Comments and Suggestions on TANGEDCO's petition for True-up (FY17 to FY21), APR for FY22 and approval of ARR and Tariff for FY23 to FY27.

Prayas (Energy Group) **30th August 2022**

The petition for true up for FY17 to FY21, and determination of tariff (T.P.No.1 of 2022) has been filed by TANGEDCO for the Control Period FY23 to FY27.

TANGEDCO's reported average cost of supply is unsustainably high at Rs. 9.13/unit for FY21 and has been rising at 4% per annum on average since FY17. Without commensurate increase in tariffs between FY17 and FY22 and without concerted efforts to increase efficiency, revenue gaps have been significant. In the present petition, TANGEDCO has claimed a regulatory asset of Rs. 1.1 lakh crores by FY21 implying an average of Rs. 17,000 crore revenue gap addition every year in the past four years. Current operations are unsustainable and concentrated efforts are required to:

- Understand key areas of concern for TANGEDCOs operations
- Ensure regular, certain increase in tariffs to address widening gap between expenses and revenue
- Work towards medium-term, concerted actions to reduce cost of supply of TANGEDCO

In this context, TANGEDCOs proposals to revise time of day tariffs, link tariffs to inflation to ensure regular, certain tariff increase and to remove concessions towards renewable energy open access are welcome. With changes in technology and competitive price discovery, RE, especially wind and solar can stand on their own economic proposition without support.

However, in many aspects, lack of adequate information and lack of clarity in the proposal make it challenging to under gain a comprehensive understanding of TANGEDCO's proposal. In addition, there are many possible approaches that TNERC could initiate in this MYT period towards improved finances and increased accountability. Our comments and suggestions focus on some of these aspects in the context of TANGEDCOs petition.

Outline of comments and suggestions

1 Lack of clarity on tariff increase proposed

While TANGEDCO has proposed a tariff increase, the exact modalities and extent of tariff increase sought is unclear. The lack of clarity is summarised in Table 1, which captures, information on revenue, sales and average tariff (ABR) from TANGEDCO's petition.

- **Average cost of supply**: As per TANGEDCO's petition, the average cost of supply is set to increase at 1% per annum, despite historical growth at 4% per annum. The rationale for such reduction and efficiency improvements especially in power procurement is not explained. In fact, with the recent coal shortage and spike in power procurement rates in the bilateral and exchange markets, it is quite likely that procurement costs have actually increased. Thus, revenue requirement and average cost of supply should be reevaluated. TNERC should direct TANGEDCO to submit quarterly information on generation, transmission and distribution costs in order to track performance of the utility in a timely manner.

- **Clarity that proposal requires a one-time hike, inflation linked increase and additional tariff increase:** As per the year on year sales and 'revenue from proposed tariff' information reported by TANGEDCO, tariffs would increase on an average by 24% in FY23 and 15% in FY24 due to the proposed tariff revision. Following this, there is hardly any tariff increase recorded. Thus, for the control period, a one time 40% tariff increase is proposed. However, TANGEDCO also reports 'balance ARR proposed to be met with new tariff', which is an additional Rs.80,210 crores to be recovered in the control period. This translates to an additional 4-6% tariff increase in the control period. This is in line with TANGEDCO's proposal to fix tariffs, with effect from 1st July of respective financial year as:

  prevailing tariff x (1+(CPI of May of respective financial year — CPI of May of previous financial year)/ CPI of May of previous financial year) or 6% whichever is lower)

  This implies a cumulative tariff increase of 67% or annual average hike of 11%.

  In addition, TANGEDCO has proposed in Para 4.28.18, 4.28.19 and Para 5.31.3, the creation and approval of regulatory asset of Rs.1,10,916.94 crores along with carrying cost. The recovery schedule for the proposed regulatory asset is not clarified. This would imply additional tariff burden in future years, potentially increasing the average tariff required by the end of the control period by

an additional 56%. As the road map for recovery is not specified, the amount proposed for recovery from consumers and the timeline for treatment of regulatory asset as well as carrying cost impact is not provided by TANGEDCO.

Clarity on estimated tariff impact sought for the control period as well as potential tariff for each year of the trajectory should be clearly provided. As it is inflation linked, a scenario-based range can also be provided to ensure the impact proposed is clearly communicated. It is also suggested that such clarity be provided by the Commission in the approved tariff order.

- **Treatment of regulatory asset unclear:** There is also ambiguity on potential tariff impact due to contradictory proposals by TANGEDCO. On one hand, TANGEDCO requires recovery of claimed regulatory assets with carrying cost through future tariff increase.
  However, in Para 4.28.17, TANGEDCO states that GoTN has given an undertaking that it will take over 100% of financial losses till FY22 in FY23.It is unclear if financial losses includes liabilities/ carrying cost and cumulative revenue gaps. It is also unclear in what proportions, the takeover will be through loans, equity and grants.

  TANGEDCO has not stated if they have to comply with conditions to improve operational efficiency and if those have been accounted for in the petition for the control period or in the capital investment plan. Clarity on the proposed takeover should be provided to get a better picture of DISCOM performance, cost of supply, passthrough of past losses to consumers and the potential tariff impact on consumers.

Table 1: Overview of tariff increase proposed

Particulars	Unit	FY22	FY23	FY24	FY25	FY26	FY27	Cumulative for control period
Total revenue requirement	**Rs. Cr**	73,050	79,914	84,284	89,715	95,306	98,881	4,48,100
Revenue at proposed tariff	**Rs. Cr**	46,802	60,157	72,543	75,675	78,638	81,811	3,68,823
Total sales	**MU**	80,759	83,807	87,953	92,336	96,971	1,02,376	4,63,444
Average cost of supply	**Rs/kWh**	9.05	9.54	9.58	9.72	9.83	9.66	
Average billing rate	**Rs/kWh**	5.80	7.18	8.25	8.20	8.11	7.99	7.96
Tariff increase (year on year)	**%**		24%	15%	-1%	-1%	-1%	37%
Balance ARR proposed to be met with new tariff	**Rs. Cr**	16,058	16,158	8,594	11,089	13,993	14,317	80,210
New ABR along with balance ARR	**Rs/kWh**							9.689
Tariff increase	**%**							67%

Recovery of regulatory asset (Rs. 1,10,916.94 by FY21) with 7% carrying cost	**Rs. Cr**	1,18,681	1,26,989	1,35,878	1,45,389	1,55,567	1,66,456	
Tariff increase required for present and past revenue gaps	**Rs/kWh**							12.96
Tariff increase required	**%**							124%

It is vital that the Commission seek such clarity from TANGEDCO and that TANGEDCO provide clear and transparent information on its financial position as well as the tariff increase proposed in the control period.

2 Tariff increase to be tempered with efficiency improvements and reduction in cost of supply

Inflation linked tariff increase as proposed by TANGEDCO would ensure automatic tariff revision, certainty in revenue recovery as well as clarity in tariff increase for the duration of the control period. However, if inflation linked tariff increase is adopted, it is suggested that the Commission direct TANGEDCO to:

- Publish annual statement of costs incurred and revenue billed and statement of revenue gaps of TANGEDCO for the previous year. In addition to being publicly available, it should also be submitted to TNERC on which suo-motu action can take place or additional directives can be provided, if necessary.
- Provide a statement of cost projected, revenue projected with increase in tariff and treatment of revenue gap and regulatory asset for the projected year in the control period. The statement should be available on TNERC and TANGEDCO websites.
- Publish an annual list of measures taken to reduce cost of supply and progress in this regard.

In addition, after the control period, the tariff increase linked to inflation can also be reduced by a certain factor on account on efficiency improvements, in line with price cap regulation/RPI-X approach. The Commission can then define and track expected efficiency improvements to factor in reduction in inflation linked tariff increase.

3 Provision for fuel surcharge to reduce future carrying cost burden

While Multi Year Tariff setting provides tariff certainty, it also limits recovery of costs due to uncontrollable factors (such as fuel price change) which DISCOMs eventually pass onto consumers. This contributes to build up of revenue gaps as well as avoidable carrying cost.

Fuel surcharge can help ensure recovery of such costs and there is a provision allowing its levy in the prevailing MYT regulations. The Commission has directed in T.P. No. 1 of 2013 that:

TANGEDCO shall file quarterly FPCA petitions to the Commission to recover the actual cost of fuel incurred and the actual cost of power purchase, if the same are in variance from the figures approved in this Tariff Order.

Given the potential impact of future carrying cost increase, it is suggested that:

— MYT regulations be amended to codify quarterly vetting of fuel and power cost adjustment filings by the DISCOM.
— Commission specify that uncontrollable and fait accompli power purchase costs incurred which are not claimed for recovery in a time-bound manner (say, 12 months) would be automatically disallowed. This will incentivise timely filing and limit delays in cost recovery.
— To prevent tariff shock, impact of passthrough can be restricted for a certain, although limited period as determined by the Commission.

In addition, the Commission could also institute an FPCA stabilization fund to prevent undue tariff shock on consumers, such that:

— In case there is negative FPCA in a quarter, it is carried forward to the next billing cycle without carrying cost and is adjusted with positive FPCA amounts in subsequent quarters.
— Such carry forward can contribute to an FPCA fund. In the absence of sufficient funds, tariff impact can be passed onto consumers.
— TANGEDCO should maintain a monthly account of use of FPCA fund to adjust payments and submit it to the Commission and upload details on their website in a publicly accessible manner.

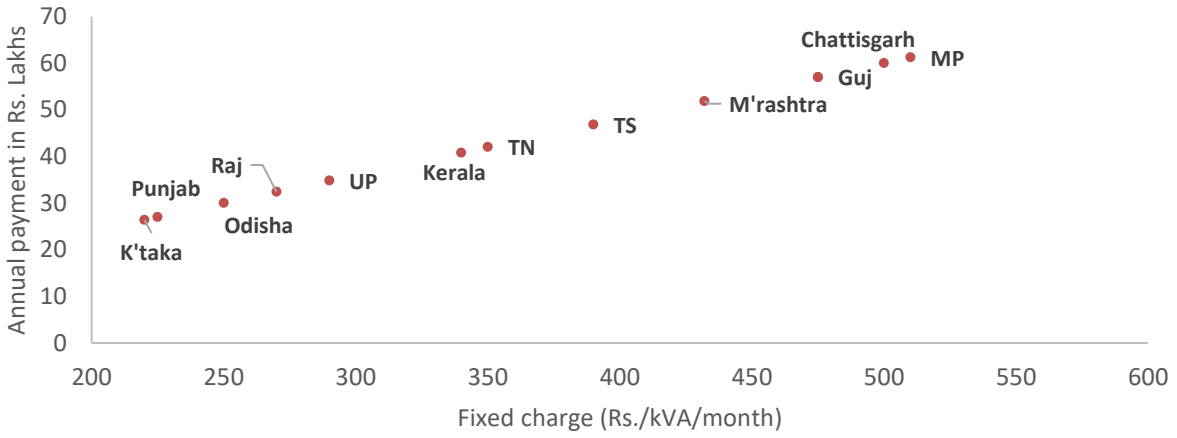
4 Proposed changes in tariff design – Some suggestions

4.1 Proposed treatment for HT categories unsustainable: Need for alternate approach

TANGEDCO has proposed increasing fixed charges across categories. For HT Industrial consumers this would mean a fixed charge of Rs. 600 /kVA/ month in FY23 to Rs. 750/kVA/month in FY27. This implies that the annual fixed charge payments per MW per month would be to the tune of Rs. 70 lakhs in FY23 and Rs.90 lakhs in FY27. The capital cost/ MW for captive solar investments is about Rs. 4 crores/ MW. With such high annual fixed charges, many consumers might find it lucrative to reduce their contracted demand with the DISCOM and invest in onsite/ offsite captive projects. Such charges also make behind the meter installations, more lucrative. As such systems are not currently tracked or registered, managing loss of sales would be challenging to manage.

Figure 1 tracks fixed charge payments across states, as applicable for FY21. With the proposed fixed charges, TN would have among the higher fixed charges in the country. The figure also tracks the annual payments per MW required with the fixed charge levy.

Figure 1: Annual fixed cost payments and fixed charges levied in FY21 across states



Perhaps, in a bid to retain consumers and provide competitive tariffs, the increase in energy charges is only by 6% in FY23. However, even with energy charges at Rs. 6.75 (increasing at about, say 6% per annum), captive consumption (including payment of parallel operation charges, wheeling charges etc.) is still more cost competitive. Thus, retaining industrial consumers may not be feasible even with muted increase in energy charges and significant increase in fixed charges. The ideal tariff design and treatment for HT consumers would be to:

- Rationalize demand charges such that the increase does not accelerate migration to captive sources. The proposed one time 71% increase in fixed charges could contribute to increased and unchecked captive migration.
- Allow open access upto 500 kW and possibly 100 kW by 2027 in a phase-wise manner in order to provide competitive choice. Such a phase-wise approach would encourage migration to more competitive sources and reduce the requirement on TANGEDCO to procure high cost long term power.
- Ensure significant ToD tariff charges and premium standby charges for the grid services provided. Standby charges can include a monthly demand charge (say at 25% of demand charges) and significant energy and demand charges for planned as well as unplanned standby services
- Imposition of increased electricity duty (say at Rs. 1/kWh) on captive consumption as such consumers are exempt from CSS and AS but whose migration impacts DISCOM power procurement and operations.

Such a comprehensive strategy which takes into account the realities of sales migration would be necessary for Tamil Nadu.

4.2 Phase-wise increase in fixed charges needed for LT C&I categories

Tariff design in Tamil Nadu does protect small enterprises with low demand and monthly consumption. However, the proposed tariff design with a 186% increase fixed charges between FY22 and FY23 would

be a significant tariff shock for many consumers. It is suggested that the fixed charges are increased on a more gradual scale over the control period which can also be managed with a higher increase in energy charges.

5 Tariff design for domestic consumers: Need for increased intra-category cross subsidy

The proposed tariff design for domestic consumers (without subsidy) definitely increases energy charges as compared to the existing tariff design. However, the increase is not commensurate to the increase in cost of supply. In essence, all consumers using less than 250 units per month are charged less than 50% of average cost of supply.

With more than 25% of the sales mix being domestic and with few avenues to retain cross subsidy, this would increase the subsidy as well as the losses incurred by TANGEDCO.

In the spirit of ensuring affordability for the poorest of the poor while providing price signals towards efficient energy use, it is suggested that only those consumers using more than 50 units per month pay higher telescopically till those using more than 150 units per month pay at average cost of supply those using more than 250 units monthly pay more than ACoS.

This is illustrated in Table 2 for energy charges as PEG proposal.

Table 2: Proposed changes in energy charges for FY23

Bi-monthly Consumption	Bi-monthly Slab	Energy charge (Rs/kWh)		
		Existing	TANGEDCO	PEG Proposal
Upto 100	0-100	2.5	4.5	4.5
	0-100	2.5	4.5	4.5
101-200	101-200	2.5	4.5	6.5
	0-100	2.5	4.5	4.5
	101-200	2.5	4.5	6.5
	201-300	3	4.5	7.5
	301-400	3	4.5	9.5
201-500	401-500	3	4.5	9.5
	0-100	2.5	4.5	4.5
	101-200	3.5	4.5	6.5
	201-300	4.6	4.5	7.5
	301-400	4.6	4.5	9.5
	401-500	4.6	6	9.5
	501-600	6.6	8	10.5
	601-800	6.6	9	10.5
	801-1000	6.6	10	10.5
>500	>1000	6.6	11	10.5

TANGEDCO has proposed not having fixed charges for the domestic category. In order to ensure certain revenue recovery, fixed charges should be charged from domestic category as well and it can be fixed based on the sanctioned load of the household rather than the consumption slab. Such that consumers have sanctioned load of 2 kW pay less than those having 5 or 7 kW. Households with three phase supply can pay higher fixed charges.

Another challenge for DISCOMs would be reduced revenue recovery from consumers who switch to grid interactive RE systems. For new applications, TANGEDCO could consider billing based on consumption slabs from past years consumption rather than the consumption slabs post installation of the system for a five year period. This would ensure revenue recovery for the support and services provided by TANGEDCO.

6 ToD tariff adoption: Much needed recalibration

As per the study recommendations, TANGEDCO has proposed to levy 25% peak charges and 5% rebate for all HT and some LT categories. Applicability of ToD on Industries with connected load above 12 kW is also welcome. In addition, TANGEDCO's proposal to collect 25% additional charges on 20% of consumption till ToD meter installation would also help accelerate the shift to changing to meters with ToD capability for some consumers. However, in addition to these measures, based on the increasing procurement of RE power by TANGEDCO and the significant need to shift load for effective grid integration and to reduce system costs, it is suggested that:

- ToD tariff be fixed for the control period to allow for adoption and adaptive changes. However, the time slots as well as the rates are reconsidered on a five year basis to reflect demand, supply and technology changes.
- Commission track progress of shifting to ToD enabled meters in categories with ToD meters on an annual basis to ensure adoption such that the ToD pricing strategy is effective. Additionally, directives can be issued such that the shift takes by in this control period alone.
- All consumers with grid interactive RE systems have ToD enabled meters are have applicable ToD tariffs
- Incentive as well as penalties be high enough to ensure changes. In this vein the rebate can be at least at 10% or 15% of energy charges.
- Incentive, rebate and time-slots for ToD should vary seasonally such that the incentives for monsoon consumption is high during off-peak/ high wind durations and the penalties for consumption are significant during stress/peak shortage summer months. This is in line with the recommendations of the ToD study.
- If subsidy is provided to any category on which ToD tariffs are applicable, the subsidy should also very with ToD slots such that the subsidy is lower in peak times and higher in off-peak periods.

7 kVAh billing: Need for a phase-wise approach

The introduction of kVAh based billing is a positive step that could aid in system stability improvements and loss reduction by incentivising consumers to reduce their drawal of reactive power and maintain

power factor close to 1. TANGEDCO's study report dated 13th October 2020 also highlights many of the benefits from the transition.

However, consumers would need to make adaptive changes to avoid being penalised and benefit from the provision. MERC, as seen in Case No. 195 of 2017, allowed MSEDCL almost two years to adopt kVAh billing for its consumers. Thus, sufficient time before shifting to kVAh billing as well as training and awareness material[1] should be released by TANGEDCO to ensure consumers and familiar with the change.

Thus, it is suggested that:

- kVAh billing be made operational from the next financial year after the order for the control period is notified.
- In the interim, TANGEDCO should take sufficient efforts to familiarize consumers with kVAh billing and increase awareness regarding corrective measures to reduce or compensate reactive power.
- The order clearly detail all the charges (energy charge, CSS etc.,) and duties that would be levied on a kVAh basis for the applicable year
- For smooth transition to the new billing system, PF recorded must be displayed and recorded in the bill. This is critical as any adverse impact due to poor PF will only be recorded as increased consumption in kVAh billing and the consumer will be unaware of actual PF for the month unless it is recorded and monitored separately. Such a measure can also reduce billing related complaints post implementation.

8 Smart metering: Disallow cost passthrough without detailed assessment of benefits

Since January 2021 TANGEDCO has installed around 82,300 smart meters, with plans to expand it to 1.66 crore smart meters, under RDSS. This would cover all LT consumers, except agriculture and hut services. The RDSS scheme calls for a phase-wise roll out plan for smart meters. **It is suggested that the plan for rollout for consumers as well as DTs and feeders is approved by the Commission and is available publicly**.

As per para 7.1.18 f.3 of the petition, TANGEDCO proposes to collect meter rent for smart meters already installed or to be installed. Existing meters for which rent is being collected as mandated by Sections 47 (1(b)) and 55(1) of the Electricity Act are able to provide meter readings. The additional benefit of smart meters for which consumers have to face a steep increase in meter rent is not clarified or justified in the petition.

It is essential that TANGEDCO establish expected improvements in billing, collection efficiency and quality of supply before massive roll out of meter installations. Further, actual improvements should be tracked in comparison to the expected improvements. This would establish whether benefits from smart meter

[1] Similar efforts were conducted by MSEDCL: https://www.mahadiscom.in/consumer/wp-content/uploads/2019/03/KVAh-FAQs.pdf and https://www.mahadiscom.in/wp-content/uploads/2020/01/002_ANNEXURE-7_POWER-POINT-PRESENTATION-ON-kVAh-BILLING.pdf

installations resulted in savings for the DISCOM. Para 5.1.5 of the RDSS OM and guideline[2] clearly state that the consumer metering component of the scheme is self financing from the improvements in revenue due to installations of such meters.

For consumer metering, feeder and DT metering to be carried out in TOTEX mode, it is expected that the DISCOM will be able to finance balance cost other than grant, due to enhanced revenue as a result of improvement in billing and collection due to prepaid metering. This component is self-financing.

When such clarity is provided, it is unclear as to why consumers need to pay higher meter rents to finance the smart metering efforts.

In Uttar Pradesh, where large scale smart meter roll out is seen, the UPERC has set a regulatory framework for smart metering which ensures the estimation of benefits from this roll out before approval of investment cost based on regulatory scrutiny. In fact, expenses are disallowed after regulatory scrutiny since *"it is expected that the overall O&M cost of the DISCOMs would also decrease due to improved billing & collection efficiency which would be compensated by the charges paid in OPEX model"* (UPERC order in Petition No. 1690 / 2021, 1689 / 2021, 1687 / 2021, 1688 /2021 and 1691 / 2021). Similar steps could be followed by TNERC to ensure effective smart meter roll out in the state.

Further, given the extent of this rollout, smart metering in the state at this scale is likely to result in significant capital expenditure, and must therefore be accounted for in the utility's capital investment plan. **The treatment of these expenses, whether through a CAPEX, OPEX or TOTEX model, must also be clarified though amendments in the state's tariff regulations. To track progress of the scheme as well as savings due to installation of smart meters, TANGEDCO should submit a quarterly status report to the TNERC with information as outlined in Table 3.** Such report should also be available in the public domain.

Table 3: Information on smart meter rollout, costs and benefits

Parameter	**TANGEDCO data**
Name of area for scheme implementation	
Consumer categories covered in meter replacement scheme	
No. of consumer meters per consumer category	
Target no. of days for replacement	
Replacement start date	
Replacement end date	
Reasons for replacement (high loss area/DSM measure, etc)	

[2] http://www.recindia.nic.in/uploads/files/RDSS-guidelines-5.pdf

Financial benefit estimation per meter:	
- Savings in power purchase cost due to loss reduction	
- Savings in cost due to O&M cost reduction	
- Savings due to increase in collection efficiency	
- Savings due to any other reason	
Implementation agency(s)	
Responsibilities of implementation agency(s)	
Payment option in smart meter (prepaid/post-paid)	
Technology used in smart meter (GPRS, RF, etc.)	
Cost of implementation (in Rs.)	
Cost borne by DISCOM (in Rs.)	
Cost borne by implementation agency (in Rs.)	

9 Introduction of green tariffs: Need for clarity in tariff and RPO accounting

Para 7.1.1 l) of the petition states that the supply of renewable energy with necessary RE certificate under HT tariff I, II, III by specific request of the consumer can be charged at 150% of the approved tariff. The applicability of such an increased tariff on the respective categories is voluntary, and the utility will need to service such consumers by procuring additional RE power, and also, in turn, be compensated with additional revenue for the provision of such service.

The rationale for the levy of 150% of approved tariff should be clarified by TANGEDCO. Further, it is suggested that power procured for consumers paying green tariffs should not be counted towards meeting TANGEDCO's RPO but should be accounted for in excess of the statutory RPO requirement. This would ensure efforts are undertaken towards contracting capacity to meet RPO over time.

10 Agricultural demand estimation: Need for detailed study-based reassessment

Almost all agricultural consumers in TANGEDCO continue to be unmetered and 50% of subsidy provision for TANGEDCO is based on sales estimates derived from consumption norms. In it's petition, TANGEDCO has reported that agricultural sales reported for true-up years is based on estimates from sample meter readings. However, the norm derived from the sample meters, geographic spread of the sample meters and average connected load of the sample meters and even the sample size is not specified. As demand estimated for agriculture impacts the revenue requirement, subsidy, power purchase and distribution losses for the true-up as well as the control period, it is imperative that the Commission seek detailed

information on data used by TANGEDCO for estimation of the norms. The Commission should ensure that the sample size is big enough and covers a wide geographic spread (at least all electrical circles) and that all sample meters are functional. The methodology should be rigour-based and scientific in its approach. Failing which, the Commission can conduct a study the assess agricultural demand in a process similar to that undertaken by Maharashtra ERC.[3] The Commission can institute a working group to conduct the study in a time-bound manner. The working group can rely on survey information, information from consumer and feeder meter readings across the state to arrive an at estimate. Such a process can aid improved efficiency in operations for TANGEDCO and reduction in costs for consumers.

11 Measures to manage part load operations of generating stations

TANGEDCO has been reporting challenges due to part load operations in its petition. Given that TN has significant share of renewable energy procurement as well as demand uncertainty due to open access and captive sales, part load operation of thermal power plants would continue in the future. To enable TANGEDCO to manage this effectively, TNERC regulations should be amended in line with CERC regulations (4th Amendment to IEGC dated 16.05.2017) to allow for heat rate compensation in case of part load operation as well as compensation for auxiliary energy consumption and secondary fuel oil consumption for additional start-ups.

In addition, there should be detailed reporting of reserve shut down, change in availability/ PLF due to coal shortages as well as backing down due to low demand/ low schedule to enable assessment of challenges before TANGEDCO. TNERC can issue directives for periodic data reporting in this regard.

12 Ensuring capital investment plan and MYT process are connected

TANGEDCO has taken a step in the right direction toward accountable medium term planning by considering a five year control period (FY23-FY27). To ensure clarity and efficacy, such a control period must be considered uniformly for all TANGEDCO's planning processes, especially those as closely related as it's capital investment planning and it's MYT tariff process. As per para 9 (3) of the petition, TANGEDCO has submitted its capital investment plan for FY23-FY25 on 6th March 2022. Given that planning undertaken in the capital investment process directly feeds into and impacts the utility's tariff, it is crucial that both the planning processes are carried out in tandem across the same five year control period. Therefore, it is suggested that:

- TANGEDCO update its captive investment plan for FY23 to FY27 and refile its petition
- Commission initiate a de novo process for approval of the capital investment plan through a public process
- The assessments and estimates approved in the capital investment plan should feed into the approval as part of the present MYT process.

[3] https://energy.prayaspune.org/images/pdf/final_report_ag_working_group.pdf

13 Thermal capacity in the pipeline: Need for reassessment

With rising cost competitiveness of RE, TANGEDCO's financial position and potential for managing demand growth, it is critical that the pipeline thermal capacity (among the highest in the country) is reevaluated as it would have significant cost impacts on TANGEDCO.

13.1 Lack of clarity on under-construction capacity

As per M.P. No. 18 of 2019, TANGEDCO has 5.7 GW of ongoing/under construction thermal capacity. In the principal document, this under construction capacity is discussed in para 5.8.3 (Addition of new plant) and Annexure IX. There are noticeable discrepancies in basic parameters such as the capacity considered and the timelines of these projects across these sources submitted by the utility and even within the petition itself. In Para 5.8 of the petition, only 3.4 GW of the under construction capacity is considered to come online by FY27 (North Chennai III, Udangudi I, Ennore SEZ). However, in Annexure IX of the same document, it mentions all the projects under construction as per the CIP (5.7 GW), but provides different or no commissioning dates for the projects in the pipeline.

Table 4, compares the status of under construction capacity as reported in the petition with what was approved in M.P. No. 18 of 2019 and with CEA assessment as reported in June 2022 CEA broad status report. It is clear that details regarding actual timelines of the capacity in the pipeline is incomplete and varies across sources for the ongoing projects.

Table 4: Discrepancies in status reporting of under construction capacity

Under Construction TPP	Capacity (MW)	Date of commissioning in principal document	Date of commissioning in M.P. No. 18 of 2019[4]	Date of commissioning as per CEA[5]
North Chennai III	1*800	FY24 (para 5.3.8) FY23 (Annexure IX)	FY22 (Annexure 1Q)	FY24
Udangudi I	2*660	FY27 (para 5.3.8) FY24 (Annexure IX)	FY22 (Annexure 1R)	FY25
Ennore SEZ	2*660	FY25 (para 5.3.8) FY24 (Annexure IX)	FY22 (Annexure 1K)	FY25
Uppur	2*800	Not mentioned	Not mentioned	On hold since Mar 2021
Ennore Expansion	1*660	Not mentioned	FY24 (Annexure 1O)	Not mentioned
Total	5700			

[4] http://www.tnerc.gov.in/Orders/files/CO-M%20P%20No%2018%20131020211616.pdf
[5] https://cea.nic.in/wp-content/uploads/thermal_broad/2022/07/BS_July_UC_ver1.2.pdf

There are also significant slippages and delays with many of the ongoing projects, for example North Chennai III, Uppur TPP and Ennore SEZ were anticipated to come online in FY20 (as per the state's Power for All report[6]), but are still tied up in delays. In addition to this, there is also lack of clarity in the estimation of energy charge of the under construction capacity considered in the principal document (3.4 GW).

Table 95 in section 5.9 of the petition projects significantly low energy charge for the ongoing projects, between Rs. 2.38 and 2.58 per kWh, while other state owned thermal capacity have energy charges in the range of Rs. 3.91 to 4.71 per kWh.

Toward lending regulatory clarity and certainty to consumers, the rationale behind such tariff determination and its actual applicability must be made available for public scrutiny. Such ambiguity and delays not only result in increased costs but also impede effective power purchase planning, as the DISCOM maybe required to procure power from alternative/potentially expensive sources in the absence of generation that was expected from such projects.

13.2 Re-evaluation of 'new' capacity: Possibility of putting projects in abeyance

In addition to the under construction capacity, M.P. No. 18 of 2019 also includes 11.3 GW of 'new' capacity, which are in the pre-construction/study/approval stage[7]. The MYT petition does not address this capacity, despite its impact on generation capital expenditure and capitalisation in the FY23-FY27 control period. Thus, it is unclear if all such capacity is still in the pipeline for TANGEDCO.

Without a thorough reassessment of demand, and by extension capacity addition, the state's power sector stands the risk of being burdened with resource lock-ins and stranded assets. While the Commission has recognised such risks of massive thermal capacity additions—such as the need for accurate demand estimation (para 5.23 of M.P. No. 18 of 2019) given the utility's finances (para 5.50 of M.P. No. 18 of 2019), and the possibility of backing down some of the capacity addition given the growing role of RE and in the interest of optimal power purchase (para 5.21 of M.P. No. 18 of 2019) in M.P. No. 18 of 2019—the utility's adherence to the Commission's directives toward these ends remains unknown, since the capital investment plan submitted to TNERC on 6th March 2022 is not available in the public domain.

Thus, compliance to the directives issues by the Commission in M.P No. 18 of 2019 should be reported in this MYT process. The directives are reproduced in Table 5.

[6] https://powermin.gov.in/sites/default/files/uploads/Power_For_All_Tamilnadu_Signed.pdf

[7] It must be noted that, most, if not all of the capacity addition has been approved based on dated and incomplete assessment, and does not sufficiently reflect current realities in the state's power sector, such as the utility's finances, the growing share of RE, and realistic demand growth.

Table 5: Reporting of compliance to crucial TNERC directives and suggested urgent next steps

Reference in M.P No.18 of 2019	**TNERC Directive**	**PEG Suggestion**
Regarding undertaking detailed study for future capacity addition Para 5.24	Commission directs TANGEDCO to furnish quarterly demand projections and the actual demand met and the quarterly progress of ongoing projects. TANGEDCO shall also make a study on the surplus capacity required to meet the peak. Optimal generation models may be utilized for the study so as to choose the correct requirement from the proposed new projects. TANGEDCO shall assess the requirement of the new coal based projects and file a report to the Commission within six months.	TANGEDCO should have completed the study by April 2022. In case of non-compliance, - Fresh directives should be issued towards submitting quarterly status of ongoing projects - The Commission should undertake a independent study for optimal generation projects through a third party[8]. - Till clarity is reached on 'new' projects, they must be placed in abeyance by the Commission to avoid risky lock-ins.
Reporting of status of scheme-wise capex, especially for generation projects Para 5.15	Commission directs TANGEDCO to submit the year-wise actual capital expenditure incurred along with detailed justification for delay, if any, at time of approval of actual capital expenditure and capitalisation. Further, the Commission directs the Petitioner to maintain the record for the scheme-wise actual capital expenditure incurred and actual capitalisation done after April 2019 for each Generating Station separately and submit the same to the Commission at the time of next Tariff Petition. The Commission will approve the actual Capital expenditure and actual capitalisation based on such scheme-wise information, subject to prudence check.	Without such detailed information, assessment of costs impacts is challenging. The Commission seek compliance to this directive as it will inform the current MYT process.
Treatment of GoTN equity Para 5.5 (k)	The petitioner shall seek equity assistance to the extent of 30% of CAPEX approved in this Capital Investment Plan for each FY from Government of Tamil Nadu for the investments made as approved in this order and GoTN shall grant the equity amount.	Status of such grants need to be provided and it needs to be ensured that amounts which are provided as GoTN equity is not treated as TANGEDCO equity with passthrough to consumers.

[8] A similar exercise in Maharashtra was able to demonstrate that MSEDCL could meet 50% of its energy requirement through RE sources without any net addition of coal-based capacity. https://energy.prayaspune.org/our-work/research-report/maharashtra-s-electricity-supply-mix-by-2030

Given the role of capacity addition and the discussed risks and challenges, TANGEDCO must take the following steps toward re-evaluation of the coal-based capacity in the pipeline, through the following:

- Comprehensive estimation of demand through modelling exercises accounting for load curves, existing supply options, renewable energy capacity addition and cost and efficiency optimisation under several scenarios
- Decisions regarding capacity addition must be taken in accordance to public consultation based on analysis led capacity addition plans
- **Till clarity on demand estimation and capacity requirement is reached, new thermal projects must be placed in abeyance**
- Details of provisional tariff and final tariff for new capacity must be filed in time, keeping with the directives of the TNERC
- Toward ensuring transparency and accountability of operations, project-wise parameters regarding capacity addition must be published by TANGEDCO on an annual basis:
    - Plant/ Unit-wise details on location, ownership
    - Details on original and current expected CoD with reasons for slippage
    - Details of project milestones including date of board approval, details of land acquisition, status of statutory clearances (environment, forest)
    - Fuel source and details of fuel arrangements, details of water arrangement
    - Financial status (tie-ups, completion of financial closure, state government equity infusion)
    - Status of construction

  Such reporting should be made accessible in the public domain.

14 Provision of crucial operational and financial information

Toward ensuring transparency and accountability in the operation of the utility and encouraging effective public participation, it is vital that the utility submits crucial, up-to-date financial and operational data to the Commission. Such data should be submitted regularly and in accessible, downloadable formats as stipulated by the Commission and hosted on the utility's website. As part of the present MYT process the Commission should direct TANGEDCO to submit:

- **Audited annual accounts** with detailed auditor observations for all years for which true-up is sought by TANGEDCO. This should also be publicly available on TANGEDCO website.

- **Quarterly status of capacity in the pipeline** as the impact of capacity addition on consumer tariffs and power purchase planning is substantial. The status reports should include project-wise data on the technical and financial status of the capacity in the pipeline. In addition, expected CoD, levelised tariff for RE projects, PPA tariffs for competitively bid projects and projected provisional tariffs for cost plus thermal capacity should be included. Both the reports on status of capacity addition and the tariff petitions for capacity in the pipeline must be hosted on the utility's website.

- **Station-wise information** on monthly MoD as well as operational parameters such as availability, PLFs, SHRs as well as information on variable costs should be submitted. For TANGEDCO stations, information on source-wise GCV, coal quantity and coal should also be accompanied by transport costs in order to assess cost impacts and aid monitoring.

— **Imported coal procurement** information on a quarterly basis including quantity, quality and costs will introduce transparency and accountability in generation operations.

- **Reporting of open access, captive transactions** for the true-up years with break up of RE and non RE open access as well as onsite/ offsite/ group captive consumption would help assess sales and revenue growth. Number of consumers and sales due to OA and captive can be reported on a periodic basis.

— **Details in energy balance** could also include energy wheeled for open access and captive to provide a better assessment of energy handled by the system.

- **RPO compliance** reporting can be more detailed with information on contracted and planned capacity in the pipeline, source-wise compliance as well as details of consumption used to assess compliance. Reports can also be submitted on an annual basis to enable assessment of compliance. The commission can issue directives in this regard.

- **Quality of supply and service** often suffers when DISCOM is facing a financial crisis especially as necessary O&M and required R&M works are deferred. Annexure VII of the petition provides details regarding quality of supply and service but this can be more detailed. Such reporting can have year-wise information on:

    - Consumer category wise billing and collection efficiency especially with revenue billed and collected
    - Consumer category wise status of metering (number of meters which are non-functional, faulty, with average billing for more than 3 consecutive billing cycles)
    - Circle-wise number of transformers and number of transformer failures in a year
    - Circle-wise/ feeder-wise average hours of supply

15 Medium term approach to address financial crisis before TANGEDCO

To avoid ballooning of regulatory assets and periodic take over of losses by the state government, consistent tariff increase could not be sufficient. This is because TANGEDCO's average cost of supply, (indicative of its existing contractual obligations, power procurement planning decisions, operational efficiencies) is unsustainably high. In addition, there will be significant uncertainty in revenues with increase in sales migration as open access, captive become more cost competitive. TANGEDCO investment plans especially those with 25 year lock-ins also need to be evaluated based on future requirements as they could contribute to future cost increase.

In this context, state government direction and action needs to be provided towards a seven to ten year plan for the state power sector. In order to formulate a 7 to 10 year consultative plan, TNERC could advise the state government to form a committee to look into financial issues of the state. The committee could consult with various stakeholders, take assistance from experts, commission studies, if required and present a plan with concrete steps to address growing liabilities as well as cost of supply of TANGEDCO. The Committee's findings should be published within 18 months from its constitution to ensure time-bound action and implementation of its findings. A similar process was initiated in Maharashtra in January 2022. It is urged that such measures are undertaken by TNERC to address the daunting challenge before the Tamil Nadu power sector.

Such a plan should include measures to improve billing and collection efficiency, improve operational efficiency and financial management including management of working capital loans, review of participation in central government schemes such as UDAY and RDSS. It should also deliberate on long term measures towards cost reduction, efficient use of available resources. Some of the proposals which can be considered by the committee include:

- **Targets and strategies for feeder level solarisation for agriculture**: With 25% of sales to agricultural consumers, reducing the cost of supply for agricultural power supply will greatly reduce power purchase cost as well as the subsidy requirement. Feeder level solarisation under KUSUM A and C can reduce the average cost of power procurement by 35 to 40%, while providing reliable, uninterrupted day time power supply to farmers. Under RDSS work has already been sanctioned (with 60% grants from central government) towards feeder seperation, which can go a long way towards agricultural solarisation efforts.

- **Tariff design and management of sales migration**: Going forward, captive and open access sales will only continue to increase and efforts such as increasing fixed charges will not arrest such migration. The state government needs to take comprehensive approach towards planning to meet demand for consumers which can potentially move to open access and captive options. Measures such as time-bound consumer contracts, provision of standby support at cost and clear phase-wise migration, investment in wires rather than supply (signing new long term thermal PPAs) could also reduce cost of supply in the 5 to 7 year period. In order to ensure there the policy and regulatory regime should ensure adequate cost compensation to the DISCOM for various services provided, revenue compensation in the interim for when there is significant loss of revenue through duties and charges. At the same time, there should be focus on providing clarity and certainty to investors and consumers to encourage a calibrated shift to open access and captive options. Going forward, small consumers especially LT enterprises, homes and agricultural consumers would require significant support. Tariff and subsidy related innovation as well supply and service monitoring would be needed to ensure adequate support is provided for affordable, reliable power supply.

- **Long term RPO targets and accountability measures to ensure compliance:** Tamil Nadu, as a leading state in renewable energy adoption has not revised its RPO trajectory beyond FY22. Such a revision should take place to cover the control period till FY27 and even beyond to provide clarity and certainty for renewable energy investment in the state and to provide direction for future

power procurement strategies for TANGEDCO. The Ministry of Power vide its order dated 22nd July 2022 has prescribed a long term RPO trajectory of 40% from wind and solar by FY30[9]. The RPO trajectory for Tamil Nadu can be fixed based on detailed studies of demand and supply trajectories and measures to ensure cost-optimal procurement. Such an exercise can inform RPO fixation in the state till FY30. In addition, after fixation of appropriate targets, the regulatory commission should track and penalise the DISCOM for not meeting its obligations annually especially as RE capacity addition would be low cost strategy for DISCOMs.

- **Encouraging investments in storage and establishing an SPO:** RE procurement at scale would involve significant efforts to ensure effective and cost optimal grid integration of RE. Some measures such as adopting ToD tariff design to encourage consumption during RE availability and using solar power to meet agricultural demand will aid in this. In addition, investment in storage technologies including modular, scalable, battery based energy storage systems (BESS) would help address some of the variability related concerns concerning high RE adoption. CEA estimates that for a cost optimal system with 50% wind and solar at the All India level by 2030, 27,000MW/108,000MWh of BESS would be required[10]. Given the scale of deployment required even at the state level, storage pilots to address implementation issues would be required immediately which could then pave the path for potential large scale deployment in the coming decade. Tamil Nadu can lead the way for such deployment with innovative test cases and applications such as BESS systems to provide uninterrupted power supply to rural hospitals and primary health centres in the state[11]. Going forward, TNERC could also prescribe a storage purchase obligation to accelerate deployment and aid better future RE grid integration. At the national level the target of 4% SPO (on energy basis) has already been prescribed[12].

- **Innovative approaches to address issues with timely bill payment:** At the public hearing, there were reports of significant pending dues from state government departments and public bodies. As many of these institutions provide essential services, it would be difficult to disconnect them which makes conventional revenue collection practices and pre-paid metering efforts ineffective. To address the issue, it is suggested that 'virtual net metering' be allowed for such 'public services'. Under this scheme:
    - Demand should be aggregated from all such 'government / public service consumers' in the identified area (say, a division or a city). Such consumers would be provided with virtual net metering through an agreement with TANGEDCO
    - A large solar power plant, which would generate the equivalent annual consumption (incl. transmission and distribution losses) of these public services is commissioned through a

[9] https://powermin.gov.in/sites/default/files/webform/notices/Renewable_Purchase_Obligation_and_Energy_Storage_Obligation_Trajectory_till_2029_30.pdf
[10] https://cea.nic.in/old/reports/others/planning/irp/Optimal_mix_report_2029-30_FINAL.pdf
[11] https://energy.prayaspune.org/power-perspectives/improving-electricity-reliability-in-rural-healthcare-centres-through-battery-storage
[12][12] https://powermin.gov.in/sites/default/files/webform/notices/Renewable_Purchase_Obligation_and_Energy_Storage_Obligation_Trajectory_till_2029_30.pdf

transparent competitive bidding process through a long term (25 year) fixed cost PPAs with solar developers.

- State government would directly pay for the power procurement from such a solar plant to the developer or contracting agency and the respective public service consumer could be given credit for their consumption by TANGEDCO through a virtual net metering accounting framework.
- Since the consumption is adjusted with the solar generation, there would be less unrecovered revenue for the billing period which will increase the collection efficiency of TANGEDCO.
- The mechanism can further help to provide power for these public services at a fixed rate over a long term (25 years) and also help meet the DISCOMs' solar RPO requirement.

Without a systematic approach to address chronic challenges before the TN power sector without preparedness for the technology driven transition ahead of TANGEDCO in the coming decade, the utility would continue to accumulate losses impeding its ability to supply reliable, quality service, especially to small and poor consumers. Therefore, such measures are urgently needed.

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