%
LT III B	14,976	19,562	31%
LT V	1,841	2,102	14%

For all HT consumers, there is an average over-recovery of INR 158 per kW /month. The demand charges of HT could be rationalised to the level of the actual fixed costs incurred.

Conclusions & Recommendations:

TANGEDCO was unable to recover its fixed costs through demand/fixed charges since FY 2011-2012 since the demand/fixed charges component in the tariff schedule does not represent the actual fixed costs incurred. Since the fixed costs are under-recovered, there is a shortfall in meeting the ARR.

A rationalisation of the demand/fixed charges levied across all consumer categories would ensure the complete recovery of all fixed costs incurred and equal distribution[4] of these costs. This entails an increase in demand/fixed charges for all LT consumers. Whereas the demand charges for all HT consumers would be lowered. Such a rationalisation of the demand/fixed charges would result in completely recovering the net ARR.

The benefits of recovering fixed costs through demand/fixed charges include the following:

- Reducing the need for tariff cross-subsidies;
- Reduction in TANGEDCO's revenue gap and higher recovery of the net ARR;
- Reduce the migration of HT consumers to other states with more attractive tariff schedules;
- De-risking of energy demand changes that result in lower energy off-take from sources with fixed capacity booking costs.

References

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3. (TNERC 2017) Order in T.P. No.1 of 2017. Determination of Tariff for Generation and Distribution, Chennai. Available at: http://www.tnerc.gov.in/orders/Tariff%20Order%202009/2017/TariffOrder/TANGEDCO-11-08-2017.pdf (Accessed on: 07 Jan 2021).
4. (CEIC 2017) India's Electricity Connect Load: Tamil Nadu from 1996 to 2017. Available at: https://www.ceicdata.com/en/india/electricity-connected-load/electricity-connect-load-tamil-nadu (Accessed on: 10 Mar 2021)

[4] *It can be argued that fixed charges for HT consumers must be lower than the fixed charges for LT consumers since in the case of the former the capital and maintenance costs of LT distribution equipment are borne by the consumer.*