

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 FY22, Annual Performance Review for FY21 and True-up of FY20 for Uttar Pradesh DISCOMs

Submission from Prayas (Energy Group), Pune

14th May 2021

DISCOMs in Uttar Pradesh have filed petitions for true-up for FY 2019-20, annual performance review for FY 2020-21 and for determination of ARR and tariff for FY 2021-22 before the UPERC. With reference to this, the Commission has issued a public notice dated 08.04.2021 in the matter.

Prayas (Energy Group)'s submission highlights several crucial issues and discusses 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.

The current year, like the last year, has presented DISCOMs with very unique challenges, leading to slowdown of business and financial constraints amidst a pandemic. Appropriate measures must be taken in such times to ensure prudent pass-through of costs, without burdening consumers. Prayas (Energy Group)'s submission aims to highlight few issues with the intention of ensuring better processes, overall sector viability and consumer protection in Uttar Pradesh. These are highlighted in the sections below.

1. DISCOMs' filing of data formats

UPERC has taken a welcome step in issuing directives, and mentioning in the admittance order for this year's tariff process that DISCOMs must upload their filings in searchable PDF formats on their websites, along with excel sheets. All DISCOMs have hosted text searchable PDFs, which is a good step. However, even though DVVNL and PVVNL have uploaded spreadsheet versions of their data formats, MVVNL and PuVVNL have done so only in PDF formats, and KESCO's are missing. The absence of such files and inconsistencies in hosting them on the website makes it difficult to extract information for effective analysis and public participation.

The DISCOMs uploaded their petitions and formats at different times on their websites, which made data aggregation tedious. Previously, UPPCL used to host all DISCOMs' petitions in one place on its website. To enable effective participation, UPERC should either direct UPPCL to continue with such practice, or host all relevant petition files and formats on its website. The SERCs in Andhra Pradesh, Delhi, Telangana and Madhya Pradesh have a good practice of archiving and hosting all tariff related filings, petitions and orders on their own websites. It is requested to the UPERC to adopt the same practice.

To make tariff process data more accessible, the following is recommended:

- UPERC or UPPCL to host and archive all filings and petition related documents of all licensees on its website
- All data formats to be uploaded as spreadsheet format (.xlsx or .csv)
- Reply to data gaps to be uploaded by all DISCOMs in the same format that are easily text searchable

2. Sales and revenue estimation

2.1. Sales projections

The DISCOMs in their tariff petitions have claimed that they have revised sales projections for FY22 (previously provided in their business plans), based on the current situation with respect to the COVID-19 pandemic. While

this is the most reasonable thing to do, it seems that there are still high projections being made compared to revised sales estimates for FY21. Sales growth projections are between FY21 and FY22 is in the range of 13%-33% for non-domestic consumption and for HV sales, as highlighted in Table 1. With new waves of the pandemic hitting the country, necessitating lockdowns and mobility restrictions, it is doubtful if such high sales figures can be achieved.

It is requested to the UPERC to take into consideration the past growth trends and current realities before approving final sales. This is to ensure that the projections are realistic and not overestimated, as such a situation affects revenue gaps subsequently.

Table 1: Sales projections by UP DISCOMs for FY22

| Consumer Category | FY20 | FY21 | FY22 | Percentage increase from FY20 to FY21 | Percentage increase from FY21 to FY22 |
|---|--------|--------|--------|---------------------------------------|---------------------------------------|
| LMV-1: Domestic Light, Fan & Power | 42,374 | 42,716 | 45,070 | 1% | 6% |
| LMV-2: Non-Domestic Light, Fan & Power | 6,448 | 5,962 | 6,719 | -8% | 13% |
| LMV-3: Public Lamps | 741 | 695 | 730 | -6% | 5% |
| LMV-4: Light, fan & Power for Institutions | 1,072 | 981 | 1,111 | -9% | 13% |
| LMV-5: Private Tube Wells/ Pumping Sets | 13,597 | 14,837 | 13,999 | 9% | -6% |
| LMV 6: Small and Medium Power upto 100 HP | 3,323 | 2,909 | 3,425 | -12% | 18% |
| LMV-7 Public Water Works | 1,736 | 1,653 | 1,797 | -5% | 9% |
| LMV-8 State Tube Wells and Pump Canals | 2,944 | 3,110 | 2,862 | 6% | -8% |
| LMV-9: Temporary Supply | 207 | 157 | 210 | -24% | 33% |
| LMV-10: Departmental Employees | 621 | 603 | 639 | -3% | 6% |
| LMV-11: Electrical Vehicles | - | - | - | - | - |
| HV-1: Non-Industrial Bulk Loads | 3,584 | 2,825 | 3,750 | -21% | 33% |
| HV-2: Large and Heavy Power above 100 BHP | 11,937 | 10,064 | 12,353 | -16% | 23% |
| HV-3: Railway Traction | 123 | 126 | 152 | 2% | 20% |
| HV-4: Lift Irrigation & P. Canals above 100 BHP | 696 | 661 | 707 | -5% | 7% |
| Bulk Supply | 2,059 | 1,911 | 2,082 | -7% | 0% |
| Extra State Consumer | 29 | 24 | 3 | -87% | 9% |
| Grand Total | 91,486 | 89,213 | 95,608 | -2% | 7% |

Source: Data provided by DVVNL as part of tariff petitions, in presentation dated 1.4.21

2.2. Tariff revisions

As per the admittance order issued by the UPERC on 8th April, 2021, DISCOMs have not proposed new tariffs. From Table 2, it can be seen that while the ACoS has been projected to increase by more than 6% between FY21 and FY22, the average tariff barely increases, increasing the ACoS-ABR gap to ₹2.23/kWh in FY22. This entails having a revenue gap of about ₹ 11,000 Crore. The DISCOMs should be prudent about their costs, especially power purchase, given the uncertainty concerning the pandemic, to maintain or reduce the ACoS-ABR gap. We request the UPERC to disallow costs that are incurred over and above what the norms permit as per the MYT regulations.

Upholding the APTEL order O.P. 1 of 2011, Ministry of Power has recently issued a directive to states to revise tariffs on time and to prevent accumulation of revenue gap, which attract carrying cost and have to be borne by consumers in the future. Under the MoU signed as part of the UDAY scheme, DISCOMs are supposed to carry out timely filing of tariff petitions, so that there is timely issuance of tariff orders.

In this regard, without delay, UPERC should revise tariffs. If government subsidy commitment is not communicated in time, then the UPERC can come up with a revised tariff schedule without considering subsidy. Once there is more clarity on exact subsidy amount, same can be implemented, while billing concerned beneficiaries.

Table 2: Statistics of UP DISCOMs over the years

| Particulars | FY 2018-19 | FY 2019-20 (True-Up) | FY 2020-21 (APR) | FY 2021-22 (ARR) |
|-------------------------------------|------------|-------------------------|---------------------|---------------------|
| Revenue from tariff (Rs. Crore) | 50272 | 54037 | 53677 | 60588 |
| ARR (Rs. Crore) | 60405 | 73049 | 72038 | 81901 |
| Revenue (Gap) / Surplus (Rs. Crore) | -63 | -8892 | -8112 | -11063 |
| ABR (Rs. / kWh) | 5.73 | 5.91 | 6.02 | 6.34 |
| ACoS (Rs. / kWh) | 6.89 | 7.98 | 8.07 | 8.57 |
| ACoS-ABR (Rs. / kWh) | 1.16 | 2.07 | 2.05 | 2.23 |

Source: Data provided by DVVNL as part of tariff petitions, in presentation dated 1.4.21

2.3. Rationalizing tariff sub-categories

The DISCOMs have resubmitted their plan for rationalisation of tariff sub-categories in FY22. It is a good move to see that simplification of slabs has been proposed, especially for domestic consumers, both rural and urban. Five tariff slabs for metered domestic consumers under LMV-1 have been reduced to three categories-namely up to 100kWh/month, 101-300 kWh/month and above 300kWh/month. This is a welcome move as this reduces incentive for meter tampering and splitting.

With rationalisation of sub-categories, for both urban and rural consumers, it is important to remove such differentiation in tariff for these consumers as well. If tariffs for rural consumers are brought at par with urban consumers, DISCOMs will have the same incentive to provide quality supply in rural areas. The tariff design already accounts for lifeline consumption in both rural and urban areas, which can be availed by low-income households. Thus, while protecting such consumers, identical tariff categorisation and rates for other domestic consumers both in rural and urban areas will push DISCOMs to provide better quality supply and in turn, instil trust in rural consumers and boost bill realisation for DISCOMs from such rural consumers.

2.4. General category for consumption up to 100 kWh/month

As per current approved tariff design, for non-domestic consumption under LMV-2, up to 4 kW, the monthly fixed charge is ₹390 and the energy charge is ₹7.50/kWh for the first 300 kWh. Compared to that, domestic rates are much lower at ₹110/month for fixed charge and ₹5.50/kWh for the first 150 kWh for energy charge. Categorisation based on type of use (e.g. - industrial, commercial) subjects small 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 charge similar fixed and variable charges for domestic and non-domestic consumers for the first 100 kWh. Similarly, the fixed charge can be reduced to match domestic rates. For consumption above 100 units, tariff can vary for domestic and commercial categories separately in a telescopic manner. This would ensure certain level of intra-category cross subsidisation and provide price signals for efficient use of power.

2.5. Likelihood of sales migration of HV commercial and industrial consumers

Energy charges of HV commercial and industrial consumers are substantially high. The average tariff for HV 1 consumers is ₹10.26/kWh, whereas the tariff for HV 2 consumers is ₹ 7.94/kWh. Even with proposed cross-subsidy surcharge and wheeling charges, these consumers might be nudged to procure power through open access or set up captive power plants. Captive consumption in UP has been significant at 17%-21% of total consumer sales between 2011-2018 as per CEA All India Electricity Statistics, General Review.

In order to disincentivize sales migration, DISCOMs could increase the fixed charge component to make open access less lucrative. However, it will have unintended consequence of making captive consumption more worthwhile. For a typical 1 MW consumer belonging to HV-1 or HV-2 category, annual fixed cost payments to the DISCOM are close to ₹50 Lakhs. If these consumers were to set up 1 MW solar captive power plants, they could recover 9-13% of their costs in a year.

Given the non-competitiveness of DISCOM tariffs, it is imperative that high paying HV consumers will prefer to reduce dependence on DISCOMs. To understand such migration and for sustainability of DISCOMs' businesses, it is important to track sales erosion and revenue generated from open access and captive consumption during the control period.

It is requested to the UPERC to fix surcharges in such a manner so as to provide certainty for long term migration of industrial and commercial consumers while imposing penalties for short term open access as such actions make power procurement planning difficult for DISCOMs. It would be beneficial to fix cross subsidy surcharge and wheeling charges for the next 5 years.

Commission should direct DISCOMs to conduct a study to quantify the impact of sales migration on its revenues and impact on tariff for other consumers and also how such a sales migration trend can be smoothed. This can't be neglected as Indian Railways has also shifted towards availing open access and DISCOMs have suggested a tariff rationalisation for overcome this situation.

Apart from this, UPERC can issue directives to DISCOMs to report quarterly and annually on number of migrating consumers from and to DISCOM network, along with the load and type of consumer (STOA/ MTOA/ LTOA/ Captive consumers). This is very useful while preparing power procurement strategy of the DISCOMs.

3. Issues on revenue subsidy

3.1. Need for pilot projects for new subsidy delivery mechanisms

Following the DISCOMs' announcement to implement DBT of revenue subsidy, the UPERC issued the following directives in FY21:

To prepare a scheme for direct transfer of subsidy to the consumers in a transparent manner with the approval of the State Government and submit the road map of DBT implementation in next ARR."

"100% metering is a necessary condition for an efficient distribution network and financial viability of the distribution companies. As per the submission made by the Petitioners, the metering of all the consumers (except LMV-5 shall be completed by end of FY 2020-21. The Commission directs that metering of LMV-10 consumers should be completed by end of FY 2020-21. The Petitioners shall also strive to ensure metering of consumers in LMV- category as well because 100% metering of consumers is necessary for implementing DBT mechanism."

In consumer interest, the Commission is requested to modify this directive to focus on implementation of large-scale pilots instead of universal rollout.

While better targeting of subsidy through direct transfers has been discussed in policy documents and recently as part of the draft Electricity Act amendment of 2020, DISCOMs need to conduct pilot projects for the same before going ahead with large scale roll outs to avoid unintended outcomes that might severely disadvantage consumers.

There needs to be clarity about whether subsidy will be directly transferred to individual consumers' bank accounts or the consumer's account with the DISCOM. There will not be much of a change in modality if the latter is taken up and the issue of delay in subsidy payments will not be addressed. However, if the state government is considering implementing subsidy disbursement through DBT by depositing the subsidy quantum in the consumers' bank accounts, as has been done for LPG subsidy programs, then pilot projects need to be conducted.

The uncertainties associated with DBT to consumer bank accounts involve the following:

- If the model of subsidy payment requires consumers to first pay unsubsidised bills, and on basis of such payment, the government credits the subsidy amount through DBT to the consumer's bank account, it might lead to cash flow issues for poor and agricultural consumers. To circumvent this issue, in the first month, an advance amount of subsidy could be credited to the consumer's bank account based on

average bills of past months. In subsequent months, subsidy can be credited based on actual consumption of the previous month and can be adjusted going forward.

- If there is a delay in transferring subsidies to consumers then it might mean substantial high bill payments for rural domestic and agricultural consumers. This tariff shock might lead to default and encouragement of a non-payment culture. With so many newly electrified consumers in the state belonging to the subsidised categories, this might not be a desirable outcome.
- In case of tenancy, it is unclear whose bank account the DBT will be credited to- the owner of house in whose name the connection is, or the tenant who actually pays the electricity bill. In case of agriculture, farming practices and ownership is much more complicated where tenancy farming is practised on fragmented pieces of land.

Even before DBT pilots are conducted, we suggest UPERC to come up with a white paper on subsidy disbursement process through DBT (covering challenges, reporting, grievance redressal and infrastructure required to support DBT) for a wider public consultation.

UPERC follows a good practice of reporting in the annual tariff orders the category wise amount of subsidy promised and paid by the government of UP and will be good to continue with such practices even with change in modalities of subsidy payments. Additionally, it is a good practice to arrive at two separate tariff schedules- one with incidence of subsidy and another without subsidy.

4.2. 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 SERC 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 SERC 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 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 unsubsidized tariff

5. Accountability for smart meter roll out plan

5.1. Clarity on smart meter installation status

UPPCL has claimed that 40 lakh smart meters will be installed as per the smart meter roll out plan. In the tariff petitions for FY21, UPPCL had stated that 10.31 lakh smart meters had been installed in Uttar Pradesh as on 30th

June 2020. However, in FY22 tariff petitions, it is recorded that 19 lakh meters were installed in FY20. It is unclear why there is a difference.

The DISCOMs were able to install 4,73,619 meters in FY21, while they plan to install 13,05,877 meters in FY22. Given that the pandemic continues to affect the country in 2021 as well, it is unclear how the DISCOMs plan to install 9 lakh more meters than it could in FY21, under similar circumstances.

In this regard, the DISCOMs should submit to the Commission, the AMISP's annual installation plan of all 40 lakh smart meter installations in this phase. Further, all future roll-out plans must be approved by the UPERC before selection of the AMISP.

5.2. Publishing quarterly reports

Installing smart meters for all 27 million domestic consumers of UP DISCOMs would mean significant per year costs which is comparable to about 40% of the current O&M of DISCOMs. Given the potential impact on consumers, reporting of progress and expenses should be improved and such information should be provided publicly. The UPERC had prescribed formats for quarterly submission of information with respect to smart metering progress in its November 2018 order as Annexure-A. This format, along with information on net gains should be published on DISCOM's and UPERC's websites for transparency. Table 3 suggests information that must be publicly available.

Table 3: Information that UPERC can direct DISCOMs to make publicly available

| Parameter | DISCOM 1 | DISCOM 2 | ...DISCOM n |
|--|----------|----------|-------------|
| About meter replacement program: | | | |
| Name of area for scheme implementation | | | |
| Consumer categories covered in meter replacement scheme | | | |
| No. of consumer meters per consumer category | | | |
| Target no. of days for replacement | | | |
| Replacement start date | | | |
| Replacement end date | | | |
| Reason for replacement (high loss area/ DSM measure, etc.) | | | |
| Financial benefit estimation per meter: | | | |
| – Savings in power purchase cost due to loss reduction | | | |
| – Savings in cost due to O&M cost reduction | | | |
| – Savings due to increase in collection efficiency | | | |
| – Savings due to any other reason | | | |
| Lessons from cost benefit analysis | | | |
| Implementation agency(s) | | | |
| Responsibilities of implementation agency(s) | | | |
| Payment option in smart meter (prepaid/post-paid) | | | |
| Technology used in smart meter (GPRS/RF, etc.) | | | |
| Cost of implementation (in ₹) | | | |
| Cost borne by DISCOM (in ₹) | | | |
| Cost borne by implementation agency (in ₹) | | | |
| Cost shared with consumers (in ₹) | | | |
| Mechanism of cost sharing with consumers (charged for meter/ cost recovered through tariff, etc) number of years | | | |
| Plan for rollout provided? (Y/N) | | | |
| Lessons from pilot project: | | | |
| Duration of pilot project | | | |
| Meters installed | | | |
| Technology used | | | |
| Payment option in smart meter (prepaid/post-paid) | | | |
| Cost incurred (in ₹) | | | |

| | | | |
|---|--|--|--|
| Benefits incurred for each category (in ₹) | | | |
| Major concerns | | | |
| No. of complains related to metering issues | | | |

5.3. Any additional costs from installation of smart meters should not be passed on to consumers

The DISCOMs had communicated to the UPERC that “*The existing consumers will not have to pay any additional charge for existing meter replacement with smart meters*”, which is recorded in the Commission’s suo moto order from November 2018. Overall OPEX for 40 lakh smart meters was stated as ₹ 3,211 Crore in the same order. The net gain was assessed to be ₹4,056 Crores in 8 years. Along with the petition for FY 21, DISCOMs had submitted with data proof as part of the letter (Letter NO. 280/NOSMP/U PPPCL/RAU/20) that there was decrease in T&D losses, along with increase in units sold and billing efficiency.

However, in the current tariff petition, DISCOMs are claiming now that “*future probable reduction in O&M expenses may or may not happen*” (section 2.5.20 in DVVNL’s petition). Further, that “*The approach of compensating the Opex cost with likely savings in billing and collection efficiency is conceptually erroneous.*” This is exactly in contradiction to what the DISCOMs had claimed and are recorded in the UPERC’s smart meter rollout plan order from November 2018.

The idea of smart metering was introduced with the understanding that it would generate savings. Thus, no costs incurred due to smart metering should be passed onto consumers. However, if there are net gains, they should be factored in while revising tariffs in subsequent years. Regulation 45 of UPERC (Multi Year Tariff for Distribution and Transmission Regulations), 2019 clearly mentions what constitutes operation and maintenance expenses and no cost other than those mentioned should be passed on to consumers for true-up of FY20.

It is imperative that the Commission designs an evaluation framework for smart meter roll outs before the true up processes for FY20 to FY22. The evaluation framework should be based on factors such as reduction in distribution losses, increase in collection efficiency, reduction in employee and A&G expenses etc. Further, if net gains are not observed, then losses incurred by the DISCOMs should be disallowed to be passed through to consumers. This is because the rationale for introducing smart meters has been to reduce losses and observe a net gain from such an exercise. Table 4 highlights data that the UPERC can ask the DISCOMs to submit for understanding the efficacy of the program. If benefits are not realised, the further rollouts should not be approved.

Table 4: Suggested format for tracking benefits of smart metering programs

| DT identifier | Before installation | | | | After installation | | | |
|---------------|---------------------|--------------------|--|---|--------------------|--------------------|--|---|
| | Input energy (MU) | Billed energy (MU) | Revenue billed (net of arrears and subsidy) (₹ Cr) | Revenue recovered (net of arrears and subsidy) (₹ Cr) | Input energy (MU) | Billed energy (MU) | Revenue billed (net of arrears and subsidy) (₹ Cr) | Revenue recovered (net of arrears and subsidy) (₹ Cr) |
| | | | | | | | | |

UPERC had not allowed for the pass through of smart metering costs in FY20 and FY21. The same treatment should be adopted for the new control period as well. Apart from this, DISCOMs should be directed to submit an impact report on smart metering installation in the state by September 2021 to UPERC and further installations should be based on such reports, after being audited by an independent 3rd party.

5.4. Inclusion of performance standards for smart meters in SoP regulations

Going forward, standards of performance regulations need to be revised to incorporate standards for smart meters over and above the provision that exists for prepaid meters in Regulation 16.11.1. Some suggested parameters are listed below. Other than this, there is a need for clarity about payment processes and disconnection criteria. Such criteria should be included in UPERC’s regulations.

Table 5: Some changes that are required in UPERC's SoP regulations

| Parameter | Description |
|----------------------------------|---|
| Consumer fuse-off | Currently mention that a fuse-off complaint has to be addressed within 4 hours in urban areas and 6 hours in rural areas. With installation of smart meters, it will be easier for DISCOMs to detect fuse-off issues and thus response time should be reduced in SoP regulations. Compensation amounts for failure to maintain the time standard should have upward revision. |
| Meter related complaints | Since smart meters will play an important role in temporary disconnection, it is important that any meter related complaint be resolved at the earliest, especially for meter replacement. Stricter standards need to be in place, especially for smart meters operating in prepaid mode. |
| Reporting of reliability indices | Reliability indices are now reported at the feeder level. With smart metering of consumers, it will be possible for DISCOMs to report outage information and reliability indices such as SAIFI, SAIDI, etc., at consumer level. UPERC can mandate DISCOMs to host real-time outage information on their websites. |

Additionally, consumer smart meters can enable payment of compensation to consumers, automatically, for not adhering to standards of performance stated by SERCs in SoP regulations. This is because smart meters can be programmed to record and communicate real time data, and hence they can be used to record power interruptions. In fact, the recently notified [Electricity \(Rights of Consumers\) Rules, 2020](#), by the Ministry of Power, states that automatic compensation can be paid to consumers in case of (i) no supply to a consumer beyond a particular duration, (ii) number of interruptions in supply beyond the limits specified by the SERC. Even the Maharashtra SERC's Supply Code regulations of 2021 mention that automatic compensation is payable for restoration of supply, wherever smart meters are installed. As technology evolves, such payments will become even more viable, overcoming the present transaction costs that a consumer has to bear to claim compensation.

6. Time of day pricing

Given the increase in off-peak surplus, proliferation of captive and open access use from renewable energy technologies, future shift of agricultural demand to day time with the implementation of KUSUM and the importance of managing evening peaks with increased electrification recalibration and widening the scope of ToD tariffs is crucial. In fact, given the recent advances and significant cost reduction in metering technologies, it is suggested that all consumers with a connected load greater than 10 kW should be subject to ToD tariffs within a five year time-frame. This is crucial as many LT consumers can also be incentivised to shift their loads to off-peak times. Given the significant renewable energy capacity in the state, the DISCOMs face peak shortages in some months and surplus power in others. Introducing seasonal ToD tariffs could also help shift load based on availability of generation. To operationalise this methodology, block-wise load and generation data from the DISCOM should be analysed for 3-4 years to identify stress periods during the day and off-peak periods. Similar analysis should be done on a seasonal basis using load duration curves. Given the significant addition of RE the stress and off-peak periods could also track RE availability. To account for RE changes, it is suggested that:

- neither an incentive nor penalty is levied for day-time consumption from 0900 Hrs-1700 Hrs (solar hours)
- the dis-incentive for consumption in the evening peak (shoulder periods/ stress hours) should be higher than the night time incentive
- during stress months, the disincentive for the shoulder periods should be increased
- during high wind months, the incentive for off-peak and evening peak periods can be increased

Considering this, our suggested ToD proposal which varies seasonally is detailed in Table 6. The example is for illustrative purposes and should be recalibrated based on state load profiles and generation availability.

Table 6: Illustrative ToD slots and rates for various seasons

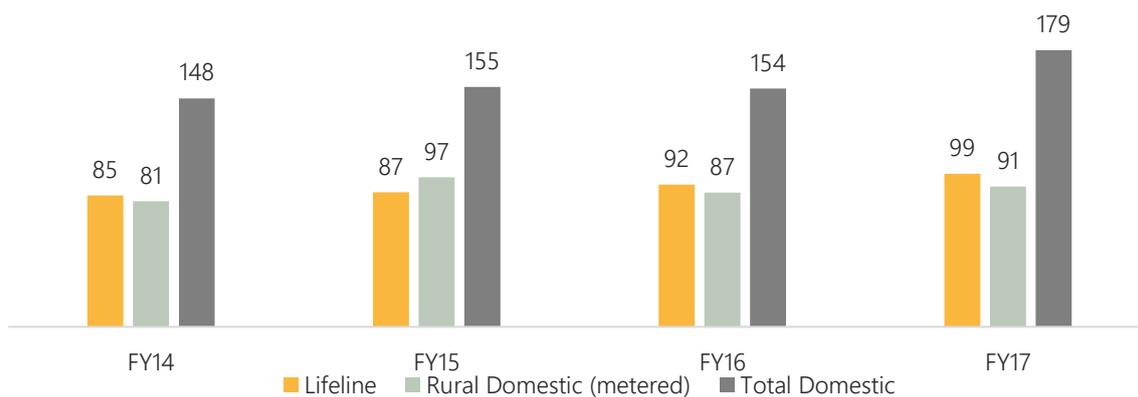
| Seasons | Rs/kWh incentive (-) and disincentive (+) for each time slot | | | |
|----------------|--|------------|-------------|--------------|
| | 22:00-6:00 | 06:00-9:00 | 09:00-17:00 | 17:00 -22:00 |
| Normal months | -1.08 | 0.5 | 0 | 1.5 |
| Stress months | -1.08 | 1.0 | 0 | 2.0 |
| Monsoon months | -1.30 | 0.75 | 0 | 1.2 |

7. Inconsistency in consumption data provided by DISCOMs across years

7.1. Lifeline consumption reporting

Disaggregated sub-category-wise consumption or revenue data is not reported consistently across years in regulatory tariff petitions or orders. Upon scrutiny of the information that is available, lifeline consumption seems substantially high in UP. This is illustrated in Figure 1, where it can be seen that between FY14 and FY17, lifeline consumption was about 90 units per month, and comparable to consumption by other rural metered domestic consumers. Surprisingly, the average monthly consumption by domestic consumers on an aggregate also seems to be significantly high at about 160 units per month.

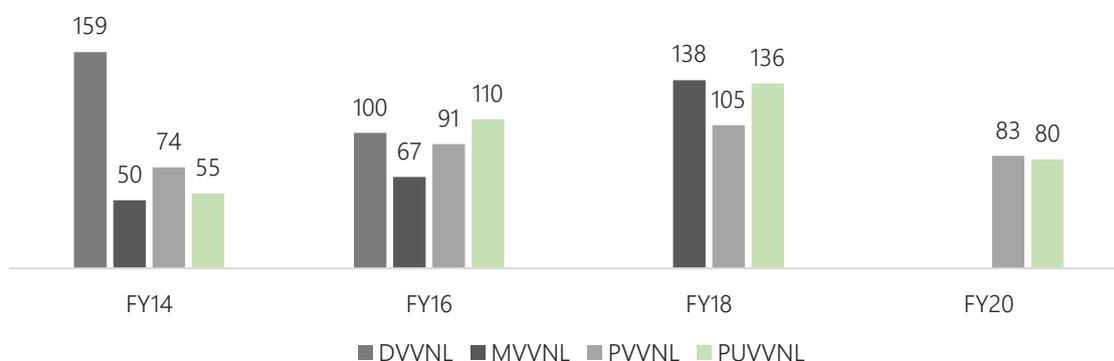
Figure 1: Average monthly electricity consumption across domestic consumer categories in UP (kWh)



Source: Compiled by Prayas (Energy Group) from business plan petitions filed by UP DISCOMs in FY17

The average monthly lifeline consumption across DISCOMs vary significantly as well, as can be seen in Figure 2. In FY14, it was as high as 159 units in DVVNL's service area. PuVVNL's consumers seem to consume the least in the state, but over the years, this consumption has fluctuated. This fluctuation of consumption across years raises questions regarding appliance usage patterns, change in hours of supply, and demand response to tariff changes. It is unclear how any of these factors might have changed in DVVNL in two years, between FY14 and FY16, to bring down the average monthly consumption by 60 units. Similarly, one can wonder as to what kind of changes happened in MVVNL between FY16 and FY18 to increase the average consumption from 67 units to 138 units. Added to this, when UP faces much more interruptions than most states¹, it is hard to imagine such high consumption.

Figure 2: Average monthly lifeline consumption across DISCOMs in UP (kWh)



¹ UP faced maximum interruptions, a total of 57 in the month of September 2019 (https://www.watchyourpower.org/download_uploaded_reports.php?f=ESMI%20Report%20-%20September%202019.pdf), among other states where the electricity supply monitors are deployed as part of Prayas (Energy Group)'s Electricity Supply Monitoring Initiative.

Source: Compiled by Prayas (Energy Group) from business plan petitions filed by UP DISCOMs in FY17 and tariff petitions filed in FY21.

Similar peculiarities can be found in more recent data submitted by the DISCOMs as part of their ARR petitions for FY22, as has been captured in Figure 3. Trued-up data for FY19 shows very high monthly average consumption for lifeline category, at 126 units. This is about 60% greater than the consumption recorded for rural domestic consumers, whose consumption was relatively the same, as seen in Figure 1. The petitioned consumption figures for FY20-FY22 are half of what was recorded in FY19, at about 67-69 units per month. DISCOM-wise lifeline average monthly consumption is illustrated in Figure 4.

Figure 3: Average monthly Lifeline and Rural Domestic consumption (kWh) in UP between FY19-FY22

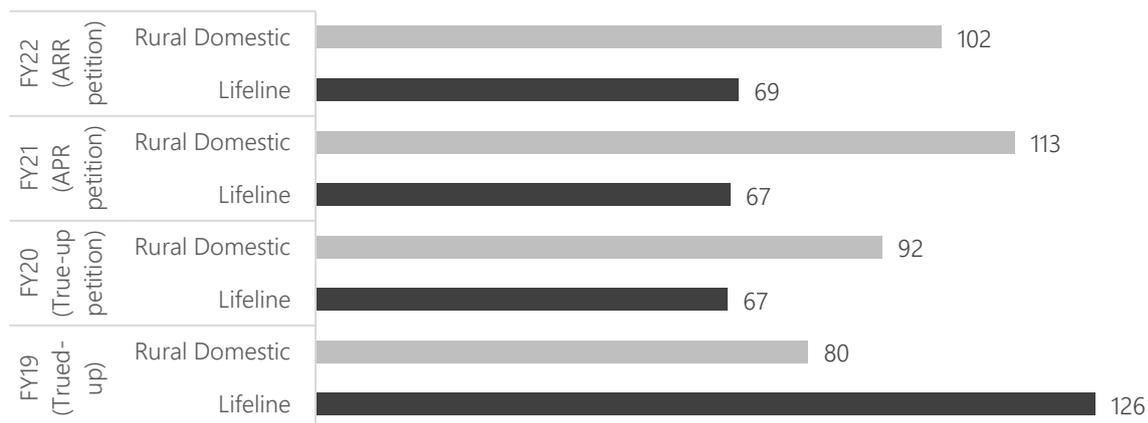
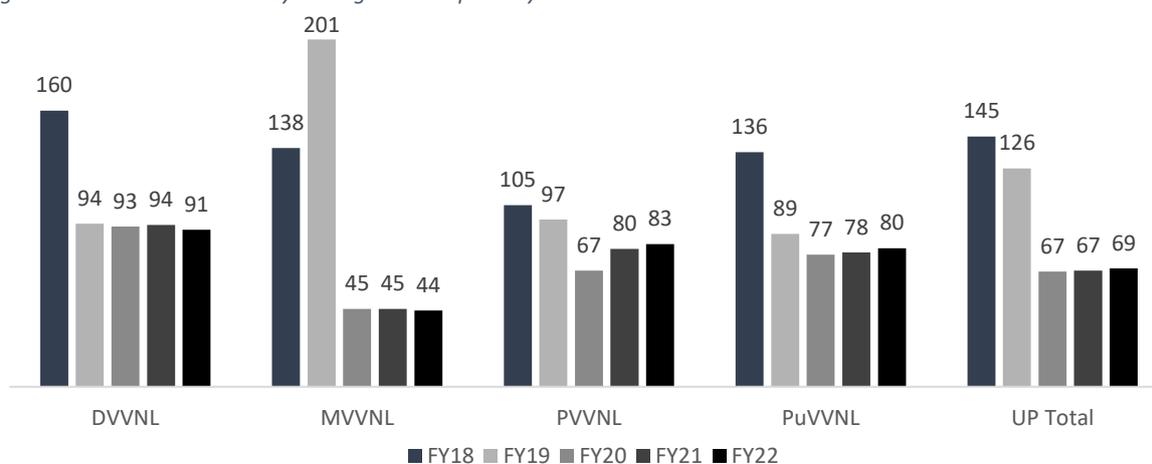


Figure 4: DISCOM-wise monthly average consumption by UP DISCOMs FY18-FY22



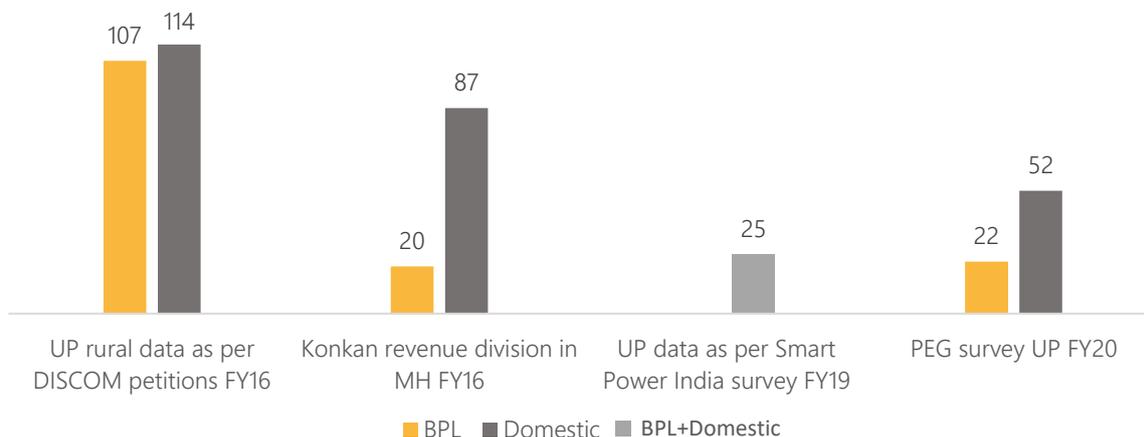
Source: Compiled by Prayas (Energy Group) from true-up, Annual Performance Review (APR), and Aggregate Revenue Requirement (ARR) petitions filed by UP DISCOMs in FY22

Further, upon comparing these average monthly consumption numbers with other sources, there seems to be a stark difference. This has been illustrated in Figure 4, where monthly average consumption of BPL and domestic consumers is captured. The first comparison can be drawn between rural domestic consumption in UP in FY16 (as per DISCOMs’ regulatory submissions) and domestic consumption in the Konkan revenue division in Maharashtra² – a region where household income levels are higher than most rural areas in the country. It can be seen that not only were the BPL consumption numbers starkly lesser in the Konkan area in FY16, but overall domestic consumption also seemed to be much lesser.

² Konkan revenue division considered, comprising of service zones of Kalyan, Kokan (Ratnagiri) and excluding more urbanised areas in Mumbai, Thane, and Vashi.

The second comparison can be done with independent surveys that have been conducted in UP. In case of the survey conducted by Smart Power India³ in FY19, the average monthly household consumption was found to be as low as 25 units per month – almost 90 units lesser than what was reported to be the consumption of domestic consumers by UP DISCOMs three years ago in FY16. Further, according to a survey conducted by Prayas (Energy Group)⁴ in FY20, average consumption by domestic consumers was 52 units, which is half of what was reported by the DISCOMs in FY16.

Figure 5: Monthly average consumption levels (kWh) of BPL and domestic consumers across various sources



Source: Compiled by Prayas (Energy Group) from various sources

7.2. Implications of such data reporting

Having compared the average consumption numbers to other sources, it is clear that statistics provided by DISCOMs are on the higher side. Could this be explained by inadequate metering, and irregular meter reading and bill generation? 41% of domestic consumers in UP were unmetered as recently as in FY14, which reduced to 31% in FY18, and in FY21 most of the DISCOMs have claimed to have metered all their residential consumers⁵. Given the large share of consumers who were unmetered in the recent past, and the problem of irregular meter reading and bill generation, as has been indicated by various surveys, such as that by CEEW⁶, it is likely that provisional average billing might have been the practice in the state.

Regulation 6.2 in the UPERC's Electricity Supply Code, 2005⁷ states that consumers need to be provisionally billed on the basis of average consumption of three billing cycles prior to the last reading. Later on, the bills are to be adjusted as per the actual reading. Going by this, and if the readings for the past three months are also not available, then it is likely that consumers are perhaps billed on a normative basis of 144 units/ kW/ month, based on UPERC's order⁸.

³ Survey based on 39 villages in Uttar Pradesh, can be found in report titled: Rural Electrification in India: Customer Behaviour and Demand (https://smartpowerindia.org/media/1230/report_rural-electrification-in-india_customer-behaviour-and-demand.pdf)

⁴ Survey based on 1500 semi-urban and rural households in Uttar Pradesh, can be found in report titled: Energy Consumption Patterns in Indian Households: Insights from Uttar Pradesh and Maharashtra (<https://www.prayasgroup.org/peg/publications/item/445-energy-consumption-patterns-in-indian-households-insights-from-uttar-pradesh-and-maharashtra.html>)

⁵ Based on Prayas (Energy Group)'s analysis of information during the annual tariff approval process for FY21 (<https://www.prayasgroup.org/peg/publications/item/467-comments-and-suggestions-on-determination-of-arr-and-tariff-for-fy-21-annual-performance-review-for-fy-20-and-true-up-of-fy-19-for-uttar-pradesh-discoms.html>).

⁶ <https://www.ceew.in/publications/electricity-consumers-and-compliance>

⁷ https://www.uperc.org/App_File/SupplyCode2005-18-02-2005-zip99201151657PM.zip

⁸ Normative consumption norms for unmetered consumer categories were issued by UPERC in 2016. While 144 units/kW/month is the consumption norm for areas having 18 hours of supply, 126 units/kW/month is the norm for areas with 14 hours of supply (https://www.uperc.org/App_File/OrderDated9-12-16fni-pdf129201661325PM.pdf).

Such practices, of relying on consumption norms, and thus over-stating consumption can lead to underestimation of losses, a practice that has been widely observed with unmetered agricultural consumers in various states. To add to it, this can lead to overestimation of government revenue subsidy as well. Also, if provisional bills are consistently generated based on such high norms, consumers might be discouraged from paying inflated bills, and might even resort to disconnecting their supply.

Further, domestic consumers are often attributed⁹ to be the largest contributors to DISCOM arrears. While that is untrue and 54% of arrears are from government institutions¹⁰, it is unclear as to how UPERC can hold the DISCOMs accountable for addressing the problem of arrears when they have been providing such unreliable data for years.

7.3. Suggestions to UPERC

Due to the practice of average billing, it is possible that the quantum of outstanding arrears from domestic consumers, that are recorded, might be much higher than actual consumption that has taken place.

Now that almost all domestic consumers have been metered in UP, relevant provisions in the UPERC's Electricity Supply Code, 2005¹¹, can be implemented more effectively. Some provisions include submission of self-assessed bills and trust bills¹² by consumers whose meters are functional. Both concepts are based on self-reporting one's consumption, if a bill is not received by the consumer. Further, the trust billing system takes advantage of online billing facilities. These measures could reduce instances of average billing. However, given that the problem of provisional billing has sustained even with the existence of these provisions for some time now, the UPERC should direct the DISCOMs to invest in consumer awareness.

Further, the recently notified Electricity (Rights of Consumers) Rules, 2020¹³, by the Ministry of Power, emphasize on meters being mandatorily read once every billing cycle in both urban and rural areas. The Rules also encourage the option for consumers to send pictures of their meters, indicating the consumption units and date of meter reading, through their registered mobile or through e-mail. Added to this, the rules mention that provisional bills cannot be extended beyond two billing cycles at a stretch. The UPERC could issue directions to DISCOMs to implement these rules.

Going forward, UPERC can amend the Supply Code to say that all provisional bills generated must state in writing the reason for average billing. Along with this, it is high time to stop using consumption norms for unmetered consumption, that were set in 2016. Instead, provisional bills can be generated based on average consumption of the consumer in the last three months. Also, all bills should state the last date of actual meter reading.

While universal meterisation of domestic consumers should not warrant the use of norms any more, to have a better understanding of what indeed has been the consumption of lifeline and domestic consumers, the UPERC should commission studies to get a clear picture of the status of metering and how well they meters are functioning. Not only will such exercises hold DISCOMs accountable for the capital expenditure they have undertaken, but also will give a true picture of status of the eight million newly electrified consumers, most of whom are lifeline consumers.

⁹<https://energy.economictimes.indiatimes.com/news/power/over-1-crore-consumers-never-paid-their-power-bills-in-up/78819911>

¹⁰ As per UPPCL's "Statistics at a Glance-2018-19" 54% of arrears are pending from government institutions such as public lighting, public waterworks, govt. tube well (<https://drive.google.com/file/d/1rAyGUlxotAxXlOY8jZHokfP9u0MFCvPK/view>)

¹¹ https://www.uperc.org/App_File/SupplyCode2005-18-02-2005-zip99201151657PM.zip

¹² Regulation 6.6 of UPERC's Electricity Supply Code, 2005 details provisions for self-assessed bills. Regulation 6.6 (ii), which details provisions for trust bills was introduced to the Supply Code in 2016 as part of the 7th amendment (https://www.uperc.org/App_File/SupplyCode7thAmendment-pdf118201745013PM.pdf).

¹³ https://powermin.gov.in/sites/default/files/webform/notices/Consumers_Rules_2020.pdf

8. Promoting Renewable energy in the state

8.1. Power Procurement strategy by DISCOMs

With solar and wind sources becoming cheaper in the country and (even though not directly comparable) available at lower costs than thermal power, the state DISCOMs should focus on increasing renewable energy procurement. The additional power procurement planned by DISCOMs in the state for FY 2021-22 has been tabled below:

Table 7: Source-wise PPA addition in FY 2021-22

| Source | Generation from | Capacity (MW) |
|-------------|-----------------------------|---------------|
| NHPC | PARBATI-II | 155 |
| | SUBANSIRI LOWER | 182 |
| | PAKALDUL | 200 |
| IPP Hydro | Rajghat Hydro | 18 |
| | Hydro (Competitive Bidding) | 400 |
| IPP Thermal | Ghatampur | 1683 |
| RE | Wind and biomass | 380 |
| | Solar | 397 |
| Total | | 3415 |

Source: DVVNL MYT Formats data

Of the capacity in the pipeline, 777 MW of the newly added sources are renewable sources (excluding large hydro), which contribute about 22% of the total addition. Considering the latest reduction in tariff for solar and wind projects, DISCOMs could focus on renewable energy. Also, we suggest that any new PPA signing should be based on a state-wide modelling, which identifies the power shortage, the time of power requirement, the source best suited to supply power and also consider the carbon footprint of such power supply along with the economics associated with the same.

We also suggest that the DISCOMs should provide information on the impact of these PPAs (source-wise) on tariff for the financial year for each source.

8.2. Promoting projects under PM-KUSUM scheme

Govt has already come up with PM-KUSUM scheme which aims to provide day-time supply to agricultural consumers in the country. Under the Component A and C of the scheme, some large projects with size ranging from 0.5 MW to 2 MW are allowed in the rural areas where substation capacities are being under-utilised. Under the component C, DISCOMs are eligible to get 30% CFA for the project development. Similarly, under Component A, DISCOMs are eligible to get performance linked incentives of Rs. 0.40 per unit purchased or Rs. 6.6 lakh per MW of capacity installed, whichever is less, for a period of five years from the COD. Apart from this, the benefit of cheaper solar power at daytime for agricultural consumer is itself an incentive for the DISCOMs with saving of more than Rs. 50 crores annually¹⁴. MNRE has already sanctioned 225 MW capacity target for the state of UP under Component A. Hence, we suggest commission to direct DISCOMs to speed up the process of tendering the projects under PM-KUSUM scheme (for both Component A & C).

8.3. Promoting Solar rooftop and solar projects to public institutions through virtual net metering

There is 257 MW solar rooftop capacity installed in the state as on 28th Feb, 2021 (MNRE), out of which 110 MW has been added in the last financial year (i.e., from March 2020 till Feb 2021). While the recent addition is noteworthy, the discoms need to promote solar rooftop projects in a big way, including awareness creation programme for consumers across the state.

The delay in bill payments by public institutions like government offices, govt. hospitals, panchayat buildings, etc. is prominent in the state. As these all come under essential services in one way or another, the disconnection

¹⁴ Considering that 225 MW capacity (with 17% CUF) is installed @ Rs. 3.08 per unit (pre-fixed levelled tariff for projects under Component A) and APPC (including renewables) being Rs. 4.37 per unit, which was approved APPC for FY 2020-21 by UPERC in [Petition No. 1595 / 2020, 1597 / 2020, 1598 / 2020, 1596 / 2020 and 1594 / 2020](#)

due to delay in bill payment is not done, rightly so. So, DISCOMs have to find out ways to reduce the delays in bill payment from such institutions. One of the ways to do so is introducing virtual and group net metering in the state. We propose that commission allow virtual net metering in the state and state government (along with UPNEDA) can install large solar projects (say 100 to 500 MW) in the state which can be used to supply power to such institutions and only any excess consumption is billed from them. This will reduce the dependence of such institutions on DISCOMs for power supply, reduce extent of pending dues and improve collection efficiency. Commission should direct DISCOMs to explore such options with the state government to address the issue of revenue collection from public bodies.

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