

BEFORE THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION

Vidyut Niyamak Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow-226010

IN THE MATTER OF

Comments and Suggestions on Determination of ARR and Tariff for FY 20, Annual Performance Review for FY 19 and True-up of FY 18 for Uttar Pradesh DISCOMs

SUBMISSION FROM PRAYAS (ENERGY GROUP), PUNE

31st July 2019

DISCOMs in Uttar Pradesh have filed petitions for true-up for FY 2017-18, annual performance review for FY 2018-19 and for determination of ARR and tariff for FY 2019-20 before the UPERC in July, 2019. With reference to this, and a draft discussion paper by UPERC on “Impact of UDAY on regulatory assets of state DISCOMs”, the Commission has issued a public notice dated 12.07.2019 in the matter.

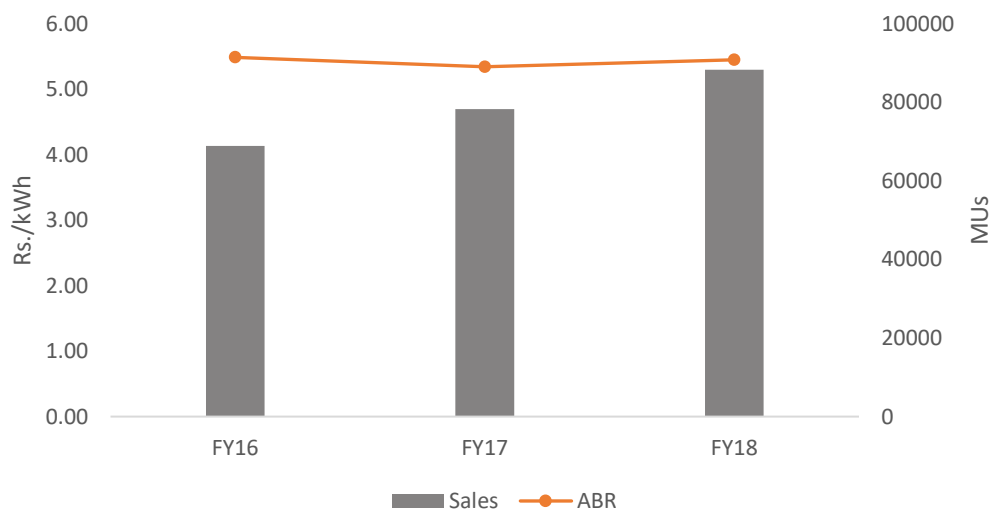
Prayas (Energy Group) made an initial submission with Ref. No. PEG/2019/033 highlighting crucial data gaps in DISCOM filings. The present submission in the matter is more detailed highlighting several crucial issues and discussing some suggestions that can be implemented in Uttar Pradesh. We request the Commission to consider this submission and to allow us to make further submissions in this matter, if any.

1 Approach and Context

UP DISCOMs are high cost with their average cost of supply at Rs. 7/kWh for FY18, estimated to have grown by 15% to Rs. 8/kWh in FY19. Bulk of these costs (about 75% to 80%) are due to power procurement and these costs are also much higher than most states. The average power purchase cost for UP DISCOMs is at around Rs. 4/kWh for the last three years for which audited data is available.

Further revenue has not been increasing enough to keep pace with the high and rising costs. As can be seen in Figure 1, the average revenue recovery has been more or less the same between FY16 and FY18, indicative of a lack of tariff increase in this period despite significant increase in sales.

Figure 1: Growth in sales and average billing rate for all UP DISCOMs



Source: Data from regulatory filings based on audited accounts

As UP DISCOMs do not have many cross-subsiding consumers and with many of their consumers rural and poor, requiring tariff support, the avenues to raise revenues are also limited. The State Government has been providing subsidy to LMV 1 and LMV 5, domestic and agricultural consumers. However, with limited cross-subsidy revenue, the Commission has modified the tariff design such that these subsidized categories do not receive any cross-subsidy support. The difference between the cost of supply and the revenue from subsidy and tariff is deemed as an 'additional subsidy' by the state government, to be recovered from the State Government. As the State Government has not committed to paying this amount, the additional subsidy has been adding to the growing losses of the DISCOM since 2013.

With 23 million households having obtained connections in the last decade in the state with 8 million households have obtaining connections in the last two years alone the number of consumers needing tariff support will grow further straining the DISCOMs finances.

Uttar Pradesh DISCOMs face the challenge of rising costs and limited avenues to raise revenues while having to meet the commitment of providing reliable, affordable power to all, especially the millions of newly electrified households in the state. Thus, the finances of the DISCOMs are stressed and the working capital borrowing and short-term liabilities have been mounting. Further, such financial distress also could result in neglect of supply and service quality and DISCOMs deciding to forgo necessary capital expenditure as well as operation and maintenance expenses. This, in turn results in deterioration in supply quality, non-payment of bills by dissatisfied consumers, build-up of arrears and increase in AT&C losses thus reducing the revenue recovery even further.

With the increase in connections concerted efforts are needed by the DISCOMs and the Commission to:

- Reduce the average cost of supply by increasing efficiency in power procurement and distribution
- Ensure quality supply and service quality to consumers, especially poor and newly electrified consumers in rural areas
- Improve operation and maintenance practices towards better electricity service delivery
- Ensure capital investment necessary to strengthen distribution networks in a cost-optimal manner
- Ensure sustainable revenue stream by adopting tariff design which ensures financial viability of the DISCOMs
- Ensure tariff design which provides tariff certainty to consumers and protects small consumers from tariff shock while ensuring revenue recovery

Many of the efforts and initiatives in this direction will need to be done in a phase-wise, calibrated manner such that there is enough room for mid-course corrections and adequate flexibility to incorporate recent technological and policy developments in the scheme.

Prayas (Energy Group)'s submission highlights some of the issues before the DISCOM, throws light on recent evidence on supply and service quality parameters and discusses some suggestions towards improving cost-efficiency, increasing accountability and performance with respect to supply and service quality and also provides suggestions towards managing growing losses of the DISCOM. These are highlighted in the sections below.

2 Sales Estimation

2.1 Estimating growth rates for APR of FY2018-19 and ARR for FY2019-20

Estimation of demand and sales have implications for power procurement cost, revenue and subsidy. As shown in Table 1, UP DISCOMs have had robust sales growth in the past. However, based on actual

sales for 10 months and projections, DISCOMs have projected a fall in sales in FY19. This fall is significant in many categories especially for LMV 1 Domestic lights and fans, LMV 5 Private Tube Wells/ Pumping Sets, and HV 1 Non-Industrial Bulk Loads. The reasons for this reduction are not elaborated on in the petition. UPERC should clarify the reasons for such a dip and ensure future projections take cognizance of this reduction, if relevant. The DISCOM projections, as highlighted in Table 1 do not reflect the changes in the recent past.

Table 1: Annual sales growth rates for all five UP DISCOMs

Year on Year growth rates	FY16 to FY17	FY17 to FY18	FY18 to FY19	FY19 to FY20
	Audited YoY	Audited YoY	Estimated YoY	Projections YoY
LMV 1: Domestic Lights and Fans	17%	16%	10%	18%
LMV 2: Non-Domestic Lights and Fans	9%	12%	10%	12%
LMV 4: Light, Fan & Power for Institutions	11%	3%	-2%	5%
LMV 5: Private Tube Wells/ Pumping Sets	25%	19%	13%	19%
HV 1: Non-Industrial Bulk Loads	25%	14%	-1%	13%
HV 2: Large and Heavy Power	0%	6%	6%	8%
Total LMV	17%	14%	9%	16%
Total HV	5%	7%	2%	8%
Total Sales	14%	12%	8%	14%

2.2 Treatment of unmetered sales and consumers

2.2.1 Unmetered consumption norms for agriculture and domestic consumers need to be revised

About 1/3rd of LMV 1 and almost all LMV 5 consumers are unmetered. As these categories account for about 60% of sales and are significantly subsidised, estimation methodologies of this unmetered demand would make a significant impact on revenue, sales and power procurement. Further, it would also impact distribution loss estimation. Given its direct link to loss estimation and subsidy claims, it is extremely important to ensure rational and realistic demand estimation methodologies.

The Commission has been estimating unmetered sales for these two categories as well as Non-Domestic and State Tube Well consumers based on norms specified. The latest revision in consumption norms by UPERC has been in 2016 in the suo-motu order dated 9th December 2016. This revision took place on a pro-rata basis by revision of norms specified in 2001 to account for increased hours of supply. However, there was no explicit rationale nor detailed methodology specified in the order for the basis and adoption of the stipulated norms for the unmetered consumption. There was also no study conducted to assess the consumption of these unmetered categories and the counterfactual metered consumption for consumers with similar profiles.

The Commission had estimated a consumption norm of 144kWh/KW/month for rural domestic consumers. This seems high, as it is comparable to average consumption in cities such as Mumbai and Hyderabad. Further, the norms specified for unmetered non-domestic consumers were the same as for domestic consumers. In its December 2016 order, even the Commission recognized that norm revision based on studies should be undertaken at a later date to ensure better estimation. If the norms are high, the sales, revenue and subsidy will be overestimated and given current energy

accounting principles, the distribution loss for the DISCOM will be underestimated. In order to ensure better estimation of unmetered consumption, for domestic consumers it is suggested that:

- Sample studies are conducted to establish the appliance use and connected load of unmetered consumers.
- The average consumption of metered consumers in the same division with similar connected load is applied as the norm for unmetered domestic.

For agricultural consumption estimation it is suggested that the norm be stipulated based on a:

- Stratified sample of pump-sets in each circle that cover all agro-climatic zones, cropping patterns and groundwater and rainfall levels are considered to record crucial information on connected load, consumption etc.
- Sample meters are installed on agricultural DTs or feeders to record consumption to aid the study

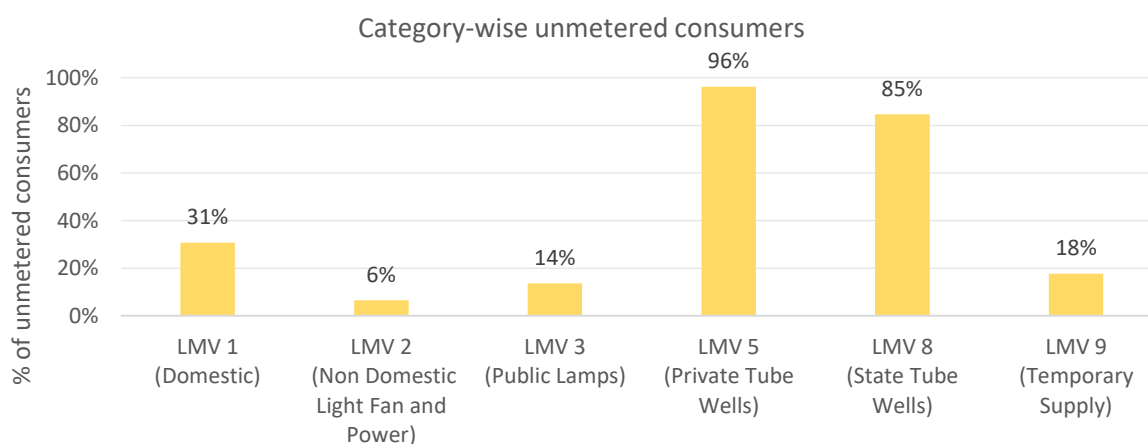
The methodology for the estimation of these norms should be clearly specified and finalised based on public consultation. Based on the re-estimation of norms the distribution losses in the state would also require to be re-stated.

The methodology for estimation of norms would be necessary as universal metering or agricultural and domestic consumers many not be feasible in the medium term. However, efforts should be made to regularise unmetered connections in other categories as a first step. This is detailed in the next section.

2.2.2 Commission to specify targets and penalties to ensure regularization of unmetered categories

As can be seen in Figure 2, other than rural domestic and agricultural consumers, there are various other categories which have unmetered sales, such as public tube wells, commercial consumers and even temporary supply. While re-estimation of unmetered rural domestic and agricultural sales is necessary in the medium-term, the Commission must direct the DISCOMs to meter all other categories by 31st March 2020. The Commission should set quarterly targets for metering and direct the utilities to submit quarterly reports on progress of metering these categories on a circle-wise basis.

Figure 2: Average percentage of Unmetered Consumers in UP in FY2017-2018



Source: Data from DISCOMs in regulatory filings for FY18.

We recognise the fact that the Commission has issued multiple directives to ensure metering in the past with not limited progress. To ensure implementation the Commission can also impose penalties for not meeting targets for metering such that any unmetered sales from these categories are disallowed during the time of true-ups.

3 Tariff increase

The DISCOMs have projected an average tariff increase of 16% for FY 2019-20. Table 2 shows the category-wise increase in tariff.

Table 2: category-wise increase in tariffs for some categories

Category	Average Billing Rate (ABR)		
	At Existing Tariff	At Proposed Tariff	% increase proposed
LMV-1: Domestic Light, Fan & Power	4.94	5.87	19%
Rural Schedule (unmetered)	3.86	4.99	30%
Rural Schedule (metered) other than BPL	3.98	5.02	26%
Supply at Single Point for Bulk Load	6.67	7.65	15%
Other Metered Domestic Consumers other than BPL	5.77	6.86	19%
BPL (both Rural and Urban)	3.80	4.20	11%
IMV-2: Non-Domestic Light, Fan & Power	9.19	10.19	11%
Rural Schedule (unmetered)	9.42	9.42	0%
Rural Schedule (metered)	5.63	6.60	17%
Other Metered Non-Domestic Supply	10.11	11.15	10%
LMV-5: Private Tube Wells/ Pumping Sets	2.61	3.12	20%
Rural Schedule (unmetered)	1.21	1.37	13%
Rural Schedule (metered)	2.28	3.04	34%
Urban Schedule (metered)	5.64	6.67	18%
HV-1: Non-Industrial Bulk Loads	10.01	11.23	12%
HV-2: Large and Heavy Power above 100 BHP (75 kW)	7.08	7.81	10%
Total	5.52	6.41	16%

Source: DISCOM Tariff filings for FY20

While tariff increase is essential for ensuring financial health of DISCOMs, a sudden and significant increase will lead to a tariff shock for consumers, especially small consumers. A tariff increase of about 20% for agricultural and domestic consumers is extremely steep, even if part of this is met through government subsidies. With increased electrification in the recent years in the state, it is important to ensure affordability of supply for small consumers. Considering this, tariff design should be such as to ensure affordability. Some suggestions in this context are given below:

3.1 Rationalising tariffs to encourage use among small consumers

3.1.1 General category for consumers using less than 300 units

Small commercial and industrial consumers are charged tariffs comparable to HT tariffs. The average proposed tariff for metered non-domestic consumers of LMV 2 category is about eleven rupees. This is equivalent to the proposed tariff of an HV-1 non-industrial bulk load consumer. Additionally, categorisation based on type of use (e.g. - industrial, commercial) subjects enterprises which run out of homes to harassment and makes them liable for unauthorised use as defined in Section 126 (6) (b)

(iv) of the Electricity Act. In order to ensure affordable power for small consumers while ensuring revenue neutrality, the Commission can:

- a. Make all LMV 1, LMV 2 and LMV 6 consumers with a connected load of less than 10 kW uniform for up to 300 units of consumption.
- b. This would enable home-based enterprise to obtain separate connections based on type of use without facing any tariff shock.
- c. The 300 units of consumption can be subject to telescopic tariffs (say, with 3-4 slabs). However, these slabs as well as the tariffs should be uniform across categories. This is illustrated in Table 3.
- d. For consumption above 300 units, the tariff slabs as well the tariffs can vary across categories. Such consumption can be charged high tariffs such that the proposal is revenue neutral. This would ensure certain level of intra-category cross subsidisation and provide price signals for efficient use of power.
- e. Such a system would encourage connections based on use and ensure that information on billing, sales and revenue collection is available based on types of use.

Table 3: Illustration of a tariff design for LT consumers having a connected load less than 10 kW

Slabs	Average tariff in typical tariff design			Average tariff in proposed tariff design		
	Domestic	Commercial	Industrial	Domestic	Commercial	Industrial
0-100	3.5	9.5	8.5	3.5	3.5	3.5
101-200	4.5			4.5	4.5	
201-300	5.5			5.5	5.5	
300-500	6.5			7	7	
>500	7			9.5	8.5	

3.1.2 Linking tariffs of small consumers to inflation to enable automatic and certain tariff increase

In order to meet burgeoning costs, there needs to be credible and automatic mechanism to increase tariff on a periodic basis at least to the extent of inflation in a rational and reasonable manner. In order to ensure this for a large number of consumers,

- a. UPERC can link tariffs for all small consumers (say, those who use less than 300 units) to the rate of inflation or say, inflation minus 2%.
- b. The tariffs for such consumers should be revised automatically at the beginning of every financial year based on the previous year's inflation index.
- c. This tariff design and the charges can be evaluated and re-determined on the basis of affordability, certainty of tariffs and DICOM finances after 3-5 years of implementation.

While this measure by itself will not be sufficient to tackle the larger issue of DISCOM's finances, it will help by reducing politicisation of tariff and while ensuring certainty of revenue increase and protecting small consumers from undue tariff shock.

3.1.3 BPL consumption limit to be annual, not monthly:

If a BPL household exceeds consumption above the prescribed limit (50 units) in any month, the household is ineligible for concessionary tariffs. As BPL households should be given flexibility to adjust their consumption, the prescribed limit can be annual limit (600 units a year) rather than a monthly limit. This will enable households to adjust their consumption based on need and retain concessions. Such an annual limit is present in Chhattisgarh and Maharashtra tariff schedules.

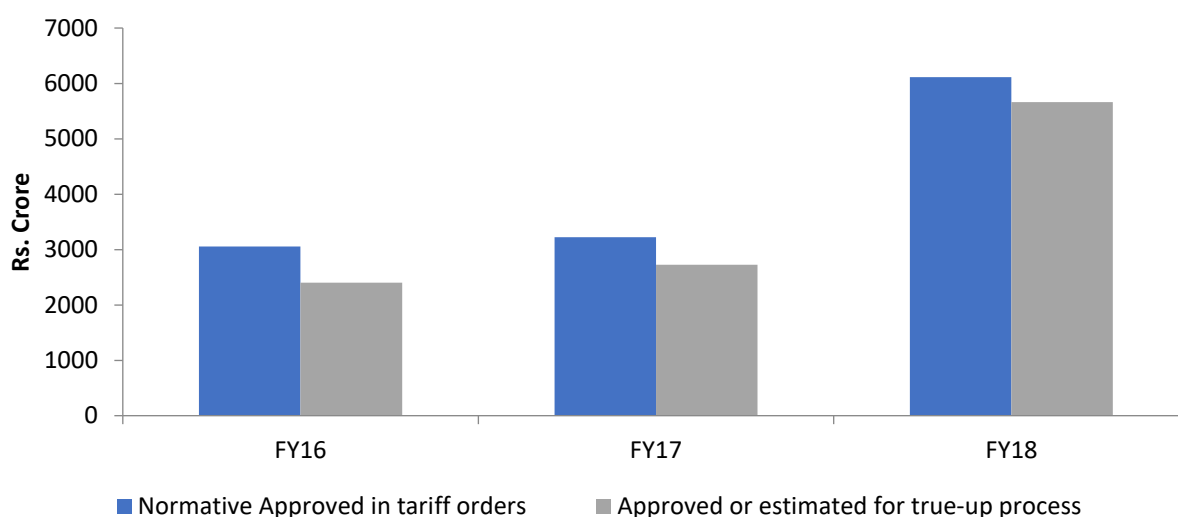
3.2 Eliminating urban-rural distinction in tariffs

There are separate tariffs for rural and urban areas with rural areas paying lower rates. For proposed tariffs, while urban domestic consumers' tariffs are about 96% of cost of supply, rural proposed tariffs are 70%. Low tariff for rural areas would perpetually trap rural areas in low levels of supply and service quality; this leaves no incentive for DISCOM to improve the rural quality of supply. Rural areas could pay the same tariffs as their urban counterparts and efforts need to be made to ensure similar service quality and standards of performance.

4 Estimation of Operation and Maintenance expenses and need for better monitoring of quality of supply and service

In spite of the financial distress and rise in newly electrified consumers whose tariffs are much lesser than average cost of supply, DISCOMs have reported that their norm-based operation and maintenance expenses in the past have been less than the cost approved by the Commission in tariff orders for the respective year. This is shown in Figure 3.

Figure 3: Consolidated approved and estimated operation and maintenance expenses for all 5 DISCOMs



Note: The data for FY18 are based on normative estimates for true-up by the DISCOMs

The operation and maintenance expenses estimated for FY18 by the DISCOMs based on norms is 5% higher than the actual expenses incurred by the DISCOMs. As operation and maintenance expenses are controllable costs, performance of the DISCOM below the stipulated norm is welcome and should be encouraged. However, such performance should be evaluated after there is more clarity on the following:

4.1 Clarification on data used for estimation of norms by DISCOMs and need to study reduction in employees

The norm-based estimation of employee expenses for the purposes of true-up depends on data provided by the DISCOMs on number of consumers and number of sub-stations. Similarly, for the norm-based estimation of administration and general expenses, DISCOMs provides data on number

of consumers and number of employees. The data provided for these estimates are represented in Table 4 and has major discrepancies.

Table 4: Base data provided for estimation of norms

Data reported for 2017-18	DVVNL	MVVNL	PVVNL	PuVVNL	KESCO	Total
No. of consumers	3,712,618	4,945,628	5,133,284	5,552,683	585,180	19,929,393
No. of substations	343,382	333,767	269,001	395,429	4,842	1,346,421
No. of employees	4869	10474	6323	8218	1694	25973
<i>Page no. in DISCOM petitions</i>	<i>Pg. 14-15</i>	<i>Pg. 12-13</i>	<i>Pg. 13-14</i>	<i>Pg. 16-17</i>	<i>Pg. 12-13</i>	

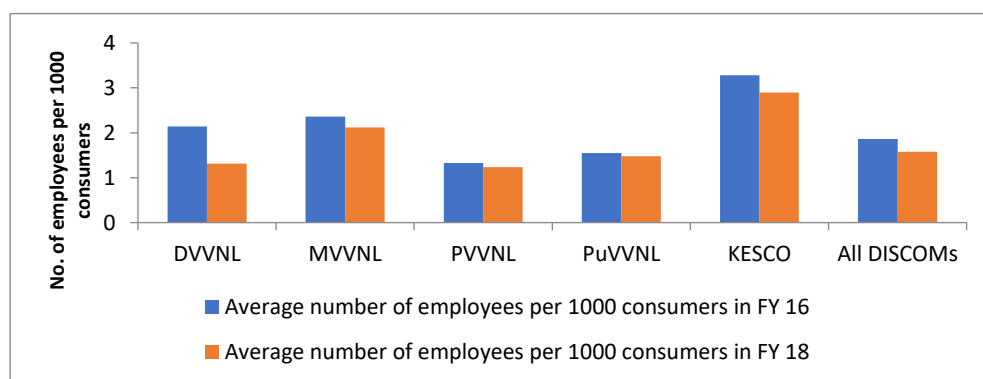
Source: DISCOM filings in current tariff process

As is evident from the table, the estimates provided for number of employees and the number of sub-stations need to be clarified. The number of employees reported seems to be low and the number of sub-stations seem to be high as there are discrepancies even with DISCOMs reporting before other forums and in other formats. For example, the number of sub-stations reported here for DVVNL do not match with the number of 33/11 kV sub-stations reported on DVVNL website¹.

When compared to the data provided across DISCOMs in Form No. P3 it is likely for some DISCOMs, the number of sub-stations refers to the number 33/11 kV sub-stations along with the number of distribution transformers in the DISCOM. If only the number of sub-stations is considered, the normative requirement estimated would be different. The rationale for the consideration needs to be evaluated and the normative costs should be estimated as per the methodology stipulated in the MYT regulations.

Similarly, the number of employees reported by the DISCOMs are 26% lower than the number of employees reported in the MYT process in FY16 by DISCOMs². With the recent rise in consumers, such a reduction would mean a considerable fall in number of employees for every 1000 consumers since FY16 as shown in Figure 4.

Figure 4: Fall in ratio of employees to consumers



This variation in numbers could be due to variations in reporting of regular and contract staff or due to other reasons which need to be clarified. If the number of employees has indeed witnessed a drastic

¹ For more details, please see: <https://www.dvvn.org/PowerMap.xlsx>

² As cited in Page 36 of the 2017 Study by Mercados on Benchmarking of performance parameters in compliance with the Uttar Pradesh Electricity Regulatory Commission (Multi-Year Distribution Tariff) Regulations 2014.

reduction in the recent past, supply and service quality to the growing number of consumers in the state would suffer.

The Commission should also clarify if the DISCOMs are utilizing staff from other government departments (for example, staff from the Block Development Office) to conduct day to day operations. If this is the case, such staff should be provided adequate training and plans to increase dedicated staff strength to cater to the needs of growing consumers should be charted out.

4.2 Need to monitor level of supply and service quality provided at lower costs and ensure accountability

Given the financial distress of the DISCOMs, it is likely that operation and maintenance works were foregone to reduce day to day expenses and thus reduce the strain on working capital requirements. Therefore, there is a need to examine whether the quality of supply and service has deteriorated in the recent years. In this context, some evidence based on recent initiatives by Prayas (Energy Group) are presented in this section.

4.2.1 Recent initiatives to build evidence for supply and service quality in Uttar Pradesh

- **Electricity Supply Monitoring Initiative:** Prayas (Energy Group) has been installing IoT based electricity supply monitors which measures and records voltage across a live electricity supply line for every minute and transmits the same over GPRS network to a central server. We have installed about 50 devices located in rural areas, municipal areas and megacities with a population of more than 2 million in Uttar Pradesh. Analysis of data from these devices provides insightful observations on voltage variation and supply interruptions in locations across the state. This information is publicly accessible at www.watchyourpower.org.
- **Residential Electricity Consumption survey in Uttar Pradesh:** Prayas (Energy Group) also conducted a major survey in 2018-19 covering 1500 households spread across five districts in semi-urban and rural areas of Uttar Pradesh.

Figure 5: Districts surveyed in UP



The districts, shown in Figure 5 are within the license areas of PVVNL, MVVNL, DVVNL and PuVVNL respectively.

300 households were sampled in each district and these were equally distributed in three tehsils geographically spread across the district. In each tehsil, 50 households were chosen in a semi-urban area, 25 households from a large village, and 25 households in a small village³.

Preliminary results from the survey also indicate poor performance by DISCOMs on many crucial supply and service quality parameters. We will be happy to discuss progress and findings under

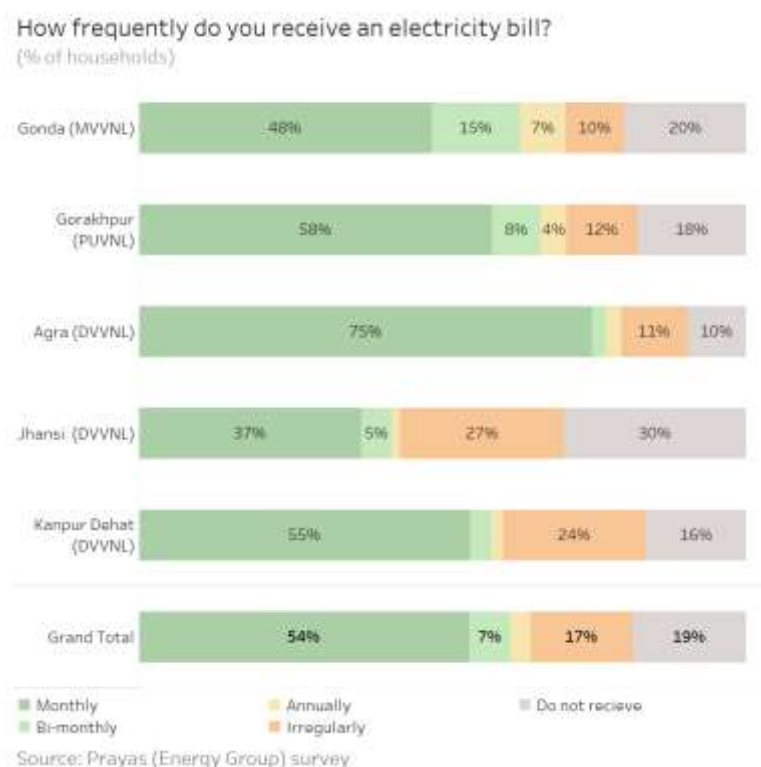
³ As per the [Reserve Bank of India \(RBI\)'s classification](http://www.reservedata.gov.in), semi-urban is a town with a population between 10,000 and 1,00,000 while population of rural areas is less than 10,000. We further identified a village with a population between 7000 and 10,000 as a large village and a village with a population between 3,000 and 7000 as a small village.

both initiatives with the Commission and the DISCOMs. These along with information submitted by DISCOMs in the tariff filings are discussed below:

4.2.2 Irregularity in issue of bills

Format P11 of the tariff filings across DISCOMs report the actual billing cycle for various consumer categories across DISCOMs. All the DISCOMs report that all consumers receive bills on a monthly basis. However, as shown in Figure 6, 46% of the 1500 households surveyed report that the periodicity of billing is not monthly.

Figure 6: Frequency of billing in surveyed households



In fact, 7% and 3% of households report receiving bills once every two months and once in a year respectively and 19% of households report not having received any bills. The households which do not receive monthly bills are much higher at 28% in the surveyed rural areas in Uttar Pradesh. With non-receipt of regular bills, many poor consumers and newly electrified consumers may find it difficult to pay the lump sum amounts, which increase the probability of hooking. Thus, efforts should be made to ensure regular and timely issue of bills especially in rural and newly electrified areas to ensure a culture of bill payment is established.

4.2.3 Issues with irregular supply

Even as Uttar Pradesh celebrates access to electricity connections to almost all households, many consumers continue to have frequent and long power outages in the state. Further, the reliability of supply is worsening over time in many areas as shown in Table 5.

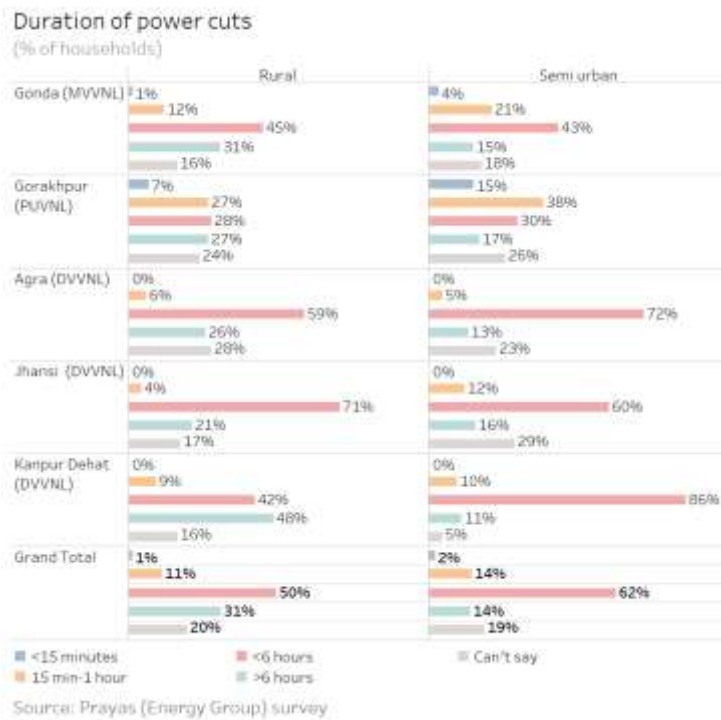
There are many locations where Electricity Supply Monitors have recorded more than 25 interruptions in a month that lasted for more than 1 hour in 2017 and the number of such locations have also increased in 2018. Further in many locations the average duration of these outages every month have been more than 100 hours in 2017 and this too has increased in 2018.

Table 5: Monthly average number of interruptions longer than 1 hour and average duration of these across locations

District	Location type	2017		2018	
		Monthly Avg. No of interruptions longer than 1 hour	Monthly Avg. hours of these outages	Monthly Avg. No of interruptions longer than 1 hour	Monthly Avg. hours of these outages
Agra	Urban	3	8	2	8
	Rural	20	50	23	71
Bahraich	Urban	20	55	22	60
	Rural	39	134	41	130
Barabanki	Urban	15	58	27	76
	Rural	26	93	33	125
Chandauli	Urban	13	37		
	Rural	32	109	34	96
Faizabad	Urban	5	18		
	Rural	34	111		
Fatehpur	Urban	11	38	7	13
	Rural	32	114	38	126
Ghaziabad	Urban	4	10	3	8
Jhansi	Urban	7	18	6	15
	Rural	27	56	34	70
Kanpur	Megacity	3	8	3	9
Lucknow	Megacity	1	3	2	4
Saharanpur	Urban	7	15	6	13
	Rural	37	117	35	127
Sitapur	Urban	23	51	26	64
	Rural	36	134	41	130
Sultanpur	Rural			41	125
Varanasi	Urban	4	15		
	Rural	20	58		

This evidence is further substantiated by data from the survey results summarized in Figure 7. This shows that 62% of consumers in semi-urban areas and 50% consumers in rural areas have reported facing power cut which are 1-6 hours long on an average. Further 31% of consumers in rural areas and 14% of consumers in semi-urban areas have reported power cuts with average durations even longer than that.

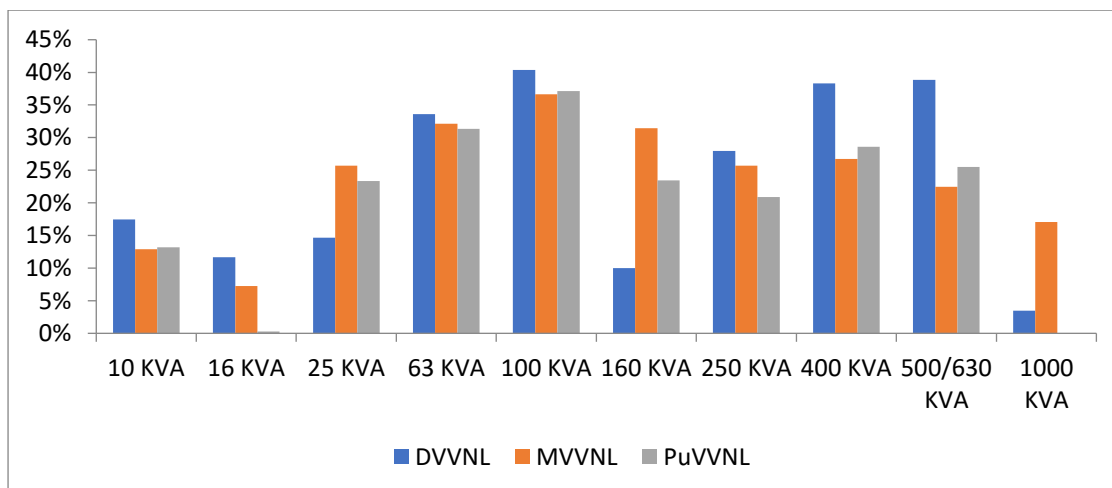
Figure 7: Duration of power cuts reported by surveyed consumers



Such frequent and long interruptions could be due to several reasons ranging from high power procurement costs and low power availability, poor investment in distribution networks and issues with capacity to ensure operation and maintenance of networks.

As per filings in Form P9 of the Commission prescribed formats, the distribution transformer failure rate across DISCOMs is also high which could also contribute to long power interruptions. The information of failure rates across rating capacity of DISCOMs has been provided by only 3 DISCOMs and has been reproduced in Figure 8.

Figure 8: DT failure rate across DISCOMs for various rating capacities



Failure rates could also be due to overloading of transformers as the loads increase with increase in number of consumers, especially in recently electrified areas. Therefore, efforts are also needed to augment distribution transformer capacity and reduce failure rates.

4.2.4 Issues with voltage fluctuations

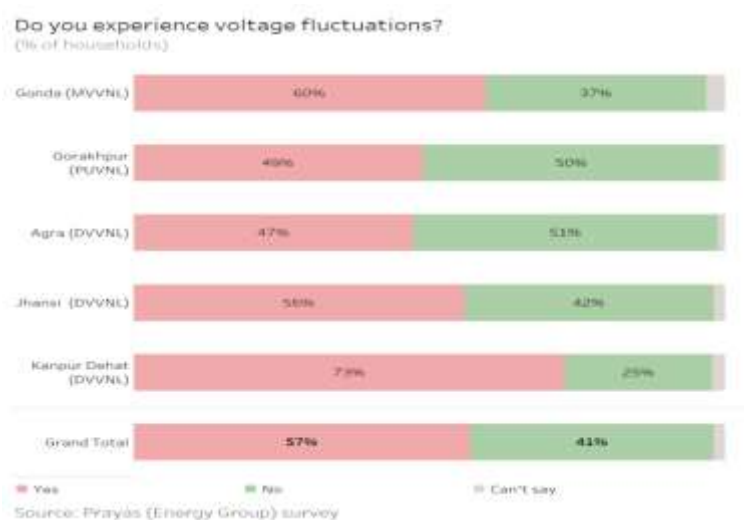
In Form P7, DISCOMs report very few instances of voltage fluctuations on an average at the 33 kV level. However, at the consumer end, voltage fluctuations especially for rural consumers are frequent. In the locations where the Electricity Supply Monitors have been installed, there are several instances of high voltage and the minutes with high voltage have been increasing between 2017 and 2018 especially in urban and rural areas of Bahraich, Barabanki and Sitapur. This is shown in Table 6. More industrialized and urban centers such as Ghaziabad, Kanpur and Lucknow also have seen deterioration in supply quality with greater high voltage instances.

Table 6: Duration of high voltage instances in a year across locations

District	Location type	Minutes in a year with high (270-350 V) voltage	
		2017	2018
Agra	Urban	359	397
	Rural	1	6
Bahraich	Urban	5,692	15,293
	Rural	435	18,906
Barabanki	Urban	0	7,054
	Rural	224	22,463
Faizabad	Urban	214	
	Rural	610	
Fatehpur	Urban	0	
	Rural	1,019	12
Ghaziabad	Urban	595	1,172
Jhansi	Urban	4	1
	Rural	0	
Kanpur	Megacity	1,378	0
Lucknow	Megacity	622	199
Saharanpur	Urban	0	1
	Rural	10	44
Sitapur	Urban	192	11,805
	Rural	2,793	3,592

About 57% of the households surveyed also report experiencing voltage fluctuations and the proportion is higher in some districts as shown in Figure 9.

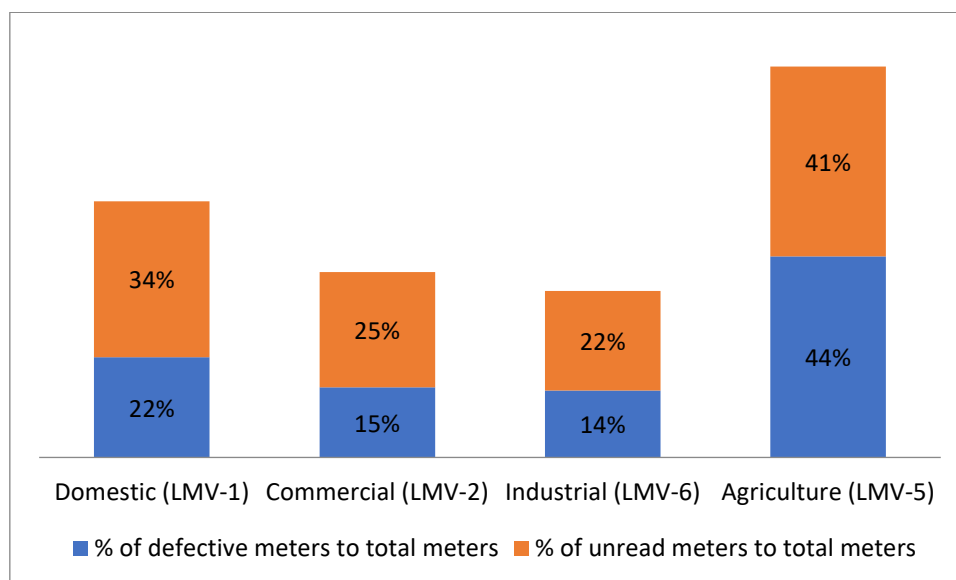
Figure 9: Reports on voltage fluctuations



4.2.5 Metering related issues

Beyond the significant number of unmetered consumers discussed in Section 2.2, there are also issues with the meters placed in consumer premises. Form P17 prescribed by the Commission is to capture the status of metering but only KESCo and PuVVNL have submitted actual data for FY18 in this format. Analysis of data submitted by PuVVNL shows that a major proportion of metered consumers across categories either do not have functional meters do not have meters that are being read. This is shown in Figure 10. The large number of defective and unread meters is not just for domestic and agricultural consumers but also commercial and industrial consumers in the DISCOM area.

Figure 10: Proportion of defective or unread meters in PuVVNL licence area



Prayas survey results also corroborate the reports of the DISCOMs as 16% of households in rural areas also reported having non-functional meters. Whether meters were read or not were not asked during the survey.

UP DISCOMs are also early adopters of smart and pre-paid meters with large scale pilots being implemented in the state. The commission should track progress of such initiatives and direct DISCOMs to report implementation progress and issues faced in the pilot stage. Documentation of such lessons would be beneficial when planning larger rollouts or assessing if these initiatives can address metering and billing issues in the state

4.3 Suggestions measures to improve quality of supply and service

The Commission could adopt the following measures to ensure more accountability for better supply and service quality:

4.3.1 Initiating pilots to improve operation and maintenance in selected divisions

Given the financial strain faced by DISCOMs, improving supply and service quality will require significant efforts over years and substantial investment in improving operations. The DISCOMs can also face several issues which could be unique to the state/ region which need to be addressed. In order to improve operations, as a first step, the Commission should direct DISCOMs to initiate pilots in say, four to five divisions in each DISCOM area to improve quality of supply and service over the next three years. In each of these selected divisions, the DISCOM could increase maintenance expenses and number of staff. The additional expense can be recovered from consumers in the division based on an additional charge over and above the regulated tariff. This additional charge say, at Rs. 0.5 per unit should be used to improve supply and service quality. The Commission can also track SoP parameters for these divisions separately to ensure performance accountability. These division-wise pilots would give DISCOMs an opportunity to explore different options and strategies to increase supply quality and would also have access to funds to ensure such improvements. However, progress in these designated feeders should be tracked and monitored by the Commission.

4.3.2 Conducting studies to assess adequacy and capacity of DISCOM staff

Based on the data provided by DISCOMs, there seems to be an acute shortage of staff. Such shortage can impact service quality significantly. To understand the issues faced by the DISCOM, the Commission should initiate a study to analyse the capacity, skills and number of staff across various grades and assess the number of contract workers, their roles and responsibilities, accountability channels and capacity. Such a study could point to major human resource gaps and provide insights into planning and operations which could be relevant for DISCOMs.

4.3.3 Conduct independent studies to audit metering and billing

Given the extent of defective meters, unmetered consumers and instances of average billing and delays in billing, the Commission should conduct an independent third-party audit of metering and billing systems and practices for all DISCOMs. Such a study should be commissioned in the coming year and would help assess the status of metering and billing and provide insights into implementation issues faced by DISCOMs, especially in rural areas. It would also help assess efficacy of measures such as early billing discount and spot billing in the state.

4.3.4 Provision of rebates for e-billing

Given the fact that consumers in rural areas also have access to the internet, especially with increased penetration of smart phones, DISCOMs can provide a nominal rebate in the bill to those consumers who adopt e-billing options. Such a measure would help reduce operation costs while ensuring timely bill access to those who have internet access.

4.3.5 Separate processes and Public hearings for Quality of Supply and Service

Consumers have been raising quality of supply and service issues in the tariff determination process, but these issues are not given enough attention given that the focus is on tariff and cost related aspects. However, there is a need to ensure accountability of DISCOMs for their Standards of Performance. In this context, the commission should:

- Conduct a separate process for evaluation of quality for supply and service issues
- This can be based on performance reports submitted by the DISCOMs as per the UPERC SoP regulations and under the mandate of Section 59 of the Electricity Act.
- As part of the process, important aspects related to metering and billing, safety and accidents should also be evaluated.
- Independent third-party evaluation of Standards of Performance parameters should also be conducted by agencies appointed by the Commission. Their reports should also be made publicly available as part of the process.
- Based on the filings and evidence, the Commission should conduct public hearings in each DISCOM headquarters and encourage consumer groups, farmer organisations, civil society organisations and consumers to participate.
- Based on the filings, studies presented and comments by the public, the Commission should publish a reasoned order which specifies time-bound directives to DISCOMs along with penal provisions in case of non-compliance.
- The order of the Commission in the matter can also link improvements in supply and service quality to evaluation of capital works and operation and maintenance expenses of the DISCOM in tariff processes.

4.3.6 Encouraging group of consumers to approach the Commission to ensure SoP compliance

There are many instances of repeated non-compliance by DISCOMs of Standards of Performance specified by the State Commission in several states. As per Section 42 of the Electricity Act, 2003 and UPERC regulations, individual consumers can approach the Consumer Grievance Redressal Forum (CGRF) seeking compensation for non-compliance. This is limited in its scope. To increase accountability of distribution and supply licensees, the Commission can amend CGRF regulations and SoP regulations to allow groups of more than 50 consumers to approach the Commission directly to ensure compliance with SoP regulations and seek compensation for repeated non-compliance. Further, consumers being served by the same licensee, with similar complaints should also be allowed to approach the CGRF to represent their views together. Such a provision will help highlight systemic issues with supply and service quality and increase accountability of utilities

5 Power procurement

Given that power procurement costs in UP are unsustainably high, any increase in these costs directly affect consumer tariffs and DISCOM losses. Therefore, detailed scrutiny of these costs is imperative and so are measures to increase efficiency in generation and reduce costs. In this context, our suggestions are detailed below:

5.1 Need for more disaggregated information on power procurement costs

The DISCOMs have provided details station-wise information on power procured from various sources. However, the break-up of fixed and variable costs is not provided. Without this

disaggregation it is difficult to assess the performance of generators, cost effectiveness of power procured and impact of change in power procurement sources. Further, the audited actuals reported by the Commission for FY18 shows a reduction in the average power purchase cost from previous years and reduced power procurement costs have also been projected. The reasons for such a reduction have also not been elaborated on in the petition. Commission should therefore analyse this issue in greater detail based on disaggregated data and provide a transparent and clear explanation for the reasons for such wide variations in the power purchase costs.

5.2 Flexibility in coal management not leading to improved availability or cost savings

In May 2016, the Cabinet approved a proposal for allowing flexibility in utilization of domestic coal to power generating stations. This was done with an objective of reducing cost of generation. As per the approval given by the Cabinet, the Central Electricity Authority (CEA) was asked to issue a methodology for the implementation of the said proposal, after undertaking due consultation with all the stakeholders. Accordingly, in June 2016 the CEA issued a methodology for this purpose. From the above policy notification, it becomes clear that the generating companies have flexibility in utilising their coal linkages in a manner that would allow them to optimize the overall cost of generation. In fact, the explicit aim of the policy is to reduce generation cost by rationalising coal linkages. However, it is not clear from the present petition whether and how much cost savings have been achieved because of this policy change. Considering this, the Commission should undertake a detailed analysis of merit order dispatch, actual fuel availability at the generating stations with lower variable cost and evaluate whether the licensees are maximizing generation from their least cost units using the flexibility in coal utilisation.

5.3 Compliance with MOEFCC notification dated 7.12.2015

The MOEFCC vide Notification dated 7.12.2015 has notified the Environment (Protection) Amendment Rules, 2015 amending the Environment (Protection) Act, 1986. Through the amendment, the existing/applicable environmental norms for all existing as well as future Thermal Power Projects stand amended. Under the amended norms prescribed by the MOEFCC Notification for compliance, all Thermal Power Plants have been categorised as:

- Units installed before 31.12.2003
- Units installed between 1.1.2004 and 31.12.2016 and
- Units which are commissioned after January, 2017.

However, it is understood that more than two years after the timeline that was specified for compliance, many plants have not taken steps necessary for ensuring compliance. It is not clear whether the generating stations with whom Uttar Pradesh DISCOMs have PPAs have initiated any steps towards ensuring such compliance. Given the statutory nature of the said regulations, compliance is mandatory and not at the discretion of the generating companies. Given the importance, urgency and fait accompli nature of the matter, and considering the fact the cost impacts to be passed through to consumers, we request the Commission to:

- Undertake a suo-motu process to evaluate the status of compliance with the said MOEFCC regulations and formulate least cost plan for ensuring such compliance.
- Through such suo-motu process, the commission should also formulate a well-coordinated plan detailing out the shut-down schedules for installation & commissioning of various emissions control systems for all the thermal power stations in the state.

Such action would ensure a timely and smooth transition to the new norms and the state will not suffer from any shortages and/or high cost short-term power purchase as a result of this change.

5.4 Need for comprehensive review of capacity addition in the pipeline

Given the shortage of power, the state has had ambitious capacity addition plans in the past. However, much of this capacity has been delayed significantly or has been stuck in the project development phase. Despite ambitious plants and significant potential cost impacts, there is limited comprehensive scrutiny of contracted capacity in the pipeline from various sources by the Commission. If cost-plus projects in the pipeline are delayed significantly, the future capacity addition would also be high cost further straining DISCOM finances. Thus, the Commission should undertake a suo-motu process to review of all contracted capacity in the pipeline. Such a review should consider status of plants in the pipeline and assess costs due to delay in commissioning and deferment for various reasons. Further, the process should also involve regulatory scrutiny of execution of sanctioned projects and tracking of major project milestones to ensure mitigation on delays. Capacity which is significantly delayed can be reconsidered through appropriate channels. Such a review should be conducted through extensive public consultations once every 2-3 years.

6 Treatment in distribution franchisees in energy accounting

The treatment of franchisee sales in the energy balance tables reported by the DISCOMs is unclear. In many states, the power input to franchisees at 33kV or 66 kV level is considered as sales to distribution franchisees while estimating energy input and losses. Such an assumption implies that all losses below the input voltage level would be considered as sales in the franchisee area. This would lead to an under-estimation of distribution losses and an over-estimation of franchisee sales. Commission to ensure that the sales, input and energy losses considered in the energy balance tables are reflective of energy handled to ensure a more accurate estimation of losses. Thus, the Commission should ask for separate reporting of sales and input energy in franchisee areas to ensure accounting of energy as handled in the system.

7 Assumption regarding capitalisation

The practice of considering an interest capitalisation rate for determination of interest on long term loans assumes that 23% of the capital investment has not been capitalized every year. Thus, capitalisation has never been considered based on actuals by the Regulatory Commission. In 2004-05 tariff determination order dated 10th November 2004 (Petition 183 of 2004), the Commission made the following observation:

“The Commission strongly believes that ad-hoc capitalization of expenses based on fixed percentages of investment is far removed from ground realities and therefore, capitalization should be done based on actual rather than on an assumed proportion. With this in view, the licensee was directed to review its existing mechanism of capitalizing expenses and to adopt a capitalization practice based on actuals. In response to this directive UPPCL has stated that it has reviewed the existing mechanism and has found that the present method of capitalization is based on a review done by erstwhile UPSEB and therefore no changes are required in this. UPPCL has also averred that the assets are capitalized as soon as they are put to commercial use in consonance with Electricity Supply Act, 1948. The Commission is not convinced about these assertions, as licensee has not furnished the project completion reports against the investments to verify that the assets have been put to commercial use.

In such a scenario, the Commission believes that existing approach continues to be ad-hoc and needs to be reviewed. Further, UPPCL has also not submitted the observation of the statutory auditors, of the company, on its capitalization practices along with corrective action, as was directed by the Commission.”

15 years hence, capitalisation continues to be assumed at 23% as in this tariff order. Such an assumption could over-estimate capital works completed especially if there are delays and allow passthrough of costs for the same. It would also provide an inaccurate estimate of gross fixed assets for the DISCOMs. It is suggested that Commission initiate steps to move away from this assumption for capitalisation while estimating capital expenditure. Thus, during true-ups the Commission should direct the DISCOMs to submit project completion reports for the works capitalised in the past year. These should be submitted especially as most of the capital works undertaken by the DISCOM are under Central Government schemes such as DDUGJY and IPDS. The proportion of capitalisation for the estimation of interest on long term loans can be estimated on actual basis. In case the project completion reports are not submitted, the Commission should disallow these costs. Further, a comprehensive study should be undertaken by the Commission to assess the gross fixed assets of the DISCOMs. It is suggested that such measures be undertaken sooner rather than later so that the assumption for capitalisation is not utilised 15 years from now and the DISCOMs are given every impetus to move towards financial viability and accountability.

8 Subsidy, additional subsidy and losses

8.1 Subsidy data provision

Annual reporting of subsidy takes place in tariff petitions and orders for domestic and agricultural consumers, but it is not clear if the entire quantum is reported and if other categories (such as power loom) are in receipt of subsidy. Additionally, there is no information on delay of subsidy payments or its impact on working capital borrowings.

In the tariff and true-up orders and petitions, the Punjab ERC and Punjab State Power Corporation Limited (PSPCL) respectively have been reporting category-wise information on subsidies, delays in subsidy payment and interest cost due to the same. The PSPCL, based on the Punjab ERC directions, is also providing information on subsidy payments on a fortnightly basis. The TNERC releases a subsidy order every year which provides details on category-wise subsidies and revision in subsidy amounts due to variation in sales. Considering such good practices and the extent of reliance on subsidy for their revenue requirements by the UP DISCOMs, we propose that the Commission can direct the DISCOMs to submit the following information on a quarterly and annual basis:

- Subsidy promised and paid during the concerned period and change in subsidy claimed due to revision of sales, if any.
- Schedule of payment of subsidies and deviation from the same on a monthly basis.
- Delays in subsidy payments in days along with short-term loans and accumulating interest payments incurred due to delays.
- Detailed break up of payments which include budgetary payments, subsidy adjustments with electricity duties collected and adjustments in loan repayments, if any.
- Break up of revenue subsidy paid to each consumer category or class of beneficiaries in the period. This should provide details on tariff subsidy, subsidy on fuel surcharge levied, if any, as well as subsidy in lieu of rebates, if any.
- Break up of subsidy provided to each category to compensate for pending dues or arrears.
- Break up of subsidised sales on a category-wise basis along with subsidised and unsubsidised tariff

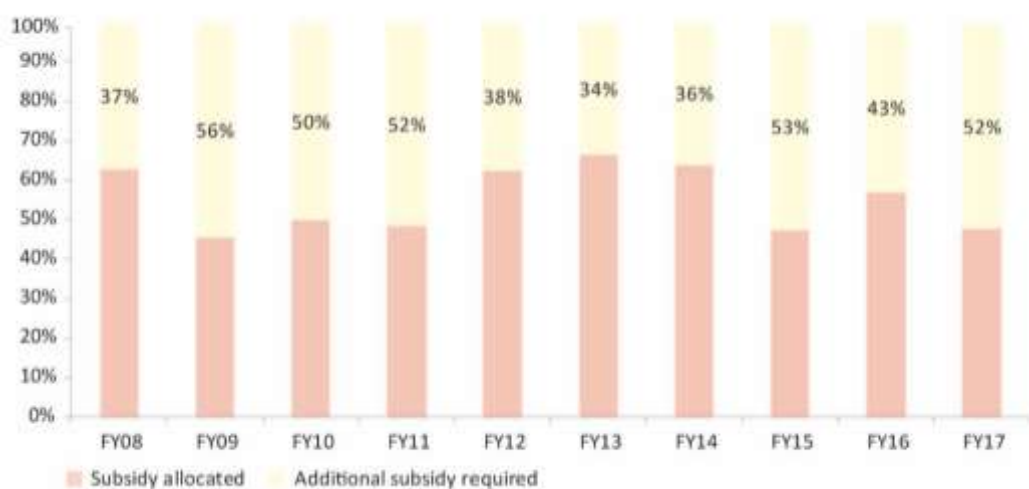
The quarterly reports (similar to SoP compliance reports) as well as the annual reports should be vetted and approved by the Commission and be available on its website. The information as well as analysis based on the same should be part of the tariff and true-up petitions and orders.

8.2 Treatment of additional subsidy and its impact on losses

In 2013, while truing up for FY08, the UPERC decided that categories consistently being subsidised by the state government (i.e. agriculture and rural domestic) would not receive any cross subsidy. This was done in accordance with the UPERC tariff regulations which came into effect in 2008. For these two categories, the UPERC, following its tariff design, estimated the difference between the cost of supply and the total revenue recovered from tariff and subsidy. The difference was deemed as an additional subsidy to be recovered from the state government. In the case of non-payment of additional subsidy by the state government, the amount would not be allowed to be added to the revenue gap or regulatory asset for recovery from consumers in subsequent years.

Till date the government of UP has not committed to paying this additional subsidy. In such a case, the unrecovered revenue has become a part of the growing losses of the DISCOMs. The quantum of additional subsidy is substantial as shown in Figure 11.

Figure 11: Additional subsidy requirement as computed by the UPERC for FY08 to FY17



Source: Compiled from various UPERC tariff orders

Without the state government commitment towards this subsidy 'additional subsidy' is merely a disallowed cost which cannot be recovered from consumers at any time. Commission should its discretion to disallow expenses for recovery, if they are not prudent or to ensure efficient operations among DISCOMs. The disallowance of 'additional subsidy' is merely suggesting that there would be no cross-subsidy support for subsidized categories, and this is not linked to DISCOM costs or performance. Instead, if the Commission disallowed unmetered sales in categories other than domestic and agriculture or disallowed capital expenditure without project completion reports, it would incentivize DISCOMs to ensure metering and thus increase efficiency in future operations.

Currently, DISCOMs are unable to recover revenue and are reeling under the burden of additional subsidy which will only grow in the coming years. Thus, it is suggested that the deeming and creation of additional subsidy be stopped by the Commission. Only those subsidies committed by the Government under Section 65 of the Electricity Act be considered as subsidy. Further the Commission should explore other avenues to reduce cross subsidy revenue required by certain categories. This

could be by reducing cost of supply, introducing slab-wise tariffs and increasing intra-category cross subsidies and by increasing operational efficiency of DISCOMs.

8.3 Treatment of losses, regulatory assets in the context of additional subsidies

The discussion paper by UPERC on the “Impact of UDAY on Regulatory Assets of State DISCOMs” suggests adjusting regulatory assets approved by the Commission along with carrying costs with the accumulated liabilities taken over under the UDAY scheme (which is about 75% of total liabilities). By adjusting these amounts, the paper shows a surplus which is to be passed on to consumers through DISCOMs for incentives for timely bill payment and waiver of regulatory surcharge.

It is our submission that the surplus being presented by the Commission is only ‘notional’ and the Commission should factor in the impacts of two crucial factors before adopting this methodology for assessment.

8.3.1 Impact of adjustment on DISCOM balance sheet

The UDAY scheme was implemented to take over accumulated liabilities of DISCOMs. Accumulated liabilities are there due to:

- Debt incurred to finance disallowed costs and associated interest payments
- Debt incurred due to delay in subsidy payments and related interest costs
- Debt incurred due to delay in revenue recovery from consumers
- Debt incurred due to deferred recovery of costs from consumers as approved by the regulator. The deferment takes place due to creation of regulatory assets or revenue gaps and the costs include carrying costs.
- Debt incurred due to non-recovery of additional subsidy

However, regulatory assets primarily are due to deferred recovery of approved costs and the associated interest costs.

Therefore, subsidies, revenue gaps and regulatory assets are only a sub-set of accumulated liabilities and before such an adjustment takes place, disaggregation of accumulated liabilities would be beneficial.

Regulatory assets and revenues gaps are a major part of the receivables of a DISCOM. With the take over of accumulated liabilities, given the receivables one can expect a significant improvement in the balance sheet of the DISCOMs, especially if debt due to subsidies, revenue gaps and regulatory assets formed a major part of the liabilities as well. With the take over of debt if the receivables also reduce commensurately, they would not be much improvement in the DISCOMs balance sheet which will not improve the creditworthiness of DISCOMs. At the same time, take over debt along with the interest payments imply that the State Government are also taking up costs which were to be recovered from consumers via future tariff increase.

This aspect should be considered and discussed with the DISCOMs and State Government before such regulatory adjustments are approved.

8.3.2 Impact on additional subsidy on estimated regulatory surplus

If all additional subsidy until 2016 has been taken over by the State Government under UDAY, it would reduce DISCOM operational losses significantly. However, additional subsidy will continue to increase even post 2016. The quantum of additional subsidy estimated by the Commission for FY17 was about Rs. 6,000 crores. If we assume a similar requirement would be approved for FY18 in the true-up process, the cumulative additional subsidy would be about Rs. 12,000 crores. This is higher than the

net regulatory surplus estimate by the Commission after accounting for the impact of UDAY. Not considering the impact of additional subsidy being approved post UDAY, especially when there is no plan to recover such revenue for the cash strapped DISCOMs is preparing the ground for another bailout, like UDAY soon. The Commission should take note of this before issuing discounts to consumers for timely bill payments based on the notional surplus.

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