BEFORE THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION LUCKNOW

September 28, 2020

IN THE MATTER OF

Proceedings on Truing-up for FY 2018-19, Annual Performance Review (APR) for FY 2019-20 and Annual Revenue Requirement and Tariff determination for FY 2020-21 for the State Discoms (namely DVVNL, PVVNL, MVVNL, PuVVNL & KESCO)

Submissions from Council on Energy, Environment and Water

The Hon'ble UPERC initiated proceedings on Truing-up for FY 2018-19, Annual Performance Review (APR) for FY 2019-20 and Annual Revenue Requirement and Tariff determination for FY 2020-21 for the State Discoms (namely DVVNL, PVVNL, MVVNL, PuVVNL & KESCO). The submissions in the above matter are in response to Hon'ble UPERC public notice dated September 4, 2020, the comments are most respectfully set out below.

Current state of affairs - Unsustainable cost of supply for Discoms

For FY 2020-21, UP discoms (at the consolidated level) have projected the total expenditure on power purchase (including transmission charges) at Rs. 57,225.63 crore. Against this, the total projected revenue from sale of electricity to consumers is at Rs. 55,996.57 crore. It is pertinent to note that the revenues are unable to cover for even the cost of electricity procured. On top of it, there are operating expenses for discoms that need to be accounted in. There are grants and subsidies that are provided to the respective discoms forming close to 18 per cent of overall revenue.

The average cost of supply (ACoS) (on energy sold basis) for UP discoms for FY 2020-21 is projected to be unsustainably high at Rs. 7.89/kWh. The UP discoms are facing an inevitable transition and are also on the brink of a major financial crisis on account of increasing sales migration to open access, competitive MW scale captive solar projects, reduced cross-subsidy support, increased direct subsidy, increasing cost of supply and a large number of newly electrified and poor consumers in need of tariff support. The tariffs are non-competitive for industrial consumers and are unaffordable for many small and poor consumers.

The discoms would find operational and financial challenges more pressing in the coming years and would require periodic bailouts and be forced to manage stranded and high cost contracted capacity (projected to be around Rs 10,000 crore in FY 2022-23). It is high time for the Regulator and discoms to gauge the performance and level of compliance and set the tone for the second control period (FY 2020-21 to FY 2024-25) and work towards rationalising tariffs in the long-term through improvement in operational efficiency by optimising their power procurement cost.

Brief Summary of comments

This section provides the brief summary of all the points that are focused in this submission:

1. **Power Purchase planning, scrutiny and approval**
    - We have scrutinised the increase in power purchase cost for FY 2018-19, FY 2019-20 and FY 2020-21 as compared to the previous year and submitted the details of the units/stations for which the increase in fixed cost is exorbitant. The increase in power purchase has significantly increased the average cost of supply. It is requested that the Hon'ble Commission ask discoms to explain the increase in cost on individual station/unit basis and, accordingly, factor in the cost for all the three years (FY 2018-19 to FY 2020-21).
    - Carry out a periodic review of applicability of differential bulk supply tariff (DBST) for discoms on account of changing sales and revenue mix, sales migration due to increasing uptake of rooftop solar by domestic & commercial consumers, open access, solarisation of agricultural demand.
    - Individual plant/unit-wise cost data should be consistently reported across portals. Variable costs reported on the MERIT portal deviates by 10-15 per cent for many of the thermal plants from which UPPCL procures power, compared with the variable costs reported by discoms in their petitions.

2. **Tariff design and simplification exercise**
    - Tariff simplification proposed by UPPCL/discoms is definitely a welcome step and the proposal appears to be revenue neutral for consumers and discoms. In the larger public interest, it is requested that the Commission adopt the tariff simplification proposal (as it deems fit) for FY 2020-21.
    - Tariff Design for low consuming consumers - The current tariff structure discriminates between the low-consuming poor consumers categorised under the lifeline, rural and urban domestic categories. For instance, consumers under each of the categories consuming 50 units would be charged ₹210 (lifeline), ₹270 (rural domestic), and ₹404 (urban domestic), respectively. There is a need to enhance the subsidy support to low consumption consumers via tariff reforms. It is submitted that the Hon'ble Commission consider devising a higher lifeline tariff support for all consumers with consumption less than 50 units/month and increase the tariffs above this limit for a revenue-neutral adjustment. Lower tariffs would improve the affordability of electricity for poorer consumers and reduce the revenue loss for discoms on account of non-payments by consumers. The above should be prioritised over OTS announcements that result in high-interest cost burden for the discom.

3. **Robust demand and sales estimations**
    - It is suggested that the discoms shall factor in detailed economic, demographic, and climatic indicators to project robust electricity demand and sales.
    - Data driven robust methodology for estimation of unmetered consumption/sales for agriculture category - It is submitted that the normative consumption norms used for unmetered category consumption has not been revised for many years. Given the changes in rainfall, water use, and cropping patterns, it is essential that the Hon'ble Commission and the discoms conduct a comprehensive study to assess agricultural demand and to revise the methodology for estimation of demand, especially for the

2nd control period. Further, significant feeder separation[1] has already been achieved for agricultural feeders in Uttar Pradesh. The Hon'ble UP Commission should initiate an independent study to assess agricultural consumption based on feeder input data and sample surveys and accordingly decide the sales for the 2nd Control period (FY 2020-21 to FY 2024-25).

- Understanding the impact of COVID-19 related lockdowns on UP's power demand - Need for a more comprehensive analysis of electricity demand to get a sense of consumption trends for each consumer segment for the next six months of FY 2020-21, and beyond.

4. **Reporting of revenue subsidy and payment delays**
    - The UP discoms are dependent on subsidy for a large portion of their revenue requirement, and any delays in subsidy payments are likely to adversely affect the working capital requirements and thus, further exacerbate the financial stress. The discoms have not provided any information on delays on receipt of revenue subsidy. It is suggested to adopt a few good practises to ensure that discoms are reporting category-wise information on subsidies, delays in subsidy payment and interest cost due to this delay.

5. **Adjustments of COVID-related relief/measures in the ARR and tariff determination for FY 2020-21**
    - Mitigation of adverse cash flow due to COVID-19 impact on the discoms.
    - Accounting of various measures announced by Central and State government under the COVID-19 assistance package in the current ARR proceedings.

6. **Discom's performance metrics – Billing efficiencies, Smart Meter evaluation, and OTS scheme**
    - Understanding the factors leading to low billing efficiency and billing of consumers on meter reading/provisional basis - The high AT&C losses with the discoms are the result of billing and collection inefficiencies, especially in rural areas. As of December 2019, only 58 per cent of billed rural consumers were billed on the basis of metered-units (MU). CEEW's interactions with various on-ground stakeholders bring out the gaps in billing and ways to bridge the same are discussed in this submission.
    - Revising the methodology for evaluation of cost benefit analysis of large-scale smart meter deployment.

Our endeavour via this submission is to share ideas to improve performance and efficiency of the Discoms of Uttar Pradesh. The detailed submissions on each aspect are discussed in the next section.

[1] https://timesofindia.indiatimes.com/city/lucknow/uppcl-curtails-power-supply-to-tube-wells-by-8-hrs/articleshow/70596270.cms

Power procurement planning, scrutiny and approval

1. Non – availability of balance sheet of UPPCL for true up of FY 2018-19

Going through the petitions/documents uploaded on the website of individual discoms, it appears that UPPCL/discoms have not submitted the balance sheet of UPPCL for FY 2018-19. The importance of the balance sheet availability can be gauged from the fact that UPPCL procures entire power on behalf of discoms and records the same in its books. Power purchase accounts for 80 per cent of the overall Annual Revenue Requirement. It is pertinent to ask, how can the Commission ascertain the Bulk Supply Tariff (BST) for FY 2018-19 in the absence of UPPCL's balance sheet.

It is requested that the Commission examine the issue of non-availability of balance sheet, before doing the true up of FY 2018-19.

2. Scrutiny on increase in power purchase cost for truing of FY 2018-19

UPPCL/discoms reports the power purchase cost for FY 2018-19 as Rs 5.11/unit, 18 per cent higher than the previous year (FY 2017-18). Compared to the previous year, the increase in sales (at consolidated level) has remained flat and overall power purchase at generator bus has decreased by four per cent. Despite this, there was an 18 percent jump on a per unit basis. Table 1 attempts to examine the individual charges that make up the total cost. It can be observed that the fixed charge (FC) outlay has increased by 22 per cent, and other charges have increased by a whopping 174 per cent. The reduction in variable charges (VC) is in line with less power drawn from generators.

Table 1: 22 per cent in fixed cost in FY 2018-19

Year	Data source	Power Purchase by UPPCL at Generator Bus (MUs)	Energy available at discoms end (MUs)	Sales (MUs)	Fixed Charge (Rs. Crore)	Variable Charge (Rs. Crore)	Others (Rs. Crore)	PGCIL/other transmission (Rs. Crore)	Power Purchase Cost (incl. trans charges) (Rs. Crore)	Power Purchase Cost per unit at Generator Bus (Rs./ kWh)	Power Purchase Cost per unit at Discoms end (Rs./ kWh)
FY 2017-18	Trued Up	120301	112000	88139	13901	27574	2244	2706	47010	3.91	4.20
FY 2018-19	TU claimed	115397	108328	88095	16978	27353	6156	4841	55327	4.79	5.11
	I/D w.r.t to FY 2017-18	**-4%**	**-3%**	**0%**	**22%**	**-1%**	**174%**	**79%**	**18%**	-	-
FY 2019-20	APR	117281	111384	91459	17936	28707	3256	5009	54908	4.68	4.93
	I/D w.r.t to FY 2018-19	2%	3%	4%	6%	5%	-47%	3%	-1%		
FY 2020-21	ARR	114513	107323	89738	-	-	-	-	55235	4.82	5.15

Source: Authors' analysis based on discom tariff filings
Note: I/D implies Increase decrease

Discom filings and replies to deficiencies did not point towards the actual reasons for the increase in cost. Also, there was no detailed breakup on what makes up other charges, so it was difficult to interpret any trend. To examine this issue more closely, we looked at the fixed cost incurred on individual station/unit basis and tried to establish which stations/units mostly contribute to this increase. The methodology we adopted is that we filtered out those stations/units where the drawal units (MUs) had decreased in comparison to FY 2017-18 and

vis a vis there was an increase in their fixed cost. Technically, the fixed cost should have decreased (based on low plant availability factor) or should have at least remained the same. But this was not the case. Table 2 provides the details of such stations.

Table 2: Unit wise increase in Fixed cost

Station(s)	FY 18_Annual FC (Rs. / kWh)	FY 18_Annual FC (Rs. Cr)	FY 19_Annual FC (Rs. / kWh)	FY 19_Annual FC (Rs. Cr)	Increase in FC	FY 18_Units (MU)	FY 19_Units (MU)	Decreased in Units procured (MUs)	Increase in FC (%)	Decreased in Units procured (MUs) (%)
	A	B	C	D	E=B-D	F	G	H = G-F	I=E/B	J=H/F
LALITPUR	1.68	1367	5.22	2703	1337	8123	5178	-2945	98%	-36%
ROSA-1	1.61	1150	3.15	1269	120	7156	4029	-3127	10%	-44%
KSK MAHANADI	1.76	715	2.06	802	87	4054	3885	-169	12%	-4%
M.B.POWER	2.43	629	2.84	688	59	2593	2426	-166	9%	-6%
HARDUAGANJ	0.89	20	3.79	79	59	225	209	-16	294%	-7%
HARDUAGANJ EXT.	1.45	477	2.00	532	55	3283	2662	-622	12%	-19%
BEPL KHAMBHAKHERA	3.46	57	8.70	112	54	166	129	-37	95%	-23%
BEPL BARKHERA	3.27	57	8.12	111	54	174	136	-38	95%	-22%
BEPL MAQSOODAPUR	3.71	57	8.60	110	54	153	128	-25	95%	-16%
PARICHHA EXT. STAGE-II	1.49	451	1.96	499	48	3032	2548	-485	11%	-16%
PARICHHA	0.99	18	4.05	60	42	182	148	-35	231%	-19%
UI Charges	0.00	0	0.00	33	33	326	275	-51	-	-16%
PARICHHA EXT.	1.19	310	1.84	334	23	2603	1815	-788	7%	-30%
APCPL	0.52	22	3.15	40	18	429	127	-302	79%	-70%
NATHPA JHAKRI	1.24	146	1.42	163	18	1175	1151	-24	12%	-2%
DADRI GPS	2.16	105	4.36	122	17	486	279	-207	16%	-43%
SINGRAULI	0.62	345	0.69	359	14	5569	5187	-383	4%	-7%
TANDA TPS	1.22	358	1.77	370	12	2938	2091	-847	3%	-29%
AURAIYA GPS	18.58	103	49.42	114	11	55	23	-32	11%	-58%
RAMPUR	1.87	56	2.09	63	7	302	302	0	12%	0%
ANTA GPS	5.42	53	10.28	58	6	97	57	-40	11%	-41%
FGUTPS-1	1.24	182	1.66	188	6	1471	1134	-337	3%	-23%
OBRA-B	0.59	241	0.74	245	5	4067	3293	-774	2%	-19%
RIHAND-1	0.77	197	0.88	202	5	2567	2302	-265	2%	-10%
NCTPS-1	0.82	53	1.67	56	3	644	339	-305	6%	-47%
FGUTPS-2	0.98	93	1.62	94	2	948	582	-366	2%	-39%
KHTPS-1	1.24	54	1.53	55	1	436	362	-73	2%	-17%

Source: Authors' compilation from UPPCL/discoms filings

We understand that the above table may not provide the complete explanation for the increase in power purchase as there may be certain intricacies on account of trued up cost of stations (maybe). However, it still makes a case for the Commission to ask discoms to explain the case for increase in cost on individual station/unit basis and, accordingly, factor in the cost for truing up. The above understanding also holds true for evaluation of power purchase cost for FY 2019-20 and FY 2020-21. It is requested that the Hon'ble Commission investigate the increase in the cost on individual station/unit basis and, accordingly, factor in the cost for all the three years (FY 2018-19 to FY 2020-21).

Arresting the increasing cost of power purchase

At present, many of the existing PPAs did not necessarily reflect the best available price (even when they were signed) and certainly do not make economic sense, given the stock of efficient

and lower cost thermal-generation assets. The power purchase cost for FY 2018-19 (Rs. 5.21/kWh), FY 2019-20 (Rs. 4.93/kWh), and FY 2020-21 (Rs. 5.15/kWh) is a reflection of the way current high cost PPAs are structured and the rigidity they impose on procurement.

Given the pipeline of thermal generation projects that are already contracted and are under construction, low offtake will make financial investments unviable and create even more stress/stranded assets in an already crippled sector.

Based on our understanding of the issue, we would like to put forward the following suggestions before the Hon'ble Commission, to reduce the overall power purchase cost:

I. In the short-term, procurement must be prioritised from stations where the variable cost is low.
II. Merit order dispatch (MoD) must be respected in its entirety and issues such as transmission constraints and coal availability must not reduce the ability to procure from these low-cost generation sources (CEEW's detailed study on analysing the potential saving, to the tune of Rs. 900 crores for each of the past years FY 2016-17 to FY 2018-19 from strict adherence to MoD and prioritising power from low cost generating stations has been attached as Annexure I).
III. Newer contracts for longer term requirements must account for the impact of low utilisation of assets on the power procurement cost and the need for more flexible resources to meet the increasingly variable demand. This can partly be achieved by getting a greater visibility of generation sources in other parts of the country, where the seasonal demand variation is complementary to Uttar Pradesh or where there is spare capacity in summers.
IV. An emphasis on contingency procurement, through banking (non - cash transactions) must be placed. Tenders could be issued for banking of power to meet demand during summer and reduce surplus during winters. While these are interim measures, a longer-term transition to a market-based procurement scenario is a likely way out for the discoms as a whole.
V. In the longer run, the Hon'ble Commission should initiate redrafting of standard PPAs. This could entail provisions for exit from contracts upon payments of reasonable compensation. Fixed costs and O&M payments to inefficient costly plants must continue and early retirement of these plants must be financially engineered.

3. Periodic review of applicability of differential bulk supply tariff (DBST) for discoms

The Hon'ble Commission vide its suo moto proceeding has approved the hybrid methodology for computation of DBST for state owned discoms. In the DBST mechanism, the per unit cost of electricity procured is different for each discom. The differentiation is mainly because of varied sales, consumer mix, and efficiency of discoms. This implies that the discoms with a lower-revenue generating consumer mix would be charged with lower DBST as compared to the discom having favourable consumer/ revenue mix. However, the tariffs to be charged by the discoms will be uniform across the state. Gujarat has been using the DBST model for the last one decade.

The adoption of DBST will bring all the discoms to a level playing field in terms of power purchase costs, with net impact on the procurement cost of each discom ranging from -11% (for MVVNL discom) to 34% (for KESCO discom). The table 3 captures the impact (pre-DBST and post DBST adoption) on power purchase cost for different discoms based on data for FY 2019-20:

Table 3: KESCO power purchase cost would increase by almost one third after DBST adoption

Sl. No.	Particulars	DVVNL	PVVNL	PuVVNL	MVVNL	KESCO	Total
1	Total Power Required at Discom Periphery (MU)	22,134.40	32,954.70	24,188.42	20,891.42	3,710.68	1,03,879.63
2	post DBST - total Power Purchase Cost (Rs. Crore)	11,307.21	17,922.30	10,352.96	9,183.12	2,442.81	51,208.40
3	**post DBST/unit cost (Rs./kWh)**	**5.11**	**5.44**	**4.28**	**4.40**	**6.58**	**4.93**
4	Pre DBST - total Power Purchase Cost (Rs. Crore) *	10,911.35	16,245.32	11,923.90	10,298.61	1,829.21	51,208.40
5	**pre DBST/unit cost (Rs./kWh)**	**4.93**	**4.93**	**4.93**	**4.93**	**4.93**	**4.93**
6	Increase/decrease in cost as compared to pre DBST cost (Rs. Crore)	395.86	1,676.98	-1,570.94	-1,115.50	613.59	-
7	**% increase / decrease in cost as compared to pre DBST cost**	**4%**	**10%**	**-13%**	**-11%**	**34%**	**-**

Source: Authors' analysis based on discom tariff filings
Note: The data is for FY 2019-20 discoms tariff filings
**pre DBST computation is same as the existing BST methodology*

While such a mechanism seems equitable, it needs to be evaluated and reviewed periodically on account of three reasons:

I. The DBST mechanism promotes high cross-subsidisation among discoms. Good performing discom (with better billing and collection efficiency) take the brunt of the poor performing discom. Little incentive for discoms to improve their operational and financial performance.
II. Changing sales and revenue mix across discoms on account of:
    a. Increasing uptake of rooftop solar by domestic & commercial consumers.
    b. Sales migration on account of open access availed by industrial and commercial consumers.
    c. Potential reduction in agricultural demand due to solarisation under the KUSUM scheme.
III. With sales migration and uniform tariffs, it could lead to undue estimation of revenue gaps for one discom over the other.

The uptake of rooftop solar, open access and solarised agriculture is currently very low. But with increasing uptake of these solutions, it will be important to periodically review the changing sales and revenue mix across discoms and move away from the DBST mechanism.

It is also important for the Hon'ble Commission to quarterly monitor the improvement/change in the operational and financial parameters of all the discoms. The low performing discoms should be nudged towards strict compliance and improvements.

It is suggested that in the medium term, the Hon'ble Commission, GoUP and UPPCL/discoms should move towards actual allocation of PPA among discoms and allow the power purchase cost for each discom to be reflective of the costs incurred by them. This in turn, would allow each discom to improve their operational efficiency as well as scheduling and dispatch principles.

4. Consistency of cost data reported across sources

Variable cost data for thermal plants from which UPPCL procures power is reported on the MERIT portal by UPSLDC. Comparing the year-to-date average variable cost reported on this portal with the cited variable cost for FY20-21 by discoms in their petition shows large deviations of the variable cost. For example, the variable cost of NCIL's RAPP units 3-4 is reported as ₹3.56/unit in the petitions but ₹3.24/unit as per the MERIT portal, a difference of nearly 10 per cent. For Tanda-II the variable cost as per MERIT data is ₹2.52/unit while in the petitions it is reported as ₹2.23/unit, a difference of nearly 12 per cent. It is requested of the Hon'ble Commission to take notice of this difference in reporting across different forums.

Tariff design and simplification exercise

5. Tariff simplification exercise proposed by UPPCL/discoms

UPPCL/discoms submitted the consumer category/sub-category/slab simplification as part of the ongoing ARR/Tariff Proceedings for FY 2020-21. The proposal is certainly a welcome step towards tariff simplification. From the perspective of revenue neutrality for consumers and discoms, we did a quick check of the impact on the domestic consumers, both rural and urban divide and across different consumption slabs, we observed that the proposal stands in line with revenue neutrality.

It is requested to the Commission adopt the tariff simplification proposal (as it deems fit) for FY 2020-21.

6. Tariff Design for Low consuming consumers - Aligning Tariff structure with consumption trends

With increased electrification under the Saubhagya Scheme in the State, it is important to ensure affordability of supply for low income consumers.

Even though the low consumption households (lifeline and rural domestic) receive electricity on subsidised rates, many rural consumers in our two surveys (one conducted in the MVVNL area of operation and a second one a state-wide consumer survey[2]) cited their inability to pay bills due to inadequate or irregular incomes. Thus, it is pertinent to investigate whether the tariff structures in the state align with the consumption trends.

As per our survey, nearly half of the households (that paid their last bill) incur a monthly expenditure of less than ₹565 on electricity use, with a majority of these being rural households. The median monthly expenditure from this survey is comparable to the estimates (₹550/month) from a state-wide consumer survey conducted in 2018 (Ganesan, Bharadwaj and Balani 2019). As per the current tariff schedule in UP, these expenditure levels imply that roughly half of the

[2] MVVNL survey was conducted in May 2020, whereas the pan-Uttar Pradesh survey was conducted in mid-2018.

households in UP have a power consumption of 100 kWh (units)/month and fall within the first slab of the tariff schedule (0-100 units/month). Thus, roughly half of the domestic consumers in UP receive similar subsidy support at equal rates, even though it is the lower-income households that may need higher support.

Further, the tariff structure discriminates between the low-consumption poor consumers categorised under the lifeline, rural and urban domestic categories. For instance, consumers under each of the categories consuming 50 units would be charged ₹210 (lifeline), ₹270 (rural domestic), and ₹404 (urban domestic), respectively. The tariffs for urban consumers are nearly 50 per cent higher than their rural counterparts belonging to the same socio-economic class. Most states in India have standard tariffs for low consumption consumers and do not discriminate between urban and rural consumers.

There is a need to enhance the subsidy support to low consumption consumers via tariff reforms. States such as Bihar, Gujarat, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka, and Haryana define the lifeline category for consumers using 30-50 units a month [2]. Further, the median energy charge for the lifeline consumer category charged by discoms across most states is less than ₹2/kWh, and the fixed charges are less than ₹20 per kW per connection. In comparison, the lifeline tariffs in UP are relatively high.

UP's electricity regulatory commission must consider devising a higher lifeline tariff support for all consumers with less than 50 units/month and increase the tariffs above this limit for a revenue-neutral adjustment. Lower tariffs would improve the affordability of electricity for poorer consumers and reduce the revenue loss for discoms on non-payments by consumers. The above should be prioritised over OTS announcements that result in high-interest cost burden for the discom.

7. Commercial tariffs higher than Industrial Tariff – Need for rationalisation

The proposed tariff for LMV-2 (non-domestic consumers) is higher than that of HV industrial (LMV-6 and HV-2). Based on various loads and consumption patterns, the per unit rate varies from ₹12-16/kWh. Further, due to categorisation of consumers based on type of use (e.g. domestic, commercial and industrial) many small shops/enterprises which are run out of homes tend to engage in unauthorised use of electricity (as defined in Section 126 of the Electricity Act, 2003) as the Tariffs for non-domestic consumers are quite high and unaffordable. This problem is prevalent in many parts of Uttar Pradesh, thereby leading to a large no. of litigations and harassment cases.

It is submitted that in order to ensure affordable power for such small shopkeepers and to prevent the unauthorised use of electricity, while ensuring revenue neutrality for the discoms, the Hon'ble Commission can ask discoms to submit an analysis on the billing parameters, revenues from such small LMV- 2 consumers and also the no. of litigation cases in such matters (also resources deployed by Discoms).

Based on the data, a revenue neutrality exercise can be done, keeping in mind that the overall revenue from LMV-2 category would increase, as a motivational 'lesser' Tariff (as compared to the proposed), would push the consumer to take separate connections for domestic and non-domestic purpose.

It is requested to the Hon'ble Commission that a new Tariff structure, say Non-domestic Lifeline of 100 units a month (similar to Domestic lifeline), be experimented for FY 2020-21.

Second control period and Sales Estimation, scrutiny and approval

Factoring in detailed economic, demographic, and climatic indicators to project robust state-wise electricity demand and sales

8. Huge overestimation of demand and sales for the 1st Control Period (FY 2017-18 to FY 2019-20)

UPPCL/State Discoms have filed the projections for billing determinants for the 1st Control Period in their business Plan dated June 21, 2017, which were later approved by the Commission's MYT Tariff Order dated November 30, 2017. The tables 5,6, and 7 compare the Billing determinants for each year of the 1st control period as approved in UPERC's MYT Tariff Order dated November 30, 2017 and as submitted in successive petitions.

Table 4: Overestimation of sales by four per cent for FY 2017-18

FY 2017-18									
	Consumer Nos.			Connected Load (kW)			Sales (MU)		
Discom	MYT Order dated Nov 30, 2017	True-up filing	% Deviation	MYT Order dated Nov 30, 2017	True-up filing	% Deviation	MYT Order dated Nov 30, 2017	True-up filing	% Deviation
DVVNL	4218858	3302774	-22	10591193	9400667	-11	19195	18736	-2
MVVNL	5325660	5176604	-3	9672631	9618007	-1	18448	17007	-8
PVVNL	5581369	5184786	-7	18264811	16968085	-7	27413	28437	4
PuVVNL	5395431	5745950	6	11398492	10634630	-7	23273	20758	-11
KESCo	608948	591653	-3	1968690	2011821	2	3764	3200	-15
Consolidated	**21130266**	**20001767**	**-5**	**51895817**	**48633210**	**-6**	**92093**	**88138**	**-4**

Source: Authors' Analysis on UPERC's MYT Tariff Order and UPPCL's MYT Petition
Note: Negative percentage indicates over projection

Table 5: Overestimation of sales by 25 per cent for FY 2018-19

FY 2018-19									
	Consumer Nos.			Connected Load (kW)			Sales (MU)		
Discom	MYT Order dated Nov 30, 2017	True-up filing	% Deviation	MYT Order dated Nov 30, 2017	True-up filing	% Deviation	MYT Order dated Nov 30, 2017	True-up filing	% Deviation
DVVNL	6343419	5072665	-20	14001671	11103624	-21	24336	19035	-22
MVVNL	9102971	7098379	-22	12868127	11636252	-10	25224	16698	-34
PVVNL	9367365	6028766	-36	26418175	19585240	-26	34998	28393	-19
PuVVNL	6638511	8149749	23	12838376	13220297	3	29411	20795	-29
KESCo	655257	612940	-6	2092619	1950638	-7	4194	3174	-24
Consolidated	**32107523**	**26962499**	**-16**	**68218968**	**57496051**	**-16**	**118163**	**88095**	**-25**

Source: Authors' Analysis on UPERC's MYT Tariff Order and UPPCL's MYT Petition
Note: Negative percentage indicates over projection

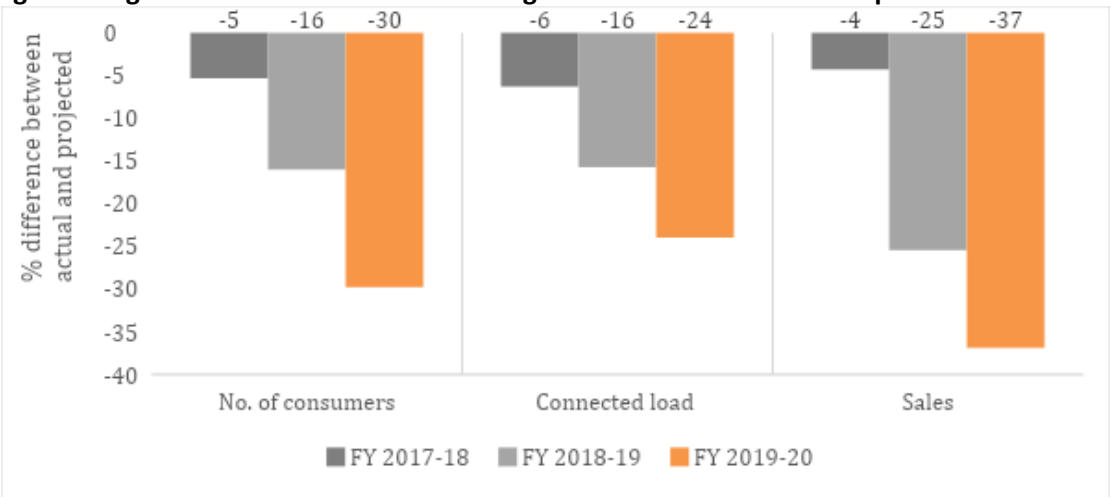
Table 6: Overestimation of sales by 37 percent for FY 2019-20

FY 2019-20									
	Consumer Nos.			Connected Load (kW)			Sales (MU)		
Discom	MYT Order dated Nov 30, 2017	APR filing	% Deviation	MYT Order dated Nov 30, 2017	APR filing	% Deviation	MYT Order dated Nov 30, 2017	APR filing	% Deviation
DVVNL	8015513	5177178	-35	16803129	11531485	-31	29708	19456	-35
MVVNL	12118118	7813203	-36	15676810	13619273	-13	33224	18426	-45
PVVNL	12345884	6649732	-46	33051753	20499950	-38	42061	29066	-31
PuVVNL	7572857	8349215	10	14445011	14820683	3	35207	21237	-40
KESCo	705152	626267	-11	2225469	2024696	-9	4671	32723	-30
Consolidated	**40757524**	**28615595**	**-30**	**82202172**	**62496087**	**-24**	**144871**	**91458**	**-37**

Source: Authors' Analysis on UPERC's MYT Tariff Order and UPPCL's MYT Petition
Note: Negative percentage indicates over projection

As is clear, the projections submitted and approved in the MYT Order of 2017 have consistently over-projected the billing determinants. Further, the extent of over-projection, at the consolidated level as well as at the level of each discom, is higher for each successive year of the control period than its preceding year. The extent of over-projection, for example of total sales, has increased by nearly tenfold, from an acceptable four per cent in the first year of the control period to nearly 40 per cent in the last year (figure 1).

Figure 1: Significant overestimation of billing determinants in 1st control period



Source: Authors' Analysis from UPERC tariff orders; UPPCL tariff filings, and UPSLDC

Impact on account of over projection of billing determinants

The objectives of the MYT regime have been to provide regulatory certainty to stakeholders, to review operational norms for generation, transmission, distribution and supply businesses, and to promote operational efficiency. In this respect the projections of billing determinants at the beginning of the MYT have a strong bearing on the following:

- Power procurement planning by the discoms,

- CAPEX for augmentation and upgradation of distribution network,
- O&M expenses,
- RPO planning and forecasting,
- Distribution loss trajectory,
- Overall financial planning of the utilities.

The evident overestimation of demand defeats these stated objectives of the MYT regime. It has already led the state of Uttar Pradesh to sign long-term PPAs with thermal power generators in excess of its actual capacity requirements. The Hon'ble Commission itself has noted that the burden of fixed charges paid on stranded capacity due to upcoming additions in generation capacity is projected to be around ₹4,797 crore during FY 2019–20, and is expected to peak at ₹10,750 crore in FY 2022–23 in the next control period, and further, it has directed UPPCL, vide its order dated 9 July 2019, to not sign new PPAs until a review of the demand position in December 2022[3].

Why do these demand overestimations exist?

Reasons for the overall forecast results deviating from actual demand in Uttar Pradesh may be:

1. Electricity demand growth is strongly correlated with economic growth. 19th EPS' econometric models projected energy requirements assuming GDP growth levels of 6.3% - 8% per year. However, Uttar Pradesh's actual GDP growth rate had slumped down to four per cent in 2019-20[4]. The actual electricity demand growth in Uttar Pradesh may have failed to emulate expectations for the future due to slower than expected economic growth.
2. The average energy consumption of new Saubhagya connections was assumed to be 144 kWh/kW/month for future projections by UPPCL[5]. However, as per CEEW's pan-Uttar Pradesh survey[6], and a survey of 300 consumers in MVVNL's area of operation, the median monthly consumption of rural domestic consumers was 50 kWh. For a reported 7.9 million Saubhagya connections awarded since October 2017[7], this difference implies a demand overestimation of 8.9 billion units per year, which is equivalent to about 10% of total sales in 2019-20.

Apart from particular assumptions used, there is a critical need for discoms to improve their demand forecast methodology. Discoms continue to use past years' CAGRs to forecast billing determinants. Where the CAGRs are deemed to be "abnormal", the petitions state that "reasonable/normalised" CAGRs have been used. However, there is no explanation of how these "reasonable/normalised" have been estimated.

Alternative methods for demand forecasting do exist. In the 19th EPS, the Central Electricity Authority (CEA) described methods using detailed economic, demographic, and climatic

[3] http://www.uperc.org/App_File/1478-pdf79201950015PM.pdf

[4] https://www.business-standard.com/article/economy-policy/up-gsdp-to-expand-4-4-in-fy20-per-capita-income-projected-at-rs-70-419-120022100649_1.html

[5] https://www.uperc.org/App_File/1478-pdf79201950015PM.pdf

[6] https://www.ceew.in/publications/electricity-consumers-and-compliance

[7] https://saubhagya.gov.in/

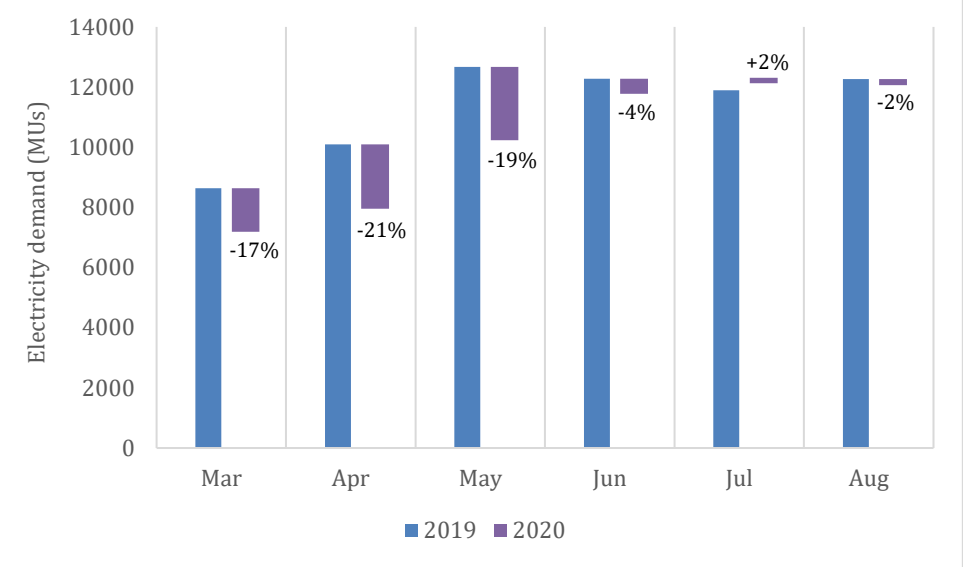
indicators to project state-wise electricity demand. State-level projections for Uttar Pradesh using these methods are much more accurate than discoms' own projections[8].

It is essential that UPPCL/discoms build institutional capacity to make as reliable billing determinant forecasts as possible, as this will be central to controlling power procurement costs over the long-term, and thereby, to reducing the revenue gap. Utilities should adopt one of the methodologies used by the CEA for their forecasting exercise, and conduct regular load research based on actual billing determinants of various consumer segments and a system cost minimization approach[9].

Impacts of Covid-19 related lockdowns on Uttar Pradesh's power demand

Due to the lockdowns imposed to control the spread of the COVID-19 pandemic, discoms report a contraction in energy sales of 24.35 per cent between 26th March and 28th April 2020, relative to the same period last year. However, with removal of lockdown measures, electricity demand has been converging with previous year's demand (Figure 2).

Figure 2: Monthly electricity demand in Uttar Pradesh in 2020, compared to 2019



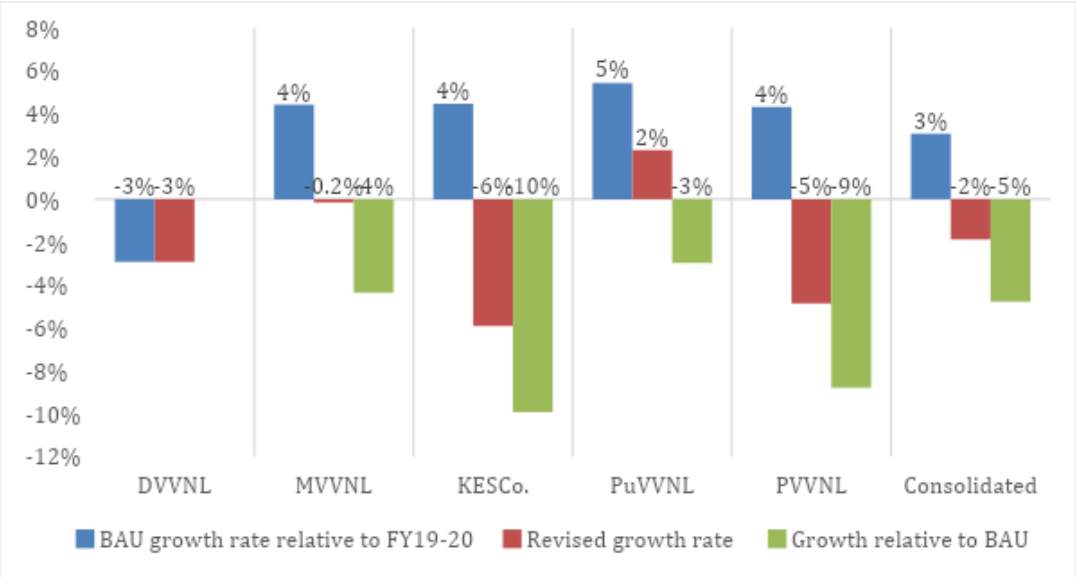
Source: Authors' Analysis based on data from MERIT portal/UPSLDC

The UP discoms have made some assumptions to include the expected impact of the pandemic on future energy sales. A contraction by about two per cent compared with last year (of consolidated sales) is projected, and five per cent relative to sales in the absence of the lockdowns (Table 7 and Figure 3).

[8] http://cea.nic.in/reports/others/planning/pslf/Long_Term_Electricity_Demand_Forecasting_Report.pdf

[9] https://www.pace-d.com/wp-content/uploads/2019/11/White-Paper-Sumedh_Inside_For-Press.pdf

Figure 3: Growth in electricity sales projected under Business-As-Usual (BAU) and after incorporating impacts of Covid-19



Source: Authors' compilation from UPPCL/Discoms' ARR petitions

Table 7: Consumer category-wise change in projected sales in FY 2020-21 compared with FY 2019-20 and Average Billing Rate (ABR)

Consolidated sales (MU)					ABR FY19-20
	FY19-20	FY20-21	Difference	% change	(₹/kWh)
LMV-1: Domestic Light, Fan & Power	42397	46967	4570	11	5.59
LMV-2:Non Domestic Light, Fan & Power	6447	5057	-1389	-22	11.43
LMV-3: Public Lamps	740	761	20	3	10.10
LMV-4: Light, fan & Power for Institutions	1063	808	-254	-24	11.01
LMV-5: Private Tube Wells/ Pumping Sets	13597	12987	-610	-4	1.72
LMV 6: Small and Medium Power upto 100 HP (75 kW)	3317	2675	-643	-19	9.59
LMV-7: Public Water Works	1727	1807	81	5	9.62
LMV-8: State Tube Wells & Pump Canals upto 100 HP	2944	2953	9	0	9.28
LMV-9: Temporary Supply	220	169	-52	-23	10.32
LMV-10: Departmental Employees	607	619	12	2	5.67
HV-1: Non-Industrial Bulk Loads	3584	2873	-711	-20	11.38
HV-2: Large and Heavy Power above 100 BHP (75 kW)	11914	9255	-2659	-22	8.26
HV-3: Railway Traction	123	100	-23	-19	9.98
HV-4: Lift Irrigation & P. Canals above 100 BHP (75 kW)	696	708	12	2	9.28
Bulk Supply	2059	1975	-83	-4	4.19
Extra State Consumer	24	24	0	0	7.83
Grand Total	**91458**	**89738**	**-1720**	**-1.88**	**6.24**

Source: Authors' compilation from UPPCL/Discoms' ARR petitions

A few observations can be made on these projections:

1) The projected contractions (about two per cent) seem to be modest compared with the YoY impact expected on the economy. For the first quarter of FY 2020-21 (April-June)

the national GDP contracted by 23.9 per cent[10]. Electricity demand observed by discoms in Uttar Pradesh between 26th March to 28th April fell by similar levels (24.35 per cent). For the whole financial year, actual national GDP contraction may be up to 20 per cent[11]. The immediate rebound in power demand following 'un-lockdown' could be due to pent-up demand, but as economic activity is expected to see a downtick[12] [13], power demand contraction could be much more severe than discoms' projections. Initial forecasts show that electricity demand until 2025 may contract by 10 per cent relative to no-COVID-19 scenario.

2) It is observed that supply in the first 5 months of FY 2020 is more than 5000 MUs short of the same period last year, whereas the shortfall for the whole year is expected to be 1720 MUs. It is important to ask discoms how they are expecting to make up for 3300 MUs in the seven months between September '20 and March '21. Technically, the coming winter months will be the low demand phase of the year, and demand in winter 2019 was actually lower (or same) than in winter 2018.

3) Table 7 shows that the largest drop in power demand is projected for consumers with higher ABRs (e.g. LMV-2, 4, and 9), while domestic consumers, with ABR less than average cost of supply, are projected to witness an uptick in energy demand. From a revenue perspective discoms need to stimulate demand from higher paying consumers to limit a widening of the revenue gap due to these changes.

4) The increase in domestic demand may be predicated on an expectation that Saubhagya connections awarded in and soon after 2017 would mature by 2020-21, and show increased energy consumption. However, Saubhagya consumers are typically low-income households and may depend on the informal sector. These households are likely to be disproportionately affected by the economic contraction, and the increase in energy demand could be subdued.

A more comprehensive analysis of electricity demand should reflect the actual consumption trends for each consumer segment. It is requested of the Commission to direct discoms to provide projections on month-wise sale to different consumer categories, so that they can better explain who will help make up for the shortfall in the next six months.

A consumer-segment-wise analysis will enable discoms to adopt strategies to mitigate the adverse impacts of energy sales contraction. For example, a marginal reduction in industrial tariffs can stimulate demand in this segment. This would also demonstrate regulatory intent to fulfil the objective of reducing the cross-subsidy burden on high-paying consumers, which is a condition highlighted in both the COVID-19 assistance package, as well as draft amendments to the National Tariff Policy 2016.

Further, projections on billing determinants for the next control period should be included in the business plans submitted by discoms. Since these plans are not available for public

[10] https://www.business-standard.com/article/economy-policy/first-economic-contraction-in-4-decades-india-s-gdp-shrinks-x-in-q1-fy21-120083101022_1.html

[11] https://www.nationalheraldindia.com/india/actual-2020-21-q1-gdp-contraction-much-higher-than-239-per-cent-economic-situation-dire#:~:text=This%20is%20the%20biggest%20contraction,GDP%20is%20at%20%2D23.9%25.

[12] https://www.teriin.org/sites/default/files/2020-07/Bending-the-Curve_Report.pdf

[13] https://www.financialexpress.com/economy/economic-contraction-may-lead-to-permanent-income-loss-in-india-gdp-may-shrink-5-9-in-2020-un-body/2089775/

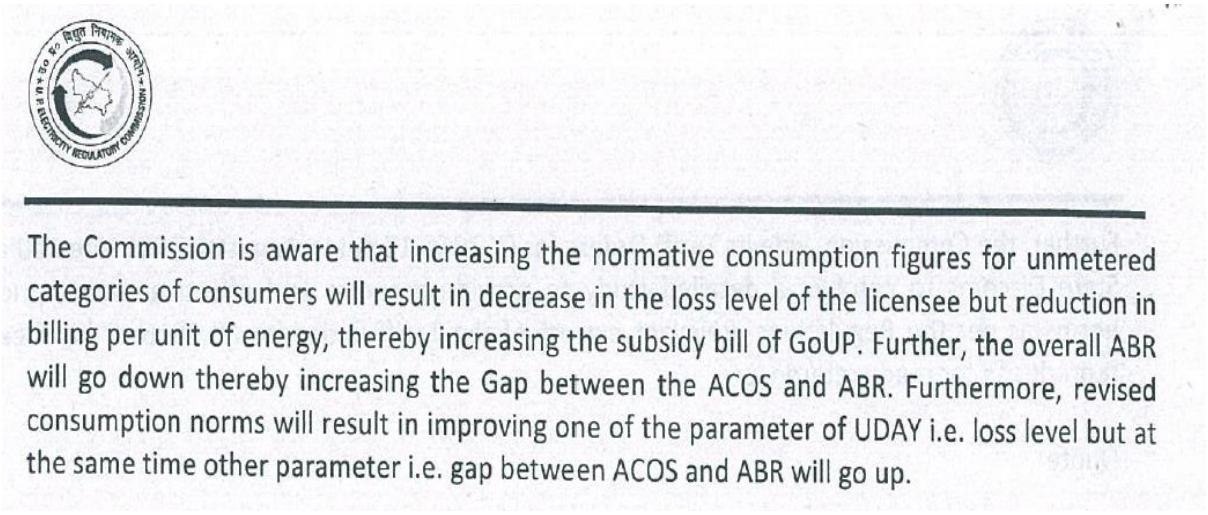
scrutiny, it should be ensured by the Hon'ble Commission that projections take realistic assumptions and strategies into account.

Sales and demand estimation for un-metered consumption

9. Data driven robust methodology for estimation of unmetered consumption/sales for agriculture category

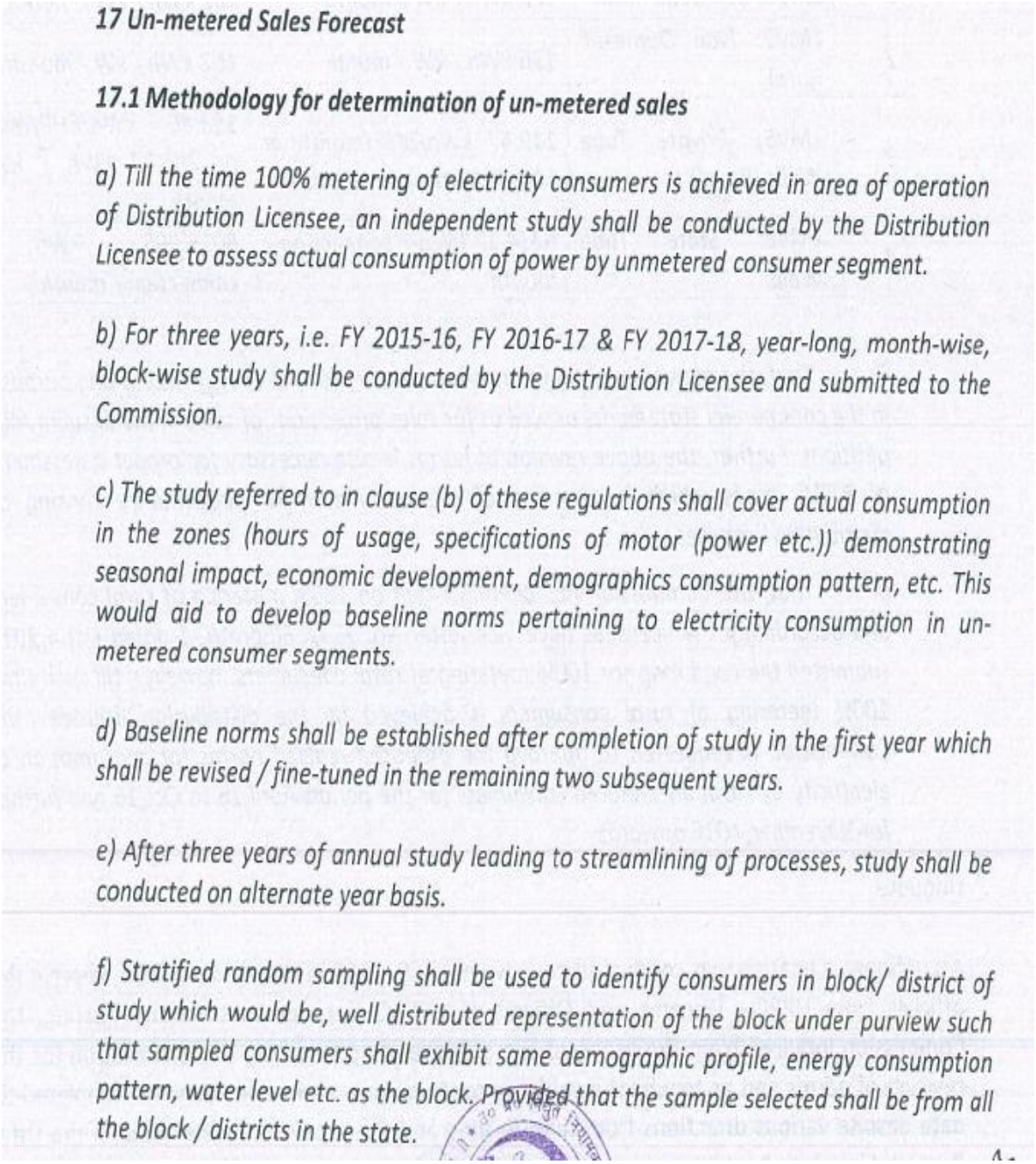
Re-estimation of normative consumption based on feeder level data for the years - APR FY 2019-20, ARR FY 2020-21 and the 2nd control period (FY 2020-21 to FY 2024-25)

Un-metered agricultural demand for FY 2020-21 under the LMV- 5 consumers (private tube wells/pumping sets) is projected to account for 96 per cent of the projected sales. The LMV-5 category is the predominant recipient of subsidies, the estimation of sales (though it is for the purpose of normative booking/accounting under the discoms' commercial statements) should be based on a more scientific and rigorous methodology. This is especially true as the demand estimations have implications on revenue recovery, cross-subsidy requirement, subsidy and distribution losses estimation. The Hon'ble Commission has recognised the same in its proceedings "Revision in Consumption Norms for unmetered category of consumers" order dated December 9, 2016 and has emphasised conducting a robust study for estimation of un-metered consumption. The relevant section of the order has been quoted below:



The Commission is aware that increasing the normative consumption figures for unmetered categories of consumers will result in decrease in the loss level of the licensee but reduction in billing per unit of energy, thereby increasing the subsidy bill of GoUP. Further, the overall ABR will go down thereby increasing the Gap between the ACOS and ABR. Furthermore, revised consumption norms will result in improving one of the parameter of UDAY i.e. loss level but at the same time other parameter i.e. gap between ACOS and ABR will go up.

It is submitted that the normative consumption norms used for un-metered category consumption has not been revised for many years. Given the changes in rainfall, water use, and cropping patterns, it is essential that the Hon'ble Commission and the discoms conduct a comprehensive study to assess agricultural demand to revise the methodology for estimation of demand, especially for the 2nd control period. The UPERC Multi Year Distribution Tariff Regulations, 2014 provides the methodology for estimation of un-metered sales forecast. The relevant provision of the Regulations has been quoted below:



17 Un-metered Sales Forecast

17.1 Methodology for determination of un-metered sales

a) Till the time 100% metering of electricity consumers is achieved in area of operation of Distribution Licensee, an independent study shall be conducted by the Distribution Licensee to assess actual consumption of power by unmetered consumer segment.

b) For three years, i.e. FY 2015-16, FY 2016-17 & FY 2017-18, year-long, month-wise, block-wise study shall be conducted by the Distribution Licensee and submitted to the Commission.

c) The study referred to in clause (b) of these regulations shall cover actual consumption in the zones (hours of usage, specifications of motor (power etc.)) demonstrating seasonal impact, economic development, demographics consumption pattern, etc. This would aid to develop baseline norms pertaining to electricity consumption in un-metered consumer segments.

d) Baseline norms shall be established after completion of study in the first year which shall be revised / fine-tuned in the remaining two subsequent years.

e) After three years of annual study leading to streamlining of processes, study shall be conducted on alternate year basis.

f) Stratified random sampling shall be used to identify consumers in block/ district of study which would be, well distributed representation of the block under purview such that sampled consumers shall exhibit same demographic profile, energy consumption pattern, water level etc. as the block. Provided that the sample selected shall be from all the block / districts in the state.

Maharashtra Electricity Regulatory Commission (MERC) constituted a working group (consisting of MERC officials, discoms officials, think tanks and others) to study the agricultural consumption in their state. The working group in its final report concluded that the feeder meter-based analysis enables capturing consumption of a large number of agricultural consumers in an economical, efficient and reasonably accurate manner[14]. It is important to note that Hon'ble Commissions in Punjab and Haryana have followed a feeder data-based approach to estimate agricultural sales.

[14]https://www.mahadiscom.in/wp-content/uploads/2020/07/32_11.03.2020_-Final_Report_AG-Working-Group.pdf

Significant feeder separation[15] has already been achieved for agricultural feeders in Uttar Pradesh. The Hon'ble UP Commission should also initiate an independent study to assess agricultural consumption based on feeder input data and sample surveys and accordingly decide the sales for the 2nd Control period (FY 2020-21 to FY 2024-25).

Estimation of agricultural demand based on actual supply hours

Based on media reports[16], it is submitted to the Hon'ble Commission that the discoms have been rationing power to agricultural consumers on account of feeder separation, which could be necessary as part of some policy directive[17]. However, in the previous and current filings, the discoms have projected 14 hours of supply, whereas, on ground it is 10 hours of supply to agricultural users. The methodology for projection based on 14 hrs, 120 days of supply was considered by the Commission in its Tariff Order for FY 2019-20 dated September 3, 2020. It is important to note that the projected supply hours get fed into demand estimations, which have serious implications on revenue recovery, cross-subsidy requirement, subsidy and distribution losses estimation.

It is requested that the Hon'ble Commission get clarity from discoms on the actual supply hours to agricultural consumers and revise the methodology of determination of sales of un-metered consumers. Based on this, the sales estimates especially for un-metered agricultural consumers shall be determined and factored-in for APR for FY 2019-21 and ARR FY 2020-21.

Un-metered sales have increased drastically, while the metered sales are projected to reduce for FY 2020-21

In FY 2019-20, the Hon'ble Commission has approved total sales (at the consolidated level) to LMV-5 consumers as 11,433.64 MUs, of which 48 per cent was towards un-metered agricultural sales and the rest as metered sales. The relevant section of Tariff Order FY 2019-20 dated September 9, 2019 (p.278) has been quoted below for easy reference of the Commission.

[15] https://timesofindia.indiatimes.com/city/lucknow/uppcl-curtails-power-supply-to-tube-wells-by-8-hrs/articleshow/70596270.cms

[16] https://timesofindia.indiatimes.com/city/lucknow/uppcl-curtails-power-supply-to-tube-wells-by-8-hrs/articleshow/70596270.cms

[17] In fact, the 'Power for All' initiative of the central government talks of 8-10 hours of power to agriculture.

6.2.14 The Commission has recomputed the sales for LMV-5 Rural Schedule (unmetered), the computation for the same is depicted below:

Table 6-8: Revised computation for LMV-5

FY 2019-20	
LMV-5: Private Tube Wells/ Pumping Sets	**Recomputed Sales (MU)**
PTW: Rural Schedule (unmetered)	
Units as per submission (Mus)	7,240.27
Load Submitted (KW)	32,91,272.69
No. of Days*	120
No. of Hours*	14
Revised No. of Units (Mus)	5,529.34
Reduction in Number of units (Mus)	-1,710.94

* Assuming that the PTW category needs a total of 120 days of power with each day supply of 14 hours.

6.2.15 The Commission has revised the Sales of FY 2019-20 for LMV-5 Category (PTW: Rural Schedule (unmetered)) and recomputed the Sales as shown below:

Table 6-9: Approved Sales of LMV-5

FY 2019-20	
LMV-5: Private Tube Wells/ Pumping Sets	**Sales (MU)**
PTW: Rural Schedule (unmetered)	5,529.34
PTW: Rural Schedule (metered)	4,148.71
PTW: Urban Schedule (metered)	1,755.60
SUBTOTAL (LMV-5)	**11,433.64**

The discoms in their filings for FY 2020-21 have projected a total sale (at the consolidated level) to LMV-5 consumers as 12,987.19 MUs, of which 96 per cent is projected towards un-metered agricultural sales and the rest four percent as metered sales. The relevant section of DVVNL tariff petition (p.121) has been quoted below for easy reference of the Commission.

Consumer Category/ Sub-Category	Projected Sales (MU)	Estimated Revenue (Rs Cr)	Average Billing Rate (Rs/Unit)
Inst: Private : 0 – 1000 kWh / month	44.83	73.99	16.50
Inst: Private : Above 1000 kWh / month	105.70	127.89	12.10
LMV-4: Light, fan & Power for Institutions	**808.35**	**889.64**	**11.01**
LMV-5: Private Tube Wells/ Pumping Sets			
Unmetered	**12,507.04**	**2035.81**	**1.63**
PTW: Rural Schedule (unmetered)	12,507.04	2035.81	1.63
Metered	**480.16**	**195.68**	**4.08**
PTW: Rural Schedule (metered)	321.11	85.08	2.65
PTW: Urban Schedule (metered)	159.04	110.60	6.95
LMV-5: Private Tube Wells/ Pumping Sets	**12,987.19**	**2231.48**	**1.72**

The following observations can be made from the above:

a. The un-metered sales have doubled in FY 2020-21 as compared to previous year
b. The metered sales have reduced from 52 percent in FY 2019-20 to four per cent in FY 2020-21

The above observations call for a detailed scrutiny and explanation from the discoms towards their sales estimation. It is requested to the Hon'ble Commission to take note of the above discrepancy in the demand estimation and factor it in for determination of ARR FY 2020-21.

On reporting of revenue subsidy

10. Reporting of revenue subsidy and payment delays

The discoms have not provided any information on payment delays on the receipt of revenue subsidy. The discoms are dependent on subsidy for a large portion of their revenue requirement, and any delays in subsidy payments are likely to adversely affect the working capital requirements and thus, further exacerbate the financial stress.

A few good practises are being followed in Punjab, where Punjab Electricity Regulatory Commission (PSERC), in the tariff and true-up orders and petitions submitted by Punjab State Power Corporation Limited (PSPCL), have been reporting category-wise information on subsidies, delays in subsidy payment and interest cost due to the same. The PSPCL, based on the PSERC directions, is also providing information on subsidy payments on a fortnightly basis. It is proposed to the Hon'ble Commission that good practises be adopted to ensure regulatory accountability. The Hon'ble Commission can direct the discoms to submit the following information on a monthly, semi-annual and annual basis[18]:

- Break up of electricity subsidy paid to each consumer category in the concerned period. This should include details such as tariff subsidy and subsidy on fuel surcharge levied.
- 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
- 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 details of 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.

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.

[18] Prayas Energy Study "Elephant in the room"

Adjustments of COVID related relief/measures in the ARR and tariff determination for FY 2020-21

11. Mitigation of adverse cash flow impact due to COVID-19 impact on the discoms

The IMF has estimated that the adverse impact of lockdown and COVID-19 pandemic on Indian economy would be majorly in the form of:

a. Sharp rise in unemployment
b. Stress on supply chains
c. Decrease in Government income
d. Collapse of tourism and hospitality industry
e. Reduced consumer activity

This may adversely impact the consumer's ability to pay their electricity dues. This might also adversely impact the position of debtors and subsequently the collection efficiency of the discoms. In view of the above, it is requested that the Hon'ble Commission kindly advise the State Government for approval of subsidy support. This would protect consumers from getting their electricity supply disconnected due to non-payment of electricity dues. This would also save the discoms from the expected impact of bad debt. Similar subsidy request was made by BSES Rajdhani Power Limited to the Delhi Regulatory Commission in their filings for FY 2020-21.

12. Accounting of various relief/measure announced by Central and State government under the COVID 19 assistance package

Government of India's Rs 90,000 crore liquidity infusion scheme to clear the outstanding dues owed to IPPs

UPPCL/discoms have evinced interest to avail the facility of liquidity infusion scheme. UPPCL has requested the loans to the tune of Rs 21,000 crore[19] to meet their obligations. The discoms in their submissions have not provided any working/details on such arrangement. It will be important to understand how the interest amount for such loans is being treated in the current and the ensuing years ARRs, and whether the interest can be passed through the ARRs of the discoms.

It is requested that the Commission directs discoms to provide clarity on the adjustments of such loans in the ARR for FY 2020-21 and also for the ensuing years.

Adjustment of offered CPSU gencos and transcos rebates to the discoms

The Commission is aware of the discount being offered by CPSE, NTPC offered to the tune of Rs. 1363 Crore to all discoms[20] in the country. It is not clear how much rebate would be offered to UPPCL. It will be interesting to understand how much rebate is offered to UPPCL/discoms and how such rebates are being treated in the current and the ensuing years ARRs.

[19] https://www.financialexpress.com/industry/withholding-payments-to-ipps-goes-against-intent-of-the-package-power-ministry-tells-up/2059024/
[20] https://www.financialexpress.com/industry/new-liquidity-infusion-scheme-private-power-producers-say-no-to-ups-demand-for-discounts/2049986/

It is requested that the Commission directs discoms to provide clarity on the adjustments of such rebates in the ARR for FY 2020-21 and also for the ensuing years.

Adjustment of various billing related rebates/waiver announced by State government to various categories of consumer under the ambit of COVID relief

The Commission is aware that various billing related rebates/waiver are announced by State government[21] to various categories of consumer under the ambit of COVID relief. It is not clear how such announcements are being factored in the ARR and tariff determination for FY 2020-21, for example, will such a rebate come as a subsidy support from the State government? Has the subsidy been already provided to the discoms? It is requested to the Commission to direct discoms to provide clarity on the adjustments of such rebates in the ARR and tariff determination for FY 2020-21.

Discom's performance metrics – Billing efficiencies, Smart Meter evaluation, and OTS scheme

13. Billing of consumers on meter reading basis/ provisional basis

As per UPPCL's open source data, it is provided that nearly all the rural and urban domestic consumers were billed on a monthly basis in 2019, which indicates good operational performance. However, what is important to ask whether consumers are getting billed based on their meter reading or on provisional basis. It is a well-accepted fact that the consumers getting billed on meter reading basis have higher inclination towards making payments than consumers who are billed provisionally. The MU-based bills have a high trust factor between discoms and consumers. Table 8 highlights that a significant share of consumers who do not receive bills from the meter readers or from discoms' counters, and are automatically billed on provisional basis by the system. It is therefore, suggested that it is inappropriate on part of the discoms to calculate billed units on the basis of total billed consumers, including the ones provisionally billed.

[21] Attached separately as Annexure I

Table 8: Up to one-fifth of consumers may be billed provisionally in PuVVNL discom

	RAPDRP consumers							
	DVVNL		MVVNL		PUVVNL		PVVNL	
	Nov-19	Dec-19	Nov-19	Dec-19	Nov-19	Dec-19	Nov-19	Dec-19
Share of billed consumers (out of billable/active consumers)	99%	99%	98%	96%	98%	97%	99%	99%
Share of Counter billed (out of all billed)	9%	10%	17%	20%	14%	18%	8%	9%
Share of SBM Billed (out of all billed)	84%	83%	74%	73%	72%	69%	88%	87%
Share of Prov Billed (out of all billed)	7%	7%	9%	7%	13%	13%	4%	4%

	Non-RAPDRP consumers							
	DVVNL		MVVNL		PUVVNL		PVVNL	
	Nov-19	Dec-19	Nov-19	Dec-19	Nov-19	Dec-19	Nov-19	Dec-19
Share of billed consumers (out of billable/active consumers)	91%	94%	98%	95%	99%	99%	99%	99%
Share of consumers billed by the meter reader (out of billed consumers)	88%	87%	83%	85%	80%	81%	89%	89%
Share of consumers billed provisionally (out of billed consumers)	11%	13%	17%	15%	19%	19%	11%	11%

Source: Authors' analysis from UPPCL open data source

Further, as per CEEW's survey of a representative sample of 300 consumers in MVVNL area of operations, only 56 per cent of domestic consumers receive bills in any form on a monthly or bimonthly basis. Also, 20 per cent of consumers have never received any bills in any form — physical copies or through electronic channels. To bridge the trust gap between consumers and discoms, it is suggested that UPPCL/discom should strive towards improving the share of bills being issued on MU basis.

What factors are resulting in low billing inefficiency? and What needs to be done to improve the status quo?

The high AT&C losses with the discoms are the result of billing and collection inefficiencies, especially in rural areas. As of December 2019, only 58 per cent of the billed rural consumers were billed on the basis of metered-units (MU). CEEW's interactions with various on-ground stakeholders reveals that the gaps in billing are majorly a result of the following:

- **Inadequate allocation of meter readers** across the geography,
- **Low incentives offered to meter readers** to traverse long distances and generate bills. A meter reader on an average earns ₹4 on every bill generated on MU basis and this amount also includes their travel expense.
- Some of the newly electrified consumers have yet to receive a **meter-sealing certificate** or have not been properly indexed in discom's billing database, which is crucial for the first bill generation.
- **Understaffing at the sub-division level** is another challenge. Mostly two employees (including a sub-division officer along with a junior engineer) manage several operations ranging from supply interruptions, billing disputes, disconnections, consumer grievance redressal, and organising camps in villages to collect payments among others. Further, the human resource crunch has substantially increased with the addition of new consumers under the Saubhagya scheme. In one of our analysis for MVVNL, we observed

that for FY 2018-19, the employee expenses of MVVNL has reduced by 12 per cent, despite an increase in the consumer base by 37 per cent. Also, the discoms (at the consolidated levels) has been consistently underspending on employee cost component, vis-a-vis the expenses approved by the regulator.

- Another significant factor resulting in gaps in bill-delivery is the **absence of updated consumer phone numbers** in the billing database. As per CEEW's survey of 300 consumers in MVVNL region, the above has emerged as the primary reason for low receipt of bills during and before the lockdown. Due to this, bills generated on a provisional basis and sent via SMS are often not delivered to consumers. These gaps are higher in case of the rural database.
  UPPCL/discoms has already initiated the KYC exercise to update consumer phone numbers. The Commission must however, issue directions to discoms for undertaking the exercise on a war footing. The Commission can also ask UPPCL/discoms to include in the electricity bills the provision for consumers to register their phone numbers. This measure has already been adopted in Uttarakhand.
- **Incomplete tagging of connections:** CEEW's interactions with the on-ground discom staff bring out a significant proportion of consumers who have not been tagged feeder-wise and village-wise. Tagging of consumers is essential to monitor and target interventions at the village and feeder level.

It is suggested that the UPPCL/discoms take cognisance of these gaps and work towards bridging them.

14. Huge amounts of surcharge waived under OTS, but non-payment behaviour still remains unaddressed

For about 20 lakh consumers in the state who made payments under Surcharge Samadhaan Yojana in 2019, the late payment surcharge amounting to ₹1578 crores was waived off (Pg 19, MVVNL Data Gap Reply Annexure Part 1). Still, on an average only 11 per cent rural consumers paid their bills each month in 2019. CEEW's analysis from a survey of a representative sample of randomly picked 300 consumers in MVVNL brings out that consumers in rural areas do not make timely payments due to the following major reasons:

- The rural incomes are mostly dependent on agricultural cycles and hence, most consumers are not capable of making payments every month.
- Consumers are further deterred from not paying after their bills have accumulated due to consistent non-payment for months. Hence, they await the OTS scheme to be announced so that their surcharge can be waived. It also creates a culture of non-payment among consumers.
- Rural consumers who do not have any other payment modes available in and around their villages, and are distant from discom's local offices and find it difficult to make regular payments.

Given the above, we suggest the discoms consider initiating pilots to test the following:

- **Assessing the impact of payment flexibility on consumer payment behaviour:** Monthly billing results in charging of late payment surcharge every month if payments are not made on time. Discoms could test the impact of reduced billing frequency - bimonthly or once in 3 months - on payments.
- **Phasing out OTS Scheme and introducing measures to improve regular payments**: As discussed above, OTS promotes a culture of non-payment among consumers.

Despite the orders from the Commission, the OTS scheme continues to be implemented by UPPCL. The discoms must consider phasing out the scheme and introduce appropriate measures to improve regular payments.

- Discoms need to organise more payment collection camps,
- Consumers must be made aware of the partial payment options.
- Measures to collect door to door payments must be explored. Such practices have already been adopted in states like Bihar and Odisha and significant increase in the overall collection efficiency of the state have been realised.
- Incentives should be introduced to promote online payments

The Commission must take cognisance of these issues, issue suitable directions and periodically monitor the performance of the UPPCL/discoms on this front.

15. Methodology for evaluation of cost benefit analysis of large-scale smart meter deployment

The discoms have provided an assessment of the progress made in improvement in operational and financial efficiency due to smart meter deployment. The filings reflect that in two years there has been an overall increase of four per cent in billing efficiency and a reduction of 2.3 per cent AT&C losses for the 88 Divisions in UP where smart meters have been deployed (Pg 29, MVVNL Data Gap Reply, Annexure 1).

However, the methodology used for the assessment does not seem appropriate. The total share of smart meters in the 88 divisions is only 26.9 per cent, and in the select divisions of PUVVNL (Rural) and KESCO the share of smart meters is as low as three per cent and 14 per cent, respectively. Thus, the change in billing efficiency and AT&C losses of the overall divisions may not entirely accord to smart meter deployment. The Commission and the UPPCL/discoms must consider revising the existing evaluation methodology. The discom should instead track the progress of all smart meter consumers and assess how were they being billed and making payments before they received smart meters vis a vis after.

To assess the effectiveness of smart meter deployment, it is requested to the Hon'ble Commission to issue directions to the discom to consider revising the methodology.

Other Issues - General Comments

16. Discrepancies in reporting of AT&C loss figures for FY 2018-19

On comparing the AT&C loss reporting as per true-up filings for FY 2018-19 with PFC reporting, discrepancies were observed in the figures for MVVNL and KESCO, as highlighted in table 9. The Commission must take cognisance of the discrepancy and direct discoms to explain the reasons for different reporting across different forums.

Table 9: AT&C losses reported by PFC are much higher than those reported by discoms

	Figures for FY 2018-19					
	Input energy (True up Filings)	Input energy (PFC)	Energy billed (True up Filings)	Energy billed/ sold (PFC)	AT&C losses (True up Filings)	AT&C losses(PFC)
MVVNL	21287.18	21258	16697.54	16669	33%	40.64%
DVVNL	24,082.45	24,082.00	19,035.31	19,035.00	37.12%	37.12%
PVVNL	33,336.73	33,337.00	28,393.36	2,88,393.00	22.27%	22.27%
PUVVNL	26,153.55	26,154.00	20,795.20	20,795.00	39.64%	39.64%
KESCO	3468.97	3469	3173.84	3174	16.49%	15.13%

Source: Authors' analysis based on UPPCL/Discoms' ARR petitions and PFC reports

17. Physical verification of capital works

In order to ensure infrastructure development, reduction in AT&C losses, reliability improvement and load growth, the discoms are required to undertake major investments in the distribution System. However, it is also important to verify whether various equipment and materials for execution of capex schemes have been procured through fair, transparent and competitive means, and the veracity of payments made against the set purchase orders need to be verified.

To address the above concern, it is submitted that provision for physical verification of assets should be developed by the Commission which shall include the physical audit of the assets capitalized on quarterly or semi - annual basis. Adoption of technology to ease the process of physical verification of assets should also be evaluated.

Further, the provisions for Geographical Information System (GIS) mapping of the assets by the Licensees also need to be framed as this will lead to physical verification of the assets linked with their Fixed Asset Register. Such an approach has been adopted by Delhi Electricity Regulatory Commission.

18. Ensuring maximum participation in the Tariff proceedings:

Drop boxes should be made available for consumers at different places in the state so as to ensure maximum participation during the tariff proceedings. One suggestion could be to ensure that suggestion boxes are available at all the sub-stations of discoms. The concerned SDO of the sub-station should ensure sending all the comments/suggestions on the tariff Petition received in the drop boxes to the Commission's office every month. Similar approach has been adopted by the Uttarakhand Electricity Regulatory Commission.

White Paper on Sector Issues and Challenges

19. Commission to publish a white paper on challenges before the discoms and seek stakeholder comments[22]

With the rising cost of supply, increased direct subsidy requirement, mammoth dues to generators, and accumulated financial losses, it is clear that the discoms in Uttar Pradesh are under severe financial stress. Measures need to be taken to reduce the average cost of supply and improve revenue realisation. There is a need for a comprehensive document (can be

[22] Some learnings are drawn from Prayas Energy Group Submission in MPERC

considered as a 'White Paper') highlighting the plan and strategies to ensure that discoms' financial predicament does not worsen with the advent of competitive solar options, sales migration, and increasingly viable storage options. Such a plan would also need to consider that demand for affordable, reliable power by newly electrified households, small homes and enterprises are met. This will help in better understanding of the immediate challenges of managing past dues and existing high cost power procurement. Unless guided by conscious policy decisions, these changes will unfold chaotically, leaving the discoms stranded with excess capacity and huge losses.

In this context, it is suggested that the Hon'ble Commission should develop a White Paper to assess strategies needed for the next 3-5 years by the sector, which includes:

- Assessment of demand based on macroeconomic indicators, progress of government development programs, environmental/resource factors, historic trends of sales, elasticity of sales to tariffs, historic trends of migration of consumers to open access and renewable options, change in appliance usage and load patterns etc.
- Assessment of least cost supply options catering to this demand considering the impact of increased uptake of renewable energy technologies.
- Assessment of impacts of various tariff design and business models to ensure revenue recovery for the discoms while encouraging broadening and deepening of competitive markets in the sector.

The study can present various models and scenarios to assess optimal strategies for the state and can also assess the impact on power availability, costs, tariffs and losses for the discoms. Such a white paper can be uploaded on the Commission's website for public consultation and can be factored in tariff determination for the ensuing years.

Our endeavour via this submission is to share ideas to improve performance and efficiency of the discoms of Uttar Pradesh.

We request an opportunity of hearing be provided in order to further clarify/explain our submission in the aforesaid proceedings. The above submission is provided for kind perusal of the Hon'ble Commission.

Thanking You,

Council on Energy, Environment and Water