

Covid-19 Economic Stimulus and State-level Power Sector Performance: Analyzing the Efficiency Parameters

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Abstract

Against the backdrop of the COVID-19 pandemic, the Government of India, as part of economic stimulus package, increased the borrowing limit of the States from 3 to 5 per cent of GSDP. The power sector reform at the State-level is one of the criteria to avail this extra-borrowing. We analyse the efficiency parameters of power sector and observe that there are statewise differentials in the financial and operational indicators of power sector. We notice that the average AT&C (Aggregate Technical and Commercial) losses that should have been 15% by 2018-19, presently, on average, stand at 26.15%. The ACS-ARR gap (the gap between Average Cost and Average Revenue) has also widened. The power tariff revisions have also not been implemented in the States, and the operational parameters in our analysis indicate widening inefficiencies across States in power infrastructure.

ⁱThe authors are with NIPFP. The authors are grateful to Pinaki Chakraborty for his valuable comments.

1. Introduction

Against the backdrop of the unprecedented impact of the COVID-19 pandemic on the economy, the government in order to revive the growth and make it self-reliant introduced stimulus package under the scheme Aatm Nirbhar Bharat¹. In the last tranche of the stimulus package, the government increased the borrowing limit of the states from 3 per cent to 5 per cent of the GSDP which is Rs. 427300 crores only for the year 2020-2021. However, this extra-borrowing power is linked to promoting specific State-level reforms. These reforms include power sector reforms along with other performance indicators². The criteria of power distribution reform measure, for additional borrowing by the states, portrays the challenges that the power infrastructure sector face. Since 2014, the government has taken several measures in order to improve the power distribution companies (DISCOMS) that have been incurring losses and for their possible financial revival. The Government of India launched the Ujwal DISCOM Assurance Yojana (UDAY), in November 2015, with an objective of “Power for All”. Since the launch of the scheme, the states have been joining this scheme at varied times, and so far, 27 states and 5 Union Territories (UTs) are part of this scheme (except Odisha, West Bengal, Chandigarh and Delhi). This ambitious project aims at improving the health of state power DISCOMs (distribution companies) - which had been incurring losses in the past - by improving their “financial” and “operational” efficiency parameters. This paper analyses these parameters as per the data on January 2021.

Out of the participating states, 8 States (Uttar Pradesh, Rajasthan, Chhattisgarh, Punjab, Jammu & Kashmir, Bihar, Jharkhand and Haryana) borrowed under UDAY in 2015-16 while in 2016-17, 12 States (Uttar Pradesh, Maharashtra, Punjab, Rajasthan, Bihar, Jammu & Kashmir, Andhra Pradesh, Tamil Nadu, Himachal Pradesh, Telangana, Madhya Pradesh and Meghalaya) borrowed under UDAY. We include Union Territories also in the efficiency analysis for comparative purposes in the power sector performance, though the economic stimulus package announcement is only for the States. The remaining states/UTs (Gujarat, Goa, Manipur, Tripura, Uttarakhand, Puducherry and Kerala, Arunachal Pradesh, Karnataka, Mizoram, Nagaland and Sikkim, Nagaland, Andaman and Nicobar Islands, Dadra and Nagar Haveli, Lakshadweep Islands and Daman and Diu) have joined UDAY for achieving operational efficiency by envisaging reform measures under the scheme.

We analyse the state-wise progress of DISCOMs focusing on the financial and operational efficiency parameters after the implementation of the UDAY scheme. There are four financial parameters and ten operational efficiency parameters envisaged in UDAY MoUs to be monitored for time-bound improvement. We examine both aggregate and State-wise performance of DISCOMs under the UDAY scheme on a quarterly basis for all

¹ <https://pib.gov.in/PressReleasePage.aspx?PRID=1624649>

² The other reforms include universalisation of ‘One Nation One Ration Card’, ease of doing business and reform measures that can increase urban local body revenues. Only 0.5 per cent of the additional borrowing is unconditional whereas the rest one per cent of the additional borrowings depend on the implementation of the reform measures taken up by the states in the above mentioned four areas (0.25 per cent each). The economic stimulus package also highlights that the remaining 0.50 per cent of the total will be granted if three out of four reform milestones are achieved by the state. For details, refer <https://www.thehindu.com/news/resources/article31606441.ece/binary/AtmaNirbharBharatFullPresentationPart5.pdf>

the fourteen parameters as per January 2021. A comparison using the data of over three timelines - May 2017, May 2018 and October 2018 are also incorporated. These prior data are exclusive and unavailable now, as the UDAY dashboard replaces the data while updating and time series data for financial and operational parameters is unavailable for UDAY, and only our paper has these prior data for the baseline comparisons.

2. Data: Sources and Issues

The UDAY portal is a national dashboard providing information on aggregate as well as state level performance on all the fourteen efficiency parameters. The dashboard for each state provides state health card and also the Memorandum of Understanding (MoU) signed with Government of India. However, since the states have been joining the scheme on varied timelines, data has not been uniform. Now that 27 states and 5 UTs have joined the scheme, the data is not updated on all parameters. Sikkim, the 22nd state³ to join UDAY provided data only on 2 parameters while states/UTs like Nagaland, Andaman and Nicobar Islands, Dadra and Nagar Haveli and Daman and Diu which had joined the scheme for operational improvements on 20th November, 2017, have yet not updated their health card on any of the parameters⁴(as of May 2018). Lakshadweep joined the scheme for operational improvement on 28th February, 2018.⁵ West Bengal and Odisha have not joined the scheme along with Chandigarh and Delhi. Although the dashboard does not provide us an aggregate picture but with the present information, one can assess the general trend in performance ex-post the introduction of UDAY for the reporting states.

3. Financial Performance

The financial parameters analyzed in this section are the progress in the issuance of UDAY bonds, the reduction in aggregate technical and commercial losses, the reduction in the gap between average cost of supply (ACS) per unit of power and per unit average revenue realized (ARR) and tariff revisions by DISCOMs post UDAY.

3.1 Issuance of UDAY Bonds

Under the UDAY scheme, States agreed to convert 75 per cent of the DISCOM debt into State government non-SLR bonds. These UDAY bonds were priced at not more than 75 basis points above the prevailing cut-off yield rate of government security of 10-year

1) Press Information Bureau, Government of India, Ministry of Power Sikkim becomes 22nd State to join UDAY, February 23, 2017. Please see link:

<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158654>

2) Press Information Bureau, Government of India, Ministry of Power, Nagaland, Andaman & Nicobar Islands, and Dadra & Nagar Haveli & Daman & Diu sign MoU with Government of India under UDAY Scheme, November 20, 2017. Please see link: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=173673>

3) Press Information Bureau, Government of India Ministry of Power Lakshadweep joins "UDAY" scheme; would derive an overall net benefit of Rs 8 crore through "UDAY", February 28, 2018.

Please see link: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=176895>

maturity. In aggregate level, so far, around 86 per cent of UDAY bonds have been issued (Rs. 2.32 lakh crores out of Rs. 2.69 Lakh crores) across all UDAY States/UTs (Figure 1). Five States, namely Jammu and Kashmir, Bihar, Chhattisgarh, Madhya Pradesh and Jharkhand issued 100 per cent of the bonds to the DISCOMs as mandated in the UDAY scheme. Seven States (Maharashtra, Telangana, Himachal Pradesh, Haryana, Meghalaya, Tamil Nadu and Punjab) have issued 75 per cent of the total bonds so far. As per the data accessed in May, 2018, we found that out of 27 States, 16 states continue to issue bonds (Table 1). However, there is no information on issuance of bonds for Assam. Also, there is no debt takeover of DISCOMs by eleven States/UTs, namely, Gujarat, Karnataka, Puducherry, Tripura, Uttarakhand, Goa, Manipur, Kerala, Arunachal Pradesh, Mizoram, Nagaland, Sikkim, Andaman and Nicobar Islands, Dadra and Nagar Haveli, Lakshadweep Islands and Daman and Diu. As per their MoUs, this scheme is targeted only to achieve further operational efficiency of DISCOMs in these States/UTs. It is to be noted here that the UDAY dashboard does not provide any further update on the issuance of bonds and the information stands for January 2021 as well.

Table 1 : Issuance of UDAY Bonds to States/ UTs

Sl. No.	States/UTs	Bonds Issued (Rs. Crore)	To Be Issued (Rs. Crore)
1	Andhra Pradesh	8256 (56.08)	14721
2	Arunachal Pradesh	ND	ND
3	Assam	ND	ND
4	Bihar	3109 (100%)	3109
5	Chhattisgarh	870 (100%)	870
6	Goa	No debt takeover	No debt takeover
7	Gujarat	No debt takeover	No debt takeover
8	Haryana	25951 (75.18)	34517.34
9	Himachal Pradesh	2891 (75.01)	3854
10	Jammu & Kashmir	3538 (100%)	3538
11	Jharkhand	6136 (100%)	6136
12	Karnataka	No debt takeover	No debt takeover
13	Kerala	ND	ND
14	Madhya Pradesh	7360 (100%)	7360
15	Maharashtra	4960 (75%)	6613
16	Manipur	ND	ND
17	Meghalaya	125 (74.85%)	167
18	Mizoram	ND	ND
19	Nagaland	ND	ND
20	Odisha	NP	NP
21	Puducherry	No debt takeover	No debt takeover
22	Punjab	15629 (77.13%)	20262.01
23	Rajasthan	72090 (94.71)	76120
24	Sikkim	ND	ND
25	Tamil Nadu	22815 (75%)	30420
26	Telangana	8923 (79.36%)	11244

Sl. No.	States/UTs	Bonds Issued (Rs. Crore)	To Be Issued (Rs. Crore)
27	Tripura	ND	ND
28	Uttar Pradesh	49510 (98.77)	50125
29	Uttarakhand	No debt takeover	No debt takeover
30	West Bengal	NP	NP

Note: The data has remained same for the issuance of bonds as on 22 January 2021.

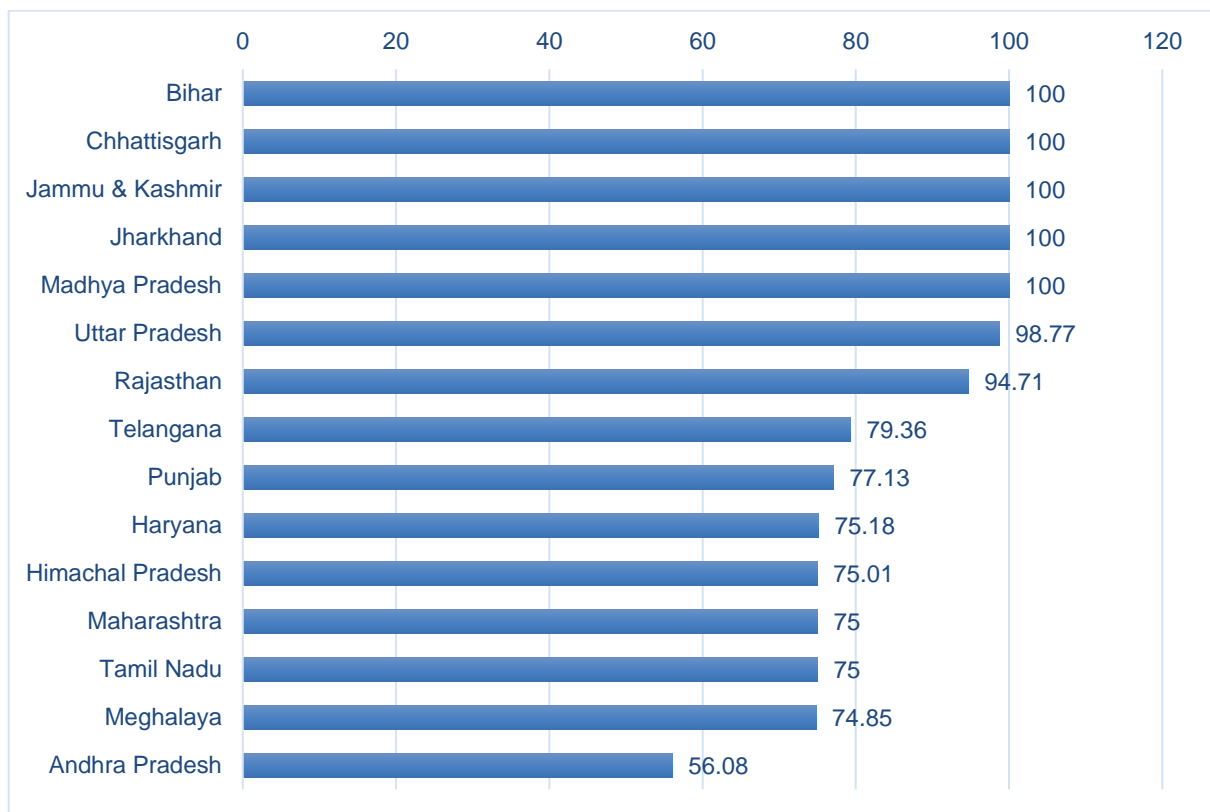
Note: All India: Total Bonds Issued: Rs. 232163 Crore (86.29%) against Bonds to be issued: Rs.269056.35 Crore.

The table does not include data of recently joined UTs namely; Daman & Diu, Dadra & Nagar Haveli, Andaman & Nicobar Islands, Lakshadweep Islands as well.

Source: UDAY Portal as accessed on May 2017 and May 2018, 26 October 2018, and 21 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Figure 1. States/UTs Issuance of UDAY Bonds



Source: (Basic Data) UDAY Portal, Government of India.

3.2 State-wise Aggregate Technical and Commercial (AT&C) losses

The aggregate technical and commercial loss is termed as AT&C loss. This includes losses which are technical and commercial. The commercial losses also include the loss of electricity due to theft, illegal metering etc. The technical losses are unavoidable losses in

the transmission system. As per the UDAY scheme, State and UT governments were required to reduce these losses to 15 per cent by 2018-19. The data is reported by 23 states/UTs except Arunachal Pradesh, Sikkim, Meghalaya, Mizoram and Nagaland. As shown in Figure 2, only six States (Himachal Pradesh, Goa, Gujarat, Kerala, Puducherry and Tamil Nadu) have AT&C losses below the 15 per cent norm. As per the recent updates, Jammu & Kashmir reports AT&C loss of 69.41 per cent while Himachal Pradesh reports the lowest AT&C loss of 7.54%, among all the participating states. However, seventeen States/UTs report AT &C losses in the range of 15-30 per cent. These States/UTs are Assam (31.09%), Chhattisgarh (34.25%), Haryana (25.34%), Jharkhand (44.26%), Karnataka (16.89%), Madhya Pradesh (26.91%), Maharashtra (28.97%), Manipur (19.22%), Punjab (32.42%), Kerala (12.26%), Puducherry (14.94%), Tripura (15.72%), Uttarakhand (30.38%), Rajasthan (27.52%), Uttar Pradesh (42.21 %), Telangana (16.33%), Andhra Pradesh (26.36%), Bihar (43.73%) and Jammu and Kashmir (69.41 %). States of Sikkim, Nagaland, Meghalaya, Mizoram and Arunachal Pradesh reported no data on their losses (Figure 2).

The all States combined average was 21.17 per cent in May 2018 which increased to 25.41 per cent on 26 October 2018 and is now at 26.15 percent (as on January 22 2021). We observe that State of Gujarat, Goa, Manipur, Puducherry, Tamil Nadu and Tripura have been able to reduce their ATC Losses considerably, over time (Table 2).

Table 2 : Aggregate Technical and Commercial (AT&C) Loss of States/UTs

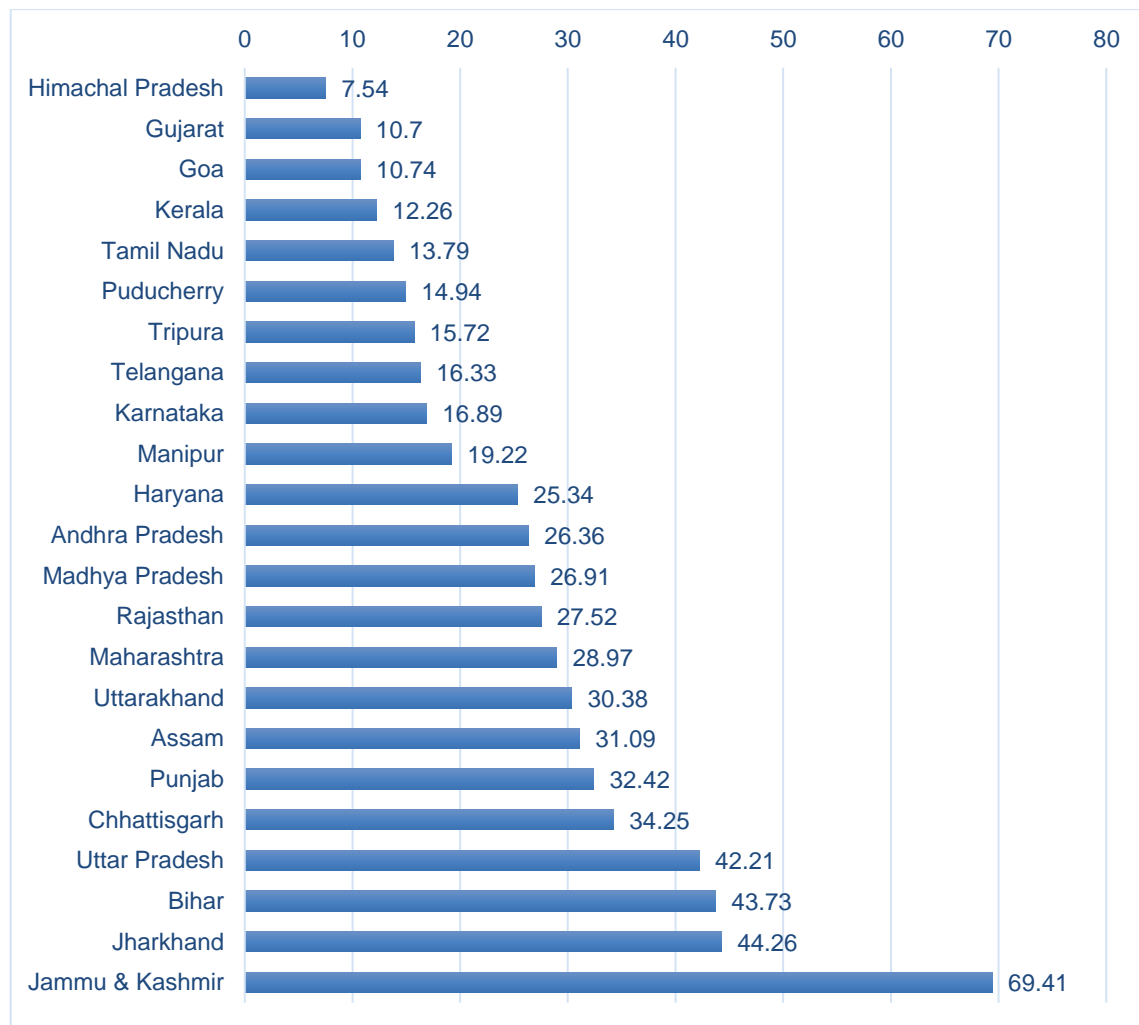
Sl. No.	States/UTs	AT&C Loss as of May 2017 (in %)	AT&C Loss as of May 2018 (in %)	AT&C Loss as of 26 October 2018 (in %)	AT&C Loss as of 22 January 2021 (in %)
1	Andhra Pradesh	10.96	9.71	11.16	26.36
2	Arunachal Pradesh	ND	ND	ND	ND
3	Assam	25.09	19.96	21.82	31.09
4	Bihar	41.75	36.75	39.1	43.73
5	Chhattisgarh	19.34	22.25	31.62	34.25
6	Goa	16.79	17.04	11.3	10.74
7	Gujarat	12.28	11.88	14.29	10.7
8	Haryana	25.69	23.28	23.81	25.34
9	Himachal Pradesh	4.15	6.1	3.29	7.54
10	Jammu & Kashmir	61.34	57.4	53.78	69.41
11	Jharkhand	29.9	36.28	36.97	44.26
12	Karnataka	15.29	15.28	15.46	16.89
13	Kerala	17.28	11.57	11.49	12.86
14	Madhya Pradesh	25.16	31.63	31.06	26.91
15	Maharashtra	18.3	20.15	19.87	28.97
16	Manipur	36.89	25	43.74	19.22
17	Meghalaya	34.87	32.28	34.64	ND
18	Mizoram	ND	39.04	ND	ND
19	Nagaland	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP

21	Puducherry	18.98	21.52	18.91	14.94
22	Punjab	17.57	29.47	31.3	32.42
23	Rajasthan	23.81	24.44	27.31	27.52
24	Sikkim	ND	42.54	ND	ND
25	Tamil Nadu	14.53	14.04	14.76	13.79
26	Telangana	14.33	13.9	12.55	16.33
27	Tripura	16.61	18.62	23	15.72
28	Uttar Pradesh	30.21	30.94	37.92	42.21
29	Uttarakhand	14.5	25.02	40.92	30.38
30	West Bengal	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Figure 2: States/UTs AT&C Loss (Aggregate Technical and Commercial Loss (%))



Source: (Basic Data) UDAY Portal, Government of India.

Out of the 23 states/UT reporting data on AT&C loss, we see that the losses for 15 states have comparatively risen. For the states like Andhra Pradesh, Karnataka, Telangana and Uttarakhand, the losses have jumped ahead of 15% which they had maintained over the years. The maximum loss incurring state of Jammu & Kashmir shows a new loss figure of 69.1% which was 61.34% in May 2017 and 53.78 % in October 2018. Further more,

Himachal Pradesh which reported 4.15 % of AT&C loss in May 2017, 3.29 % in October 2018 has now losses upto 7.54% in January 2021 (Table 2). However, it still remains the state with the lowest AT&C Loss. Needless to say, even though with so many years into the scheme, the performance of the states/UTs utilities have been overwhelming.

3.3 States/UTs Commercial Viability: ACS-ARR Gap (Rs per unit kWh)

Another milestone to be achieved under UDAY was reduction in the difference between average cost of Supply (ACS) per unit of power and per unit Average Revenue Realized (ARR) to nil by 2018-19. This tests the commercial viability by covering the cost through revenues. According to the data reported on the portal by 23 states, as of January 2021, the average gap ratio is Rs 0.58 per unit/kWh. States such as Goa, Maharashtra, Gujarat and Himachal Pradesh have been running a revenue surplus as shown in Figure 3. The figure 3 showcases 10 states that have an ACS-ARR Gap ratio between 0 and 0.5. Nine states report gap ratio of more than 0.5 out of which states such as Manipur (1.04), Andhra Pradesh (1.13), Telangana (1.24), Tamil Nadu (2) and Jammu & Kashmir (2.52) report ratio above 1 (Figure 3). There is no data provided by the state of Arunachal Pradesh, Meghalaya, Mizoram, Nagland and Sikkim on the portal.

Table 3 : Commercial Viability : ACS-ARR Gap of States/UTs

S. No.	States/UTs	ACS-ARR Gap (Rs/Unit kWh) as of May 2017	ACS-ARR Gap (Rs/Unit kWh) as of May 2018	ACS-ARR Gap (Rs/Unit kWh) as of 26 October 2018	ACS-ARR Gap (Rs/Unit kWh) as of 22 January 2021
1	Andhra Pradesh	0.6	0.03	0.06	1.13
2	Arunachal Pradesh	ND	ND	ND	ND
3	Assam	0.65	0.09	1.04	0.2
4	Bihar	0.71	0.47	0.1	0.29
5	Chhattisgarh	-0.15	0.27	0.5	0.48
6	Goa	0.95	0.44	1.17	-0.09
7	Gujarat	-0.03	-0.04	-0.04	-0.02
8	Haryana	0.08	0.23	0.58	0.16
9	Himachal Pradesh	-0.26	-0.1	0.03	-0.01
10	Jammu & Kashmir	2.15	2.38	1.96	2.52
11	Jharkhand	1.48	0.71	1.85	0.64
12	Karnataka	0.27	-0.1	-0.01	0.34
13	Kerala	0.53	0.24	0.4	0.07
14	Madhya Pradesh	0.86	0.48	0.37	0.79
15	Maharashtra	0.22	-0.05	-0.02	-0.06
16	Manipur	0.1	0	1.61	1.04
17	Meghalaya	1.81	2.78	1.3	ND
18	Mizoram	ND	0.47	ND	ND
19	Nagaland	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP

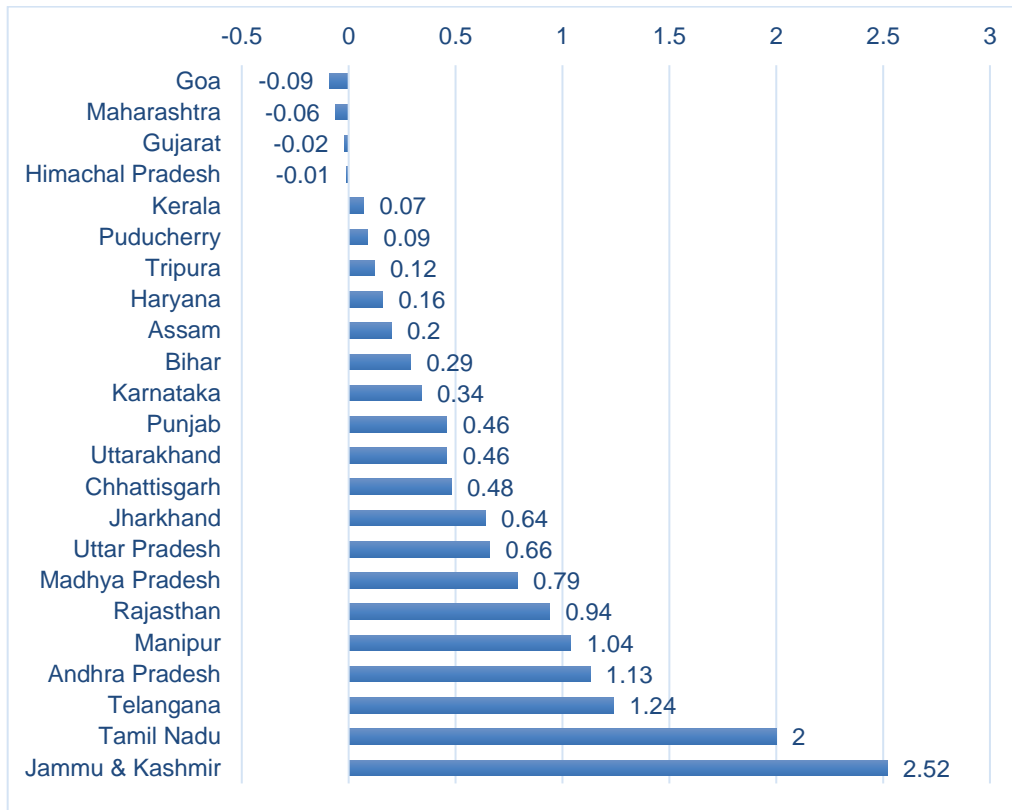
21	Puducherry	0.07	0	ND	0.09
22	Punjab	0.71	1.03	1.1	0.46
23	Rajasthan	0.74	0.26	-0.27	0.94
24	Sikkim	ND	5.65	ND	ND
25	Tamil Nadu	0.36	0.24	0.55	2
26	Telangana	0.6	0.58	0.39	1.24
27	Tripura	0.02	0.08	-0.17	0.12
28	Uttar Pradesh	0.66	0.39	0.37	0.66
29	Uttarakhand	0.14	0.03	-0.02	0.46
30	West Bengal	NP	NP	NP	NP

Note: ACS-ARR Gap stands for (the gap between Average Cost of Supply and Average Revenue Realized in Rs. per unit kWh)

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

We also observe that the states reporting a negative gap ratio have been performing well over the reference period as well (Table 3). Table 3 presents the status of the states on ACS-ARR gap ratio on four timepoints, viz., May 2017, May 2018 and October 2018 and January 2021 for a comparative view. States such as Goa and Gujarat have lower ATC losses and lower ACS-ARR gap ratio as well. However, 11 state/UT utilities performance have shown a deteriorating trend. The most concerning aspect is for states like Andhra Pradesh, Chhatisgarh, Manipur, Tamil Nadu and Telangana where the gap ratio has increased to more than Rs 1 per unit which was below Rs 0.5 per unit at the inception of the scheme. This reiterates the fact that many utilities have not been able to reduce their losses or even maintain them under this scheme.

Figure 3: States/UTs ACS-ARR Gap (Rs/Unit kWh)


Source: (Basic Data) UDAY Portal, Government of India.

3.4 Tariff Revision

For the FY 2016-17, out of 27 States tariff orders were issued by 25 States. As per the press note released by the Ministry of Power, Andhra Pradesh, Assam, Bihar, Chhattisgarh, Haryana, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Uttar Pradesh and Uttarakhand have increased tariffs in the year 2017-18 (Table 4).⁶ The tariff revision status has not been updated on the portal since May 2017.

Table 4 : Tariff Revision of States/UTs (2016-17)

Sl. No.	State/UTs	MYT/ARR Petition (Filed/Not Filed)	Tariff Order (Issued/Not Issued)
1	Andhra Pradesh	Filed	Issued
2	Arunachal Pradesh	Filed	Issued
3	Assam	Filed	Issued
4	Bihar	Filed	Issued
5	Chhattisgarh	Filed	Issued
6	Goa	Filed	Issued
7	Gujarat	Filed	Issued
8	Haryana	Filed	Issued
9	Himachal Pradesh	Filed	Issued
10	Jammu & Kashmir	Filed	Issued

4) <http://www.pib.nic.in/PressReleaseDetail.aspx?PRID=1514456>

11	Jharkhand	Filed	Issued
12	Karnataka	Filed	Issued
13	Kerala	Not Filed	FY14-15 order is extended for FY16-17
14	Madhya Pradesh	Filed	Issued
15	Maharashtra	Filed	Issued
16	Manipur	Filed	Issued
17	Meghalaya	Filed	Issued
18	Mizoram	Filed	Issued
19	Puducherry	Filed	Issued
20	Punjab	Filed	Issued
21	Rajasthan	Filed	Not Issued
22	Sikkim	Filed	Issued
23	Tamil Nadu	Filed	Not Issued
24	Telangana	Filed	Issued
25	Tripura	Filed	FY14-15 order is continuing for FY16-17
26	Uttar Pradesh	Filed	Issued
27	Uttarakhand	Filed	Issued

Note: There is no update of data as on 22 January 2021.

Source: UDAY Portal as accessed on May 2017, May and 26 October 2018, and 22 January 2021.

4. Operational Efficiency Parameters under UDAY

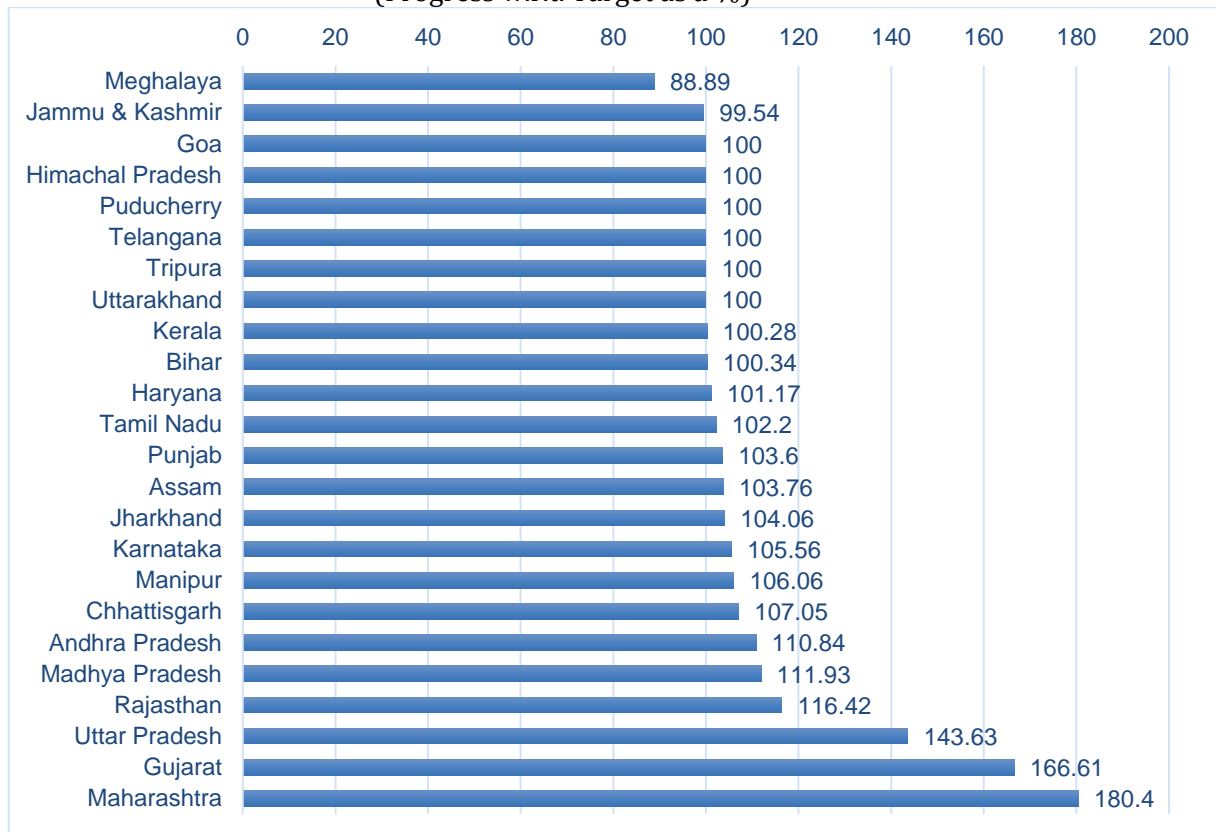
Apart from financial parameters, there are ten operational efficiency indicators to be monitored under UDAY scheme to examine the progress of UDAY across States/UT. These are broadly related to the progress on power sector infrastructure including feeder metering, distribution transformer (DT) metering, smart metering, electricity to unconnected households and installation of LED bulbs.

4.1 Power Supply Infrastructure: Feeder Metering

Feeder metering is to ensure effective power supply and reduction in Aggregate Technical and Commercial (AT&C) losses. Target for 100 per cent metering is the stated goal under UDAY. Figures 4 and 5 depict the progress made by the distribution companies in this respect for the latest data (January 2021) in rural and urban areas of Indian states. These figures represent the progress made in percentage terms on the basis of the target set by the States at the time of joining UDAY.

Figures 4 and 5 reflects data entered by 24 states wherein almost all the states/UTs have met feeder metering targets in both the urban and rural areas. State of Meghalaya reflects least progress in both the urban (88.89%) and rural areas (22.86%). Almost all the rural areas have been covered under the scheme except Assam (85.44%) and Meghalaya (22.86%) as reflected by recent update on database. Over the reference period under consideration, the states/UTs utliities have gradually met the targets for both the urban and rural areas.

Figure 4: Power Infrastructure: State/UTs Feeder Metering (Urban)
(Progress w.r.t. Target as a %)



BI (Basic Data) UDAY Portal, Government of India.

Table 5 : Power Infrastructure : States/UTs Feeder Metering (Urban)

Sl. No.	States/UTs	Feeder Metering as of May 2017 (no. of units)		Feeder Metering as of May 2018 (no. of units)		Feeder Metering as of 26 October 2018 (no. of units)		Feeder Metering as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	2632	1605	1779	1605	1779	1605	1779	1605
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	376	399	414	399	414	399	414	399
4	Bihar	591	591	591	591	591	591	593	591
5	Chhattisgarh	972	908	972	908	972	908	972	908
6	Goa	95	95	95	95	95	95	95	95
7	Gujarat	4160	3911	5140	3911	5276	3911	6516	3911
8	Haryana	2024	1391	2024	1391	1381	1365	1381	1365
9	Himachal Pradesh	1027	1027	393	393	393	393	393	393
10	Jammu & Kashmir	644	644	644	644	644	644	644	647
11	Jharkhand	436	419	436	419	436	419	436	419
12	Karnataka	3111	3096	3198	3096	3214	3096	3268	3096
13	Kerala	945	1072	954	1072	954	1072	1075	1072
14	Madhya Pradesh	2534	2523	2565	2523	2679	2523	2824	2523
15	Maharashtra	4049	2964	4107	2964	4169	2964	5347	2964
16	Manipur	66	66	66	66	66	66	70	66
17	Meghalaya	75	90	80	90	80	90	80	90
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	52	52	52	52	52	52	52	52
22	Punjab	3266	3266	3266	3266	3386	3386	3508	3386
23	Rajasthan	4150	3953	4213	3953	4261	3953	4602	3953
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	5059	4950	5059	4950	5059	4950	5059	4950
26	Telangana	3017	3017	3017	3017	3017	3017	3017	3017
27	Tripura	112	112	112	112	112	112	112	112

28	Uttar Pradesh	6866	5686	6922	5686	6954	5686	8167	5686
29	Uttarakhand	585	585	585	585	585	585	585	585
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Table 6 : Power Infrastructure : States/UTs Feeder Metering (Rural)

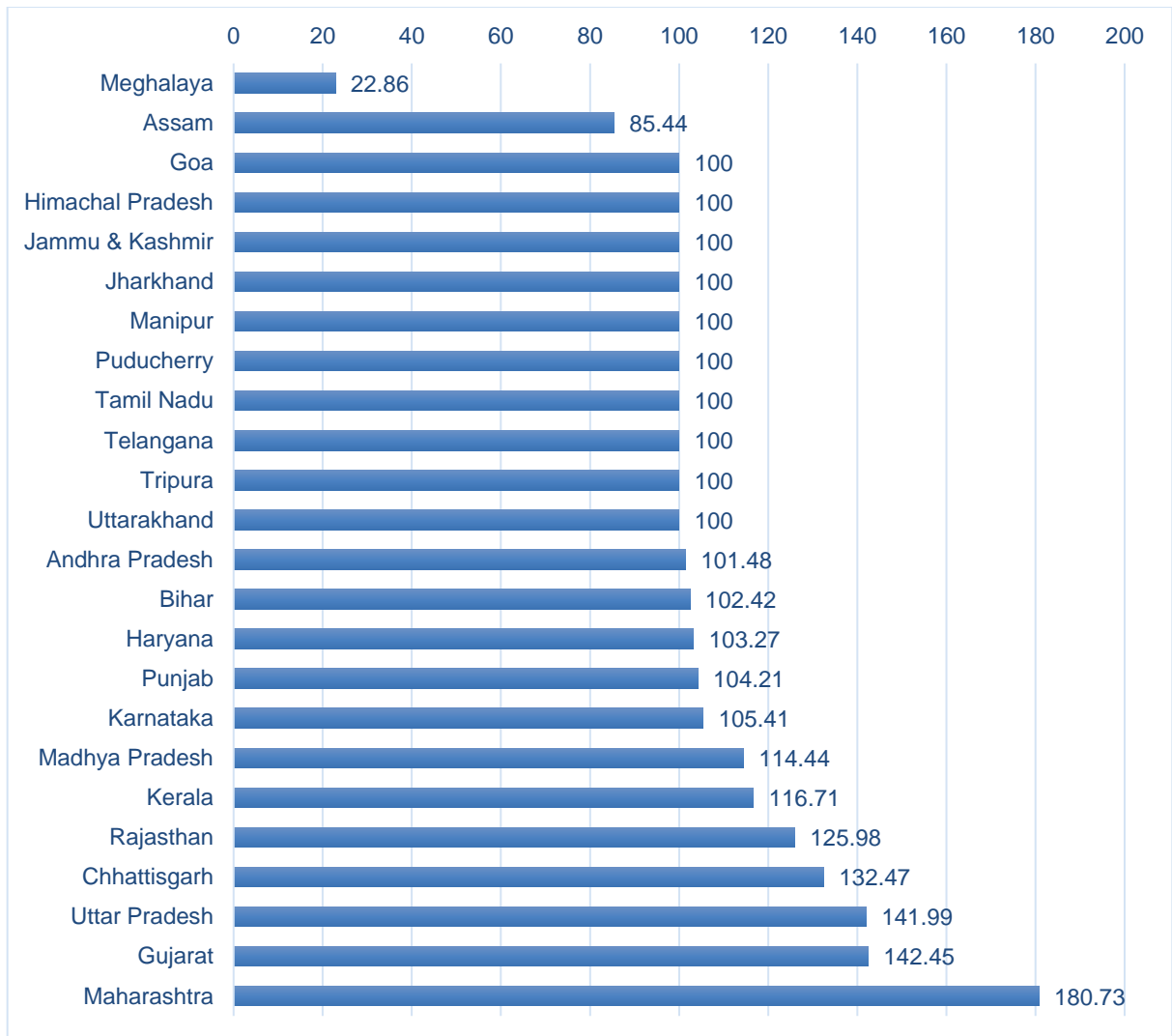
Sl. No.	States/UTs	Feeder Metering as of May 2017 (no. of units)		Feeder Metering as of May 2018 (no. of units)		Feeder Metering as of 26 October 2018 (no. of units)		Feeder Metering as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	9025	8893	9025	8893	9025	8893	9025	8893
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	194	1756	751	1051	751	1051	898	1051
4	Bihar	1238	1572	1492	1572	1591	1572	1610	1572
5	Chhattisgarh	2538	2790	3485	2790	3696	2790	3696	2790
6	Goa	289	289	289	289	289	289	289	289
7	Gujarat	9958	9324	11206	9324	11526	9324	13282	9324
8	Haryana	3352	1628	2520	1628	1674	1621	1674	1621
9	Himachal Pradesh	0	0	634	634	634	634	634	634
10	Jammu & Kashmir	1227	1227	1227	1227	1227	1227	1227	1227
11	Jharkhand	484	761	761	761	761	761	761	761
12	Karnataka	7915	7870	8061	7870	8078	7870	8296	7870
13	Kerala	842	1053	858	1053	858	1053	1229	1053
14	Madhya Pradesh	11811	11389	12043	11389	12449	11389	13034	11389
15	Maharashtra	4185	3389	4281	3389	4445	3389	6125	3389
16	Manipur	110	95	95	95	95	95	95	95
17	Meghalaya	28	175	40	175	40	175	40	175
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	55	55	55	55	55	55	55	55
22	Punjab	6657	6657	6657	6657	7414	7414	7726	7414

23	Rajasthan	20307	19440	20795	19440	21301	19440	24490	19440
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	ND	ND	2423	2558	2423	2558	2558	2558
26	Telangana	ND	ND	5906	5906	5906	5906	5906	5906
27	Tripura	235	235	235	235	235	235	235	235
28	Uttar Pradesh	6803	8743	11186	8743	11227	8743	12414	8743
29	Uttarakhand	1395	1395	1395	1395	1395	1395	1395	1395
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Figure 5: Power Infrastructure: State/UTs Feeder Metering (Rural)
(Progress w.r.t. Target as a %)



Source: (Basic Data) UDAY Portal, Government of India.

4.2 Energy Distribution Infrastructure: DT Metering

The Distribution Transformer Metering (DTM) helps in improving the energy distribution system and reduces the losses caused by thefts. This helps in load balancing and monitoring the quality of power. Also, it provides real time input and output data of the units consumed for better records and enables to figure out areas which are incurring high losses and need attention⁷. Figures 6 and 7 provide the progress in DT metering for urban and rural areas respectively in percentage terms.

As per the recent database on UDAY portal, we see that the progress in terms of DT metering is relatively better in the urban areas than the rural areas. Out of 24 State/UT utilities that report data, Rajasthan (30.33%), Maharashtra (31.09%) and Jammu and Kashmir (52.04%) have reported the least progress. 11 state utilities report 100 per cent progress as per the targets shown in figure 6 in the urban areas.

⁷Kamat, V. N. (2000). Distributed Transformer Metering with Centralized consumer metering to reduce losses in the LT Distribution System. ELECTRICAL INDIA, 40(23), 10-17.

In order to reduce the losses incurred by the state utilities, it is imperative to have metering at place to account for the power demanded and power consumed. The progress is poor in the rural areas. There is hardly any progress made in the states like Jammu & Kashmir which reports nil progress followed by Punjab (0.81%), Haryana (6.67%), U.P. (9.5%) to name a few (see figure 7). 22 state utilities report data for the rural areas out of which only Telangana and Gujarat report 100 percent progress.

The comparative picture of the state/UT utilities reflects that the targets of DT metering for the rural areas has been challenging (see Table 8). Since the reference period, we observe that the targets have not been met for most of the states. However, there has been noticeable improvements for many of them as compared to previous years. Telangana and Gujarat have already met the set targets for the rural areas. The recent estimates do show a positive sign of more metering targets being met by the states/UTs. The targets have been more achievable in the urban areas which could have been possible due to active involvement of the concerned authorities in most of the states/UTs (Table 7).

Table 7 : State/UTs Distribution Transformer (DT) Metering (Urban)

Sl. No.	States/UTs	DT Metering as of May 2017 (no. of units)		DT Metering as of May 2018 (no. of units)		DT Metering as of 26 October 2018 (no. of units)		DT Metering as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	46585	53704	49328	53704	49663	53704	50648	53704
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	8619	8619	8619	8619	8619	8619	9638	8619
4	Bihar	21378	55021	14442	14442	14442	14442	16275	14442
5	Chhattisgarh	35128	55498	35128	55498	36039	55498	39457	55498
6	Goa	2026	2386	2101	2386	2238	2386	2238	2386
7	Gujarat	144702	142871	133737	118735	138043	118735	158767	118735
8	Haryana	51509	286069	51509	286069	51509	286069	32734	49420
9	Himachal Pradesh	21184	29162	4117	3955	4117	3955	4137	3955
10	Jammu & Kashmir	3550	12442	5125	12442	5378	12442	6475	12442
11	Jharkhand	20180	10140	10140	10140	10140	10140	10140	10140
12	Karnataka	96957	104921	99776	104921	101412	104921	112927	104921
13	Kerala	16443	23074	16443	23074	16443	23074	17535	23074
14	Madhya Pradesh	55627	82693	63728	82693	67606	82693	71080	82693
15	Maharashtra	79623	263323	79998	263323	80868	263323	81873	263323
16	Manipur	1994	2098	2011	2098	2011	2098	2011	2098
17	Meghalaya	1667	1716	1753	1716	1753	1716	1753	1716
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	969	1372	971	1372	992	1372	1149	1372
22	Punjab	34864	73139	44980	73139	46093	73139	46093	73139
23	Rajasthan	16486	66459	16822	66459	16842	66459	20159	66459
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	ND	ND	50200	66073	50200	66073	69483	66073
26	Telangana	ND	ND	85086	107927	136156	107927	154740	107927

27	Tripura	3058	4688	3058	4688	3058	4688	3058	4688
28	Uttar Pradesh	96413	164182	99639	164182	114146	164182	236614	164182
29	Uttarakhand	5664	6616	5664	6616	5887	6616	6777	6616
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Table 8 : State/UTs Distribution Transformer (DT) Metering (Rural)

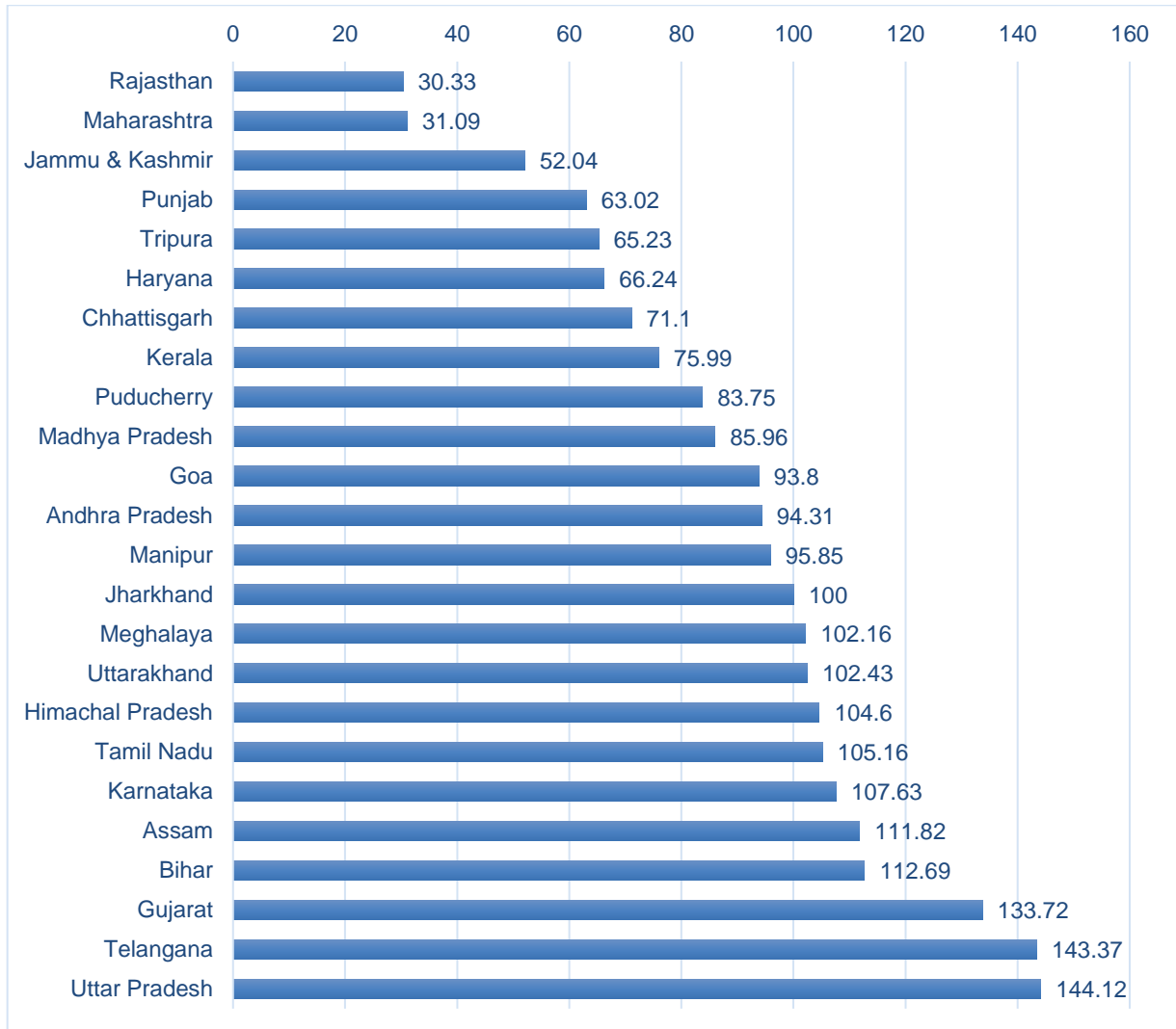
Sl. No.	States/UTs	DT Metering as of May 2017 (no. of units)		DT Metering as of May 2018 (no. of units)		DT Metering as of 26 October 2018 (no. of units)		DT Metering as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	322529	661037	331073	661037	339873	661037	351873	661037
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	58992	63692	21265	60199	21265	60199	22695	60199
4	Bihar	2830	54724	9766	95303	9766	95303	32102	95303
5	Chhattisgarh	32905	73955	32905	73955	33709	73955	36836	73955
6	Goa	2936	3529	3076	3529	3321	3529	3321	3529
7	Gujarat	794347	869988	1105274	894124	1232230	894124	1503529	894124
8	Haryana	63744	221897	63744	221897	63744	221897	31872	478120
9	Himachal Pradesh	ND	ND	17711	25207	17733	25207	18151	25207
10	Jammu & Kashmir	0	40193	0	40193	0	40193	0	40193
11	Jharkhand	0	62794	42627	62794	52282	62794	62683	62794
12	Karnataka	134176	215286	140155	215286	148505	215286	180857	215286
13	Kerala	17365	50386	17365	50386	17365	50386	40158	50386
14	Madhya Pradesh	145028	454194	168354	454194	188007	454194	197084	454194
15	Maharashtra	46460	247708	47025	247708	47435	247708	47879	247708
16	Manipur	2214	2411	2217	2411	2217	2411	2217	2411
17	Meghalaya	3096	7599	3096	7599	3096	7599	3096	7599
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND

19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	434	1317	434	1317	434	1317	445	1317
22	Punjab	969	118997	969	118997	969	118997	969	118997
23	Rajasthan	ND	ND	ND	ND	ND	ND	0	0
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	0	180748	0	180748	0	180748	18430	180748
26	Telangana	45201	220893	59791	220893	264937	220893	271365	220893
27	Tripura	2605	8486	3203	8486	3674	8486	3864	8486
28	Uttar Pradesh	52822	604500	16624	506283	Progress	Target	48104	506283
29	Uttarakhand	ND	ND	ND	ND	339873	661037	0	0
30	West Bengal	NP	NP	NP	NP	ND	ND	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

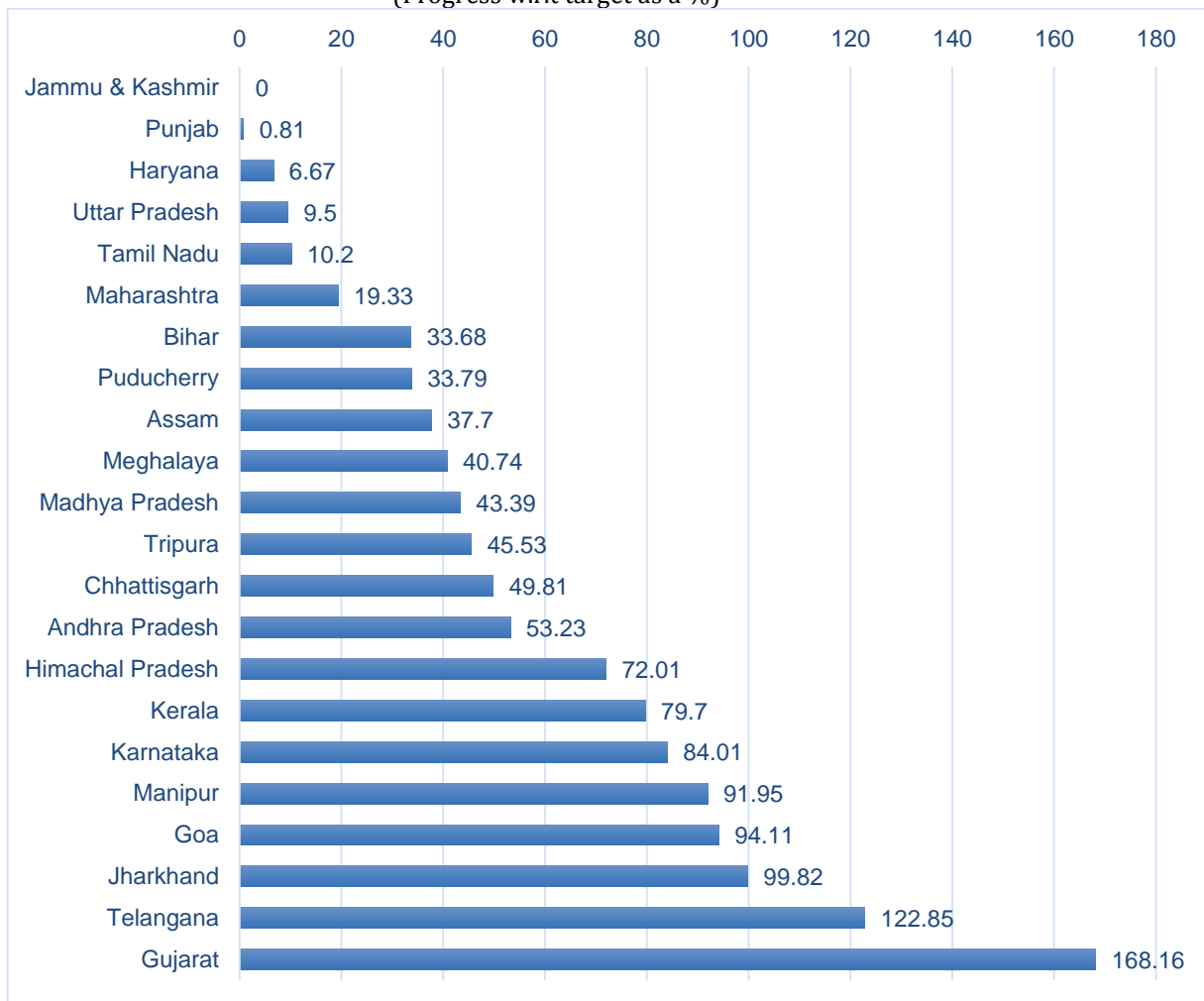
ND: No Data; NP: Not a part of UDAY Scheme

Figure 6: Energy Distribution Infrastructure: States/UTs DT Metering (Urban)
(Progress w.r.t. target as a %)



Source: (Basic Data) UDAY Portal, Government of India.

Figure 7: Energy Distribution Infrastructure States/UTs DT Metering (Rural)
(Progress w.r.t target as a %)



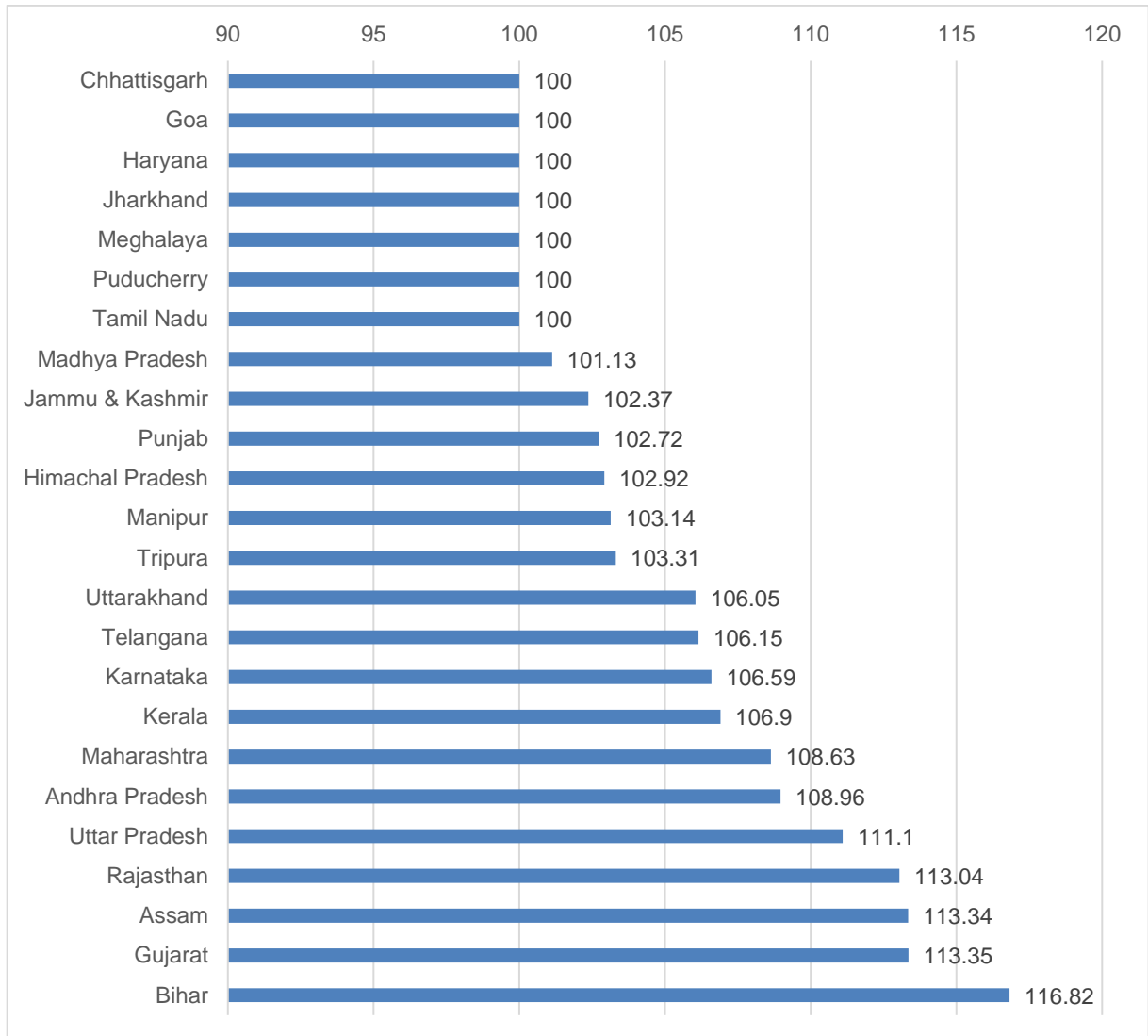
Source: (Basic Data) UDAY Portal, Government of India.

4.3 Electricity Access to Un-connected Households

Figure 8 provides the progress of the States/UTs utilities on the basis of their targets for the financial year, in percentage terms, for electricity access to unconnected households.

The current data analysis shows that electricity connection target to unconnected households have been completed by the 24 states/UTs utilities who have reported data. As compared to the previous years since its inception, we see considerable progress made in this parameter. Gradually over the years, the utilities have achieved this objective. Schemes launched in the year 2017 called SAUBHAGYA: Pradhan Mantri Sahaj Bijli Har Ghar Yojana’ to achieve the mission of universal electrification of the country has further expedited the process of electricity connection throughout the country.

**Figure 8: States/UTs Electricity Access to Unconnected Households
(Progress w.r.t. Target as a %)**



Source: (Basic Data) UDAY Portal, Government of India.

Table 9: States/UTs Electricity Access to Unconnected Households

Sl. No.	States/UTs	Electricity Access to Unconnected Households as of May 2017 (in lakhs)		Electricity Access to Unconnected Households as of May 2018 (in lakhs)		Electricity Access to Unconnected Households as of 26 October 2018 (in lakhs)		Electricity Access to Unconnected Households as of 22 January 2021 (in lakhs)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	89.34	87.15	90.22	87.15	91.05	87.15	94.96	87.15
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	37.68	58.09	41.49	61.84	45.13	61.84	66.76	58.9
4	Bihar	121.98	198.04	127.7	198.04	129.33	198.04	180.46	154.48
5	Chhattisgarh	55.57	63.6	57.05	63.6	59.93	63.6	61.7	61.7
6	Goa	5	5	5	5	5	5	5	5
7	Gujarat	119.47	115.09	121.56	115.09	123.44	115.09	130.46	115.09
8	Haryana	45.06	49.18	45.17	49.18	45.45	49.18	45.58	45.58
9	Himachal Pradesh	19.04	19.18	19.12	19.18	19.19	19.18	19.74	19.18
10	Jammu & Kashmir	15.28	18.18	15.54	18.18	15.71	18.18	18.61	18.18
11	Jharkhand	29.69	54.58	31.17	54.58	31.64	54.58	54.58	54.58
12	Karnataka	33.11	39.18	34.15	39.18	35.2	39.18	39.64	37.19
13	Kerala	92.84	92.28	94.01	92.28	94.48	92.28	98.65	92.28
14	Madhya Pradesh	112.46	153.46	123.9	153.46	130.85	153.46	138.95	137.4
15	Maharashtra	250.73	260.84	254.57	260.84	259.27	260.84	283.35	260.84
16	Manipur	6.54	6.36	6.56	6.36	6.56	6.36	6.56	6.36
17	Meghalaya	1.36	5.21	3.88	5.21	3.88	5.21	3.88	3.88
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	2.9	2.94	2.92	2.94	2.94	2.94	2.94	2.94
22	Punjab	62.08	62.08	62.08	62.08	66.82	66.82	68.64	66.82
23	Rajasthan	106.15	119.45	110.78	119.45	115.25	119.45	129.2	114.3
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	ND	ND	ND	ND	189.93	189.93	189.93	189.93
26	Telangana	98.41	102.1	100.77	102.1	102.98	102.1	108.38	102.1

27	Tripura	7.85	9.5	8.08	9.5	8.19	9.5	9.04	8.75
28	Uttar Pradesh	137.48	308.73	170.01	308.73	193.31	308.73	240.76	216.71
29	Uttarakhand	20.09	21.17	20.2	21.17	20.24	21.17	22.45	21.17
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018 and 26 October 2018

ND: No Data; NP: Not a part of UDAY Scheme

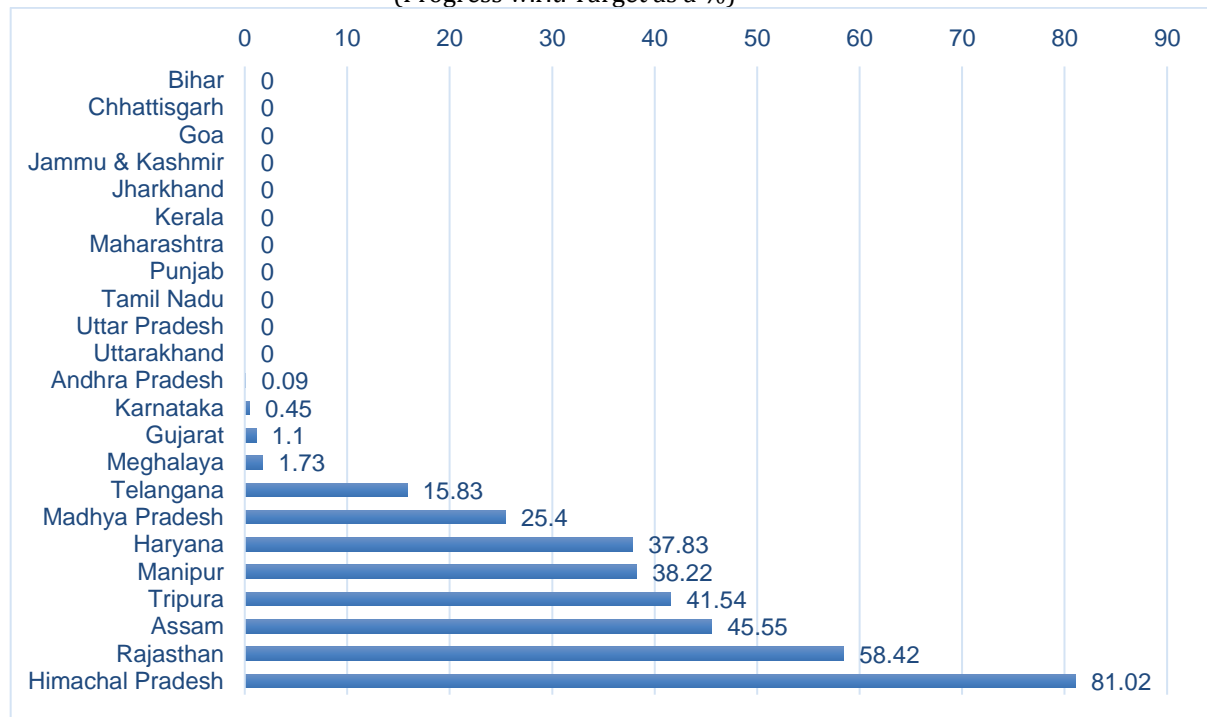
4.4 Smart Metering above 200 and upto 500 kWh & above 500 kWh

Installations of Smart Meters help in recording energy consumption in intervals of an hour or less and communicate the same to State utilities for effective monitoring and billing.⁸ Important feature of the smart meter is that it provides a 2-way interface between the meter and the utility that gives alerts in case the meter is tampered.⁹ The government aimed to reach this target by December 2017 for greater than 500 units and December 2019 for greater than 200 units.

For smart metering target above 500kWh, out of the 27 States/UTs that have signed the MoU, Sikkim, Arunachal Pradesh, Mizoram, Nagaland, have not provided data on their progress till January 2021. So far, as per the data entered in UDAY portal, none of the 23 States reached anywhere near the target of smart metering for above 500 kWh (see figure 9).

For smart metering target for above 200 kWh and up to 500 kWh, the data shows that only Himachal Pradesh and Uttar Pradesh have achieved them (see figure 10). On the other hand, majority of the remaining states are not even close enough to reach the 100% smart metering targets. Also, the data is not available for the north-eastern states of Arunachal Pradesh, Mizoram, Nagaland, Sikkim while for the states like Punjab, Rajasthan, Uttarakhand, Tamil Nadu, Jammu & Kashmir, Jharkhand, Maharashtra there is no mention on the progress over their determined targets and hence, no comparison can be made between the states. Hereby, it can be inferred that this parameter has been overlooked by the states and the target seems unachievable till the said deadline for both above 500 kWh and up to 500 kWh.

Figure 9: Power Infrastructure: States/UTs Smart Metering Above 500 kWh (Progress w.r.t. Target as a %)

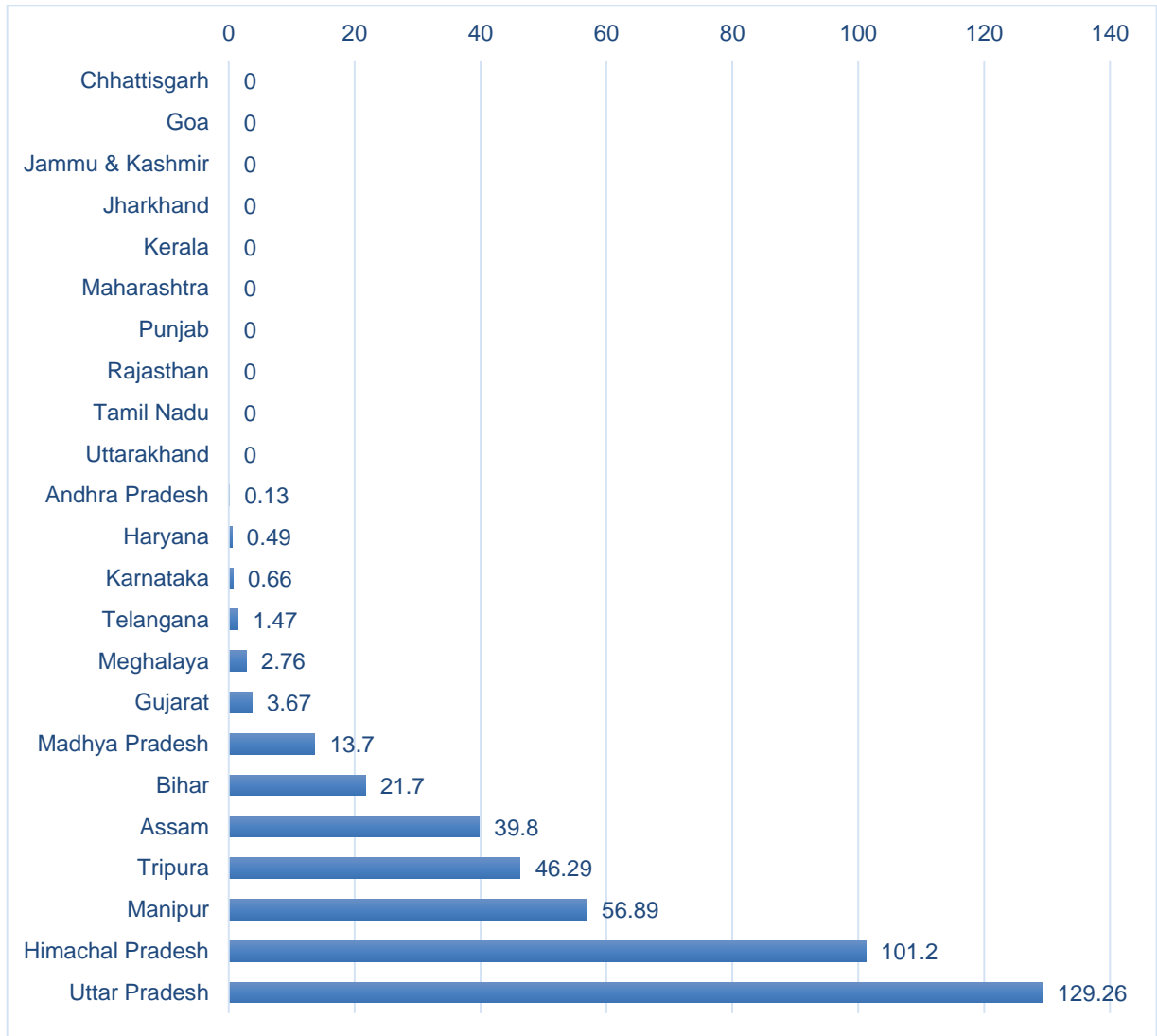


Source: (Basic Data) UDAY Portal, Government of India.

⁸ Ministry of Power, Coal and New & Renewable Energy, 2015. "Presentation on Towards Ujwal Bharat UDAY: The Story of Reforms", (November).

⁹ IT in Power Distribution, National Power Training Institute <https://npti.gov.in/presentations>, IT in Power Distribution

Figure 10: Power Infrastructure: States/UTs Smart Metering Above 200 kWh up to 500 kWh (Progress w.r.t. Target as a %)



Source: (Basic Data) UDAY Portal, Government of India.

Table 10: States/UTs Smart Metering Above 500kWh

Sl. No.	States/UTs	Smart Metering Above 500 kWh as of May 2017 (no. of units)		Smart Metering Above 500 kWh as of May 2018 (no. of units)		Smart Metering Above 500 kWh as of 26 October 2018 (no. of units)		Smart Metering Above 500 kWh as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	250	399713	358	399713	358	399713	358	399713
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	0	31000	5737	31000	5737	31000	14121	31000
4	Bihar	0	197831	0	197831	0	197831	8	197821
5	Chhattisgarh	0	488307	0	488307	0	488307	0	488307
6	Goa	0	34163	0	34163	0	34163	0	34163
7	Gujarat	0	247583	0	247583	0	247583	2715	247583
8	Haryana	0	431797	5630	431797	6583	431797	163360	431797
9	Himachal Pradesh	175	0	397	490	397	490	397	490
10	Jammu & Kashmir	0	215828	0	215828	0	215828	0	215828
11	Jharkhand	0	26534	0	26534	0	26534	0	26534
12	Karnataka	365	137456	610	137456	610	137456	622	137456
13	Kerala	0	136000	0	136000	0	136000	0	136000
14	Madhya Pradesh	58898	295644	59994	295644	59994	295644	75107	295644
15	Maharashtra	0	10385	0	10385	0	10385	0	10385
16	Manipur	51420	134527	51420	134527	51420	134527	51420	134527
17	Meghalaya	1455	86368	1494	86368	1494	86368	1494	86368
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	ND	ND	ND	ND	16000	0	32231	0
22	Punjab	ND	ND	ND	ND	0	697711	0	697711
23	Rajasthan	15887	31136	17970	31136	18003	31136	18189	31136
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	0	1552000	0	1552000	0	1552000	0	1552000
26	Telangana	1000	168634	1604	168634	20649	168634	26702	168634
27	Tripura	3210	32508	5410	32502	5510	32502	13500	32502

28	Uttar Pradesh	0	278722	0	278722	0	278722	0	278722
29	Uttarakhand	0	75000	0	75000	0	75000	0	75000
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Table 11: States/UTs Smart Metering above 200 kWh up to 500 kWh

Sl. No.	States/UTs	Smart Metering Above 200 kWh up to 500 kWh as of May 2017 (no. of units)		Smart Metering Above 200 kWh up to 500 kWh as of May 2018 (no. of units)		Smart Metering Above 200 kWh up to 500 kWh as of 26October 2018 (no. of units)		Smart Metering Above 200 kWh up to 500 kWh as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	410	1671543	1445	1671543	1445	1671543	2225	1671543
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	0	150000	7703	150000	7703	150000	59694	150000
4	Bihar	0	336113	0	336113	0	336113	72933	336113
5	Chhattisgarh	0	652146	0	652146	0	652146	0	652146
6	Goa	0	120307	0	120307	0	120307	0	120307
7	Gujarat	0	632581	0	632581	0	632581	23233	632581
8	Haryana	0	822747	3174	822747	3857	822747	4000	822747
9	Himachal Pradesh	885	0	925	914	925	914	925	914
10	Jammu & Kashmir	0	582149	0	582149	0	582149	0	582149
11	Jharkhand	0	125896	0	125896	0	125896	0	125896
12	Karnataka	1300	291650	1876	291650	1876	291650	1920	291650
13	Kerala	0	745000	0	745000	0	745000	0	745000
14	Madhya Pradesh	8886	776487	9356	776487	9406	776487	106405	776487
15	Maharashtra	0	49680	0	49680	0	49680	0	49680
16	Manipur	123417	216940	123417	216940	123417	216940	123417	216940
17	Meghalaya	5096	189553	5229	189553	5229	189553	5229	189553
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	ND	ND	ND	ND	5000	0	6962	0
22	Punjab	ND	ND	ND	ND	0	934394	0	934394
23	Rajasthan	0	56000	0	56000	0	56000	0	56000
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	0	8256000	0	8256000	0	8256000	0	8256000
26	Telangana	0	689446	2422	689446	9531	689446	10101	689446

27	Tripura	11852	79026	16252	79026	16490	79026	36581	79026
28	Uttar Pradesh	3200	781220	3200	781220	3200	781220	1009817	781220
29	Uttarakhand	0	225000	0	225000	0	225000	0	225000
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

4.5 Feeder Segregation

As per the RBI State Finance report 2016, those States who join UDAY and perform as per operational milestones will be given additional / priority funding through Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Integrated Power Development Scheme (IPDS), Power Sector Development Fund (PSDF) or other such schemes of Ministry of Power and Ministry of New and Renewable Energy.¹⁰ The DeenDayal Upadhyaya Gram Jyoti Yojana (DDUGJY) aims to segregate agricultural and non-agricultural feeders for uninterrupted supply to non-agricultural consumers in the rural areas.¹¹ This can ensure reduction in the commercial losses aggravated due to large number of free agricultural consumers. Also, a separate feeder helps in load shedding for the agricultural power demand without compromising other consumers¹².

Figure 11 gives us the States/UTs utilities Feeder segregation progress with respect to targets (in per cent) so far. According to the recent data noted in January 2021, 17 States/UTs reported data wherein Gujarat, Andhra Pradesh, Haryana, Madhya Pradesh, Karnataka, Maharashtra and Bihar have achieved the targets followed by Punjab (see figure 11). Jammu & Kashmir report nil progress amongst all the reporting states. The States namely, Arunachal Pradesh, Mizoram, Nagaland, Sikkim, Puducherry, Goa, Himachal Pradesh, Kerala, and Tripura have not reported data since 2017.

The underlying cause of states not successfully achieving this target, is likely the lack of commitment. It is because of the high capital costs of setting up the segregated feeders especially for the agricultural consumption. Generally, in the states that need high agricultural power rely on diesel generating sets which are not metered, are often on subsidy or nominal tariffs that depletes the water table. Even though there is emphasis by the government on 24*7 electricity supply to the households in the rural sector, we see that there is less importance to the commitment to push for power exclusively for agriculture¹³.

6) States not meeting operational milestones, however, will be liable to forfeiture of their claim on IPDS and DDUGJY grants. (Box IV.1 of RBI State Finance Report, April 2016).

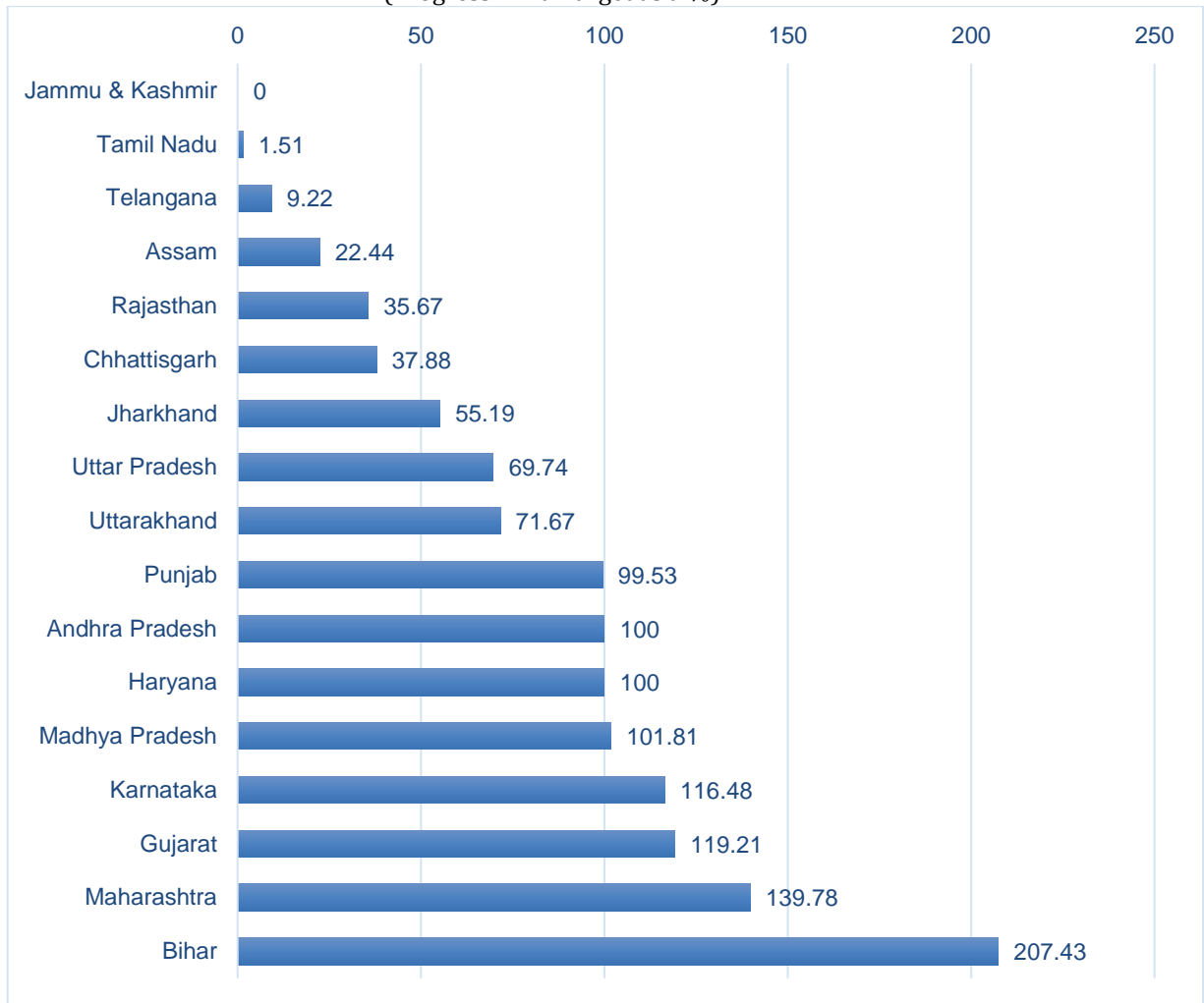
<https://rbi.org.in/scripts/PublicationsView.aspx?id=16836>

7) Ministry of Power. 06-August-2015. "Feeder Segregation Scheme". Press Information Bureau, Government of India.

¹²<https://www.pv-magazine-india.com/2020/12/29/debunking-feeder-segregation/>

¹³ https://www.business-standard.com/article/economy-policy/after-household-electrification-centre-to-focus-on-power-for-agriculture-119022600896_1.html

Figure 11: States/UTs Feeder Segregation
(Progress w.r.t. Target as a %)



Source: (Basic Data) UDAY Portal, Government of India.

Table 12 : States/UTs Feeder Segregation

Sl. No.	States/UTs	Feeder Segregation as of May 2017 (no. of units)		Feeder Segregation as of May 2018 (no. of units)		Feeder Segregation as of 26 October 2018 (no. of units)		Feeder Segregation as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	4964	5987	5987	5987	5987	5987	5987	5987
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	136	0	166	878	166	878	197	878
4	Bihar	0	565	0	566	23	566	1172	565
5	Chhattisgarh	419	1049	436	1283	466	1283	486	1283
6	Goa	ND	ND	ND	ND	ND	ND	ND	ND
7	Gujarat	6866	6560	7091	6560	7228	6560	7820	6560
8	Haryana	3536	3536	3536	3536	3536	3536	3536	3536
9	Himachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
10	Jammu & Kashmir	0	116	0	1227	0	116	0	118
11	Jharkhand	0	460	0	460	0	460	149	270
12	Karnataka	1937	2506	2414	2506	2448	2506	2919	2506
13	Kerala	ND	ND	ND	ND	ND	ND	ND	ND
14	Madhya Pradesh	6173	6862	6542	6862	6713	6862	6986	6862
15	Maharashtra	4244	7355	4468	7355	4852	7355	10281	7355
16	Manipur	ND	ND	1	0	1	0	1	0
17	Meghalaya	ND	ND	3	0	3	0	3	0
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	ND	ND	ND	ND	ND	ND	ND	ND
22	Punjab	5319	5590	5319	5590	5686	5962	5934	5962
23	Rajasthan	1672	9581	2125	9581	2259	9581	3418	9581
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	0	1920	0	1920	0	1920	29	1920
26	Telangana	291	4158	387	4196	387	4196	387	4196
27	Tripura	ND	ND	ND	ND	ND	ND	ND	ND

28	Uttar Pradesh	179	5257	553	5257	799	5257	3666	5257
29	Uttarakhand	0	40	0	60	1	60	43	60
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

BI: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

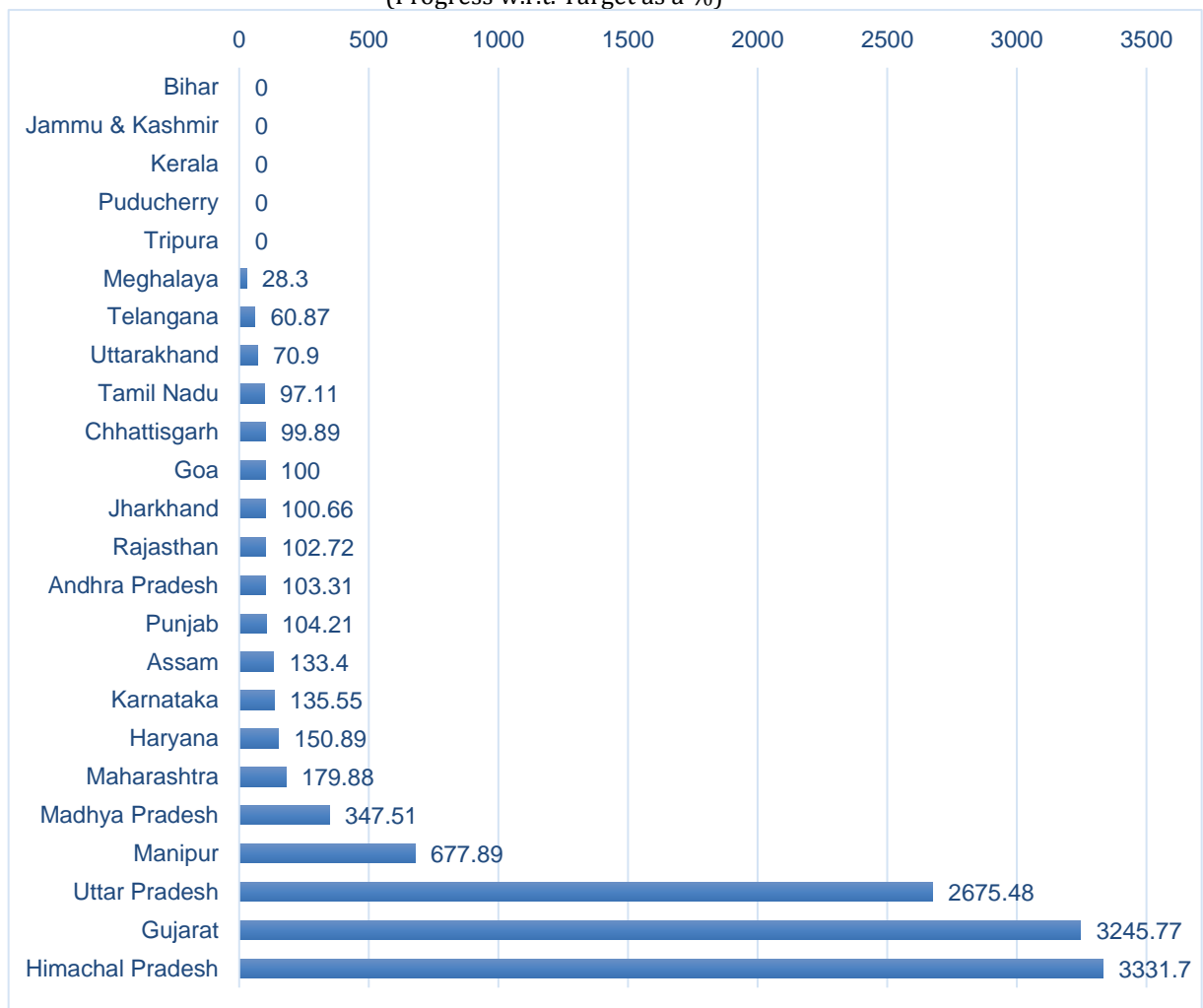
ND: No Data; NP: Not a part of UDAY Scheme

4.6 Rural Feeder Audit

Rural feeder audit helps in identifying the utilities/ feeders making losses and helps in taking necessary actions to improve their health. Also, the audit locates the areas that require immediate attention thereby improving efficiency. As installation process of rural feeders gears up, the need of the audit arises to locate the leakages and inefficiencies in the energy distribution. Figure 12 provides States/UTs data for rural-feeder audit. The data points that Himachal Pradesh is conducting maximum audits followed by Gujarat, Uttar Pradesh and Manipur. However, it is to be noted here that targets for the number of audits are different for each state utilities and hence, they can't be compared to each other. Important to notice here is that, over the years since the reference period, there has been no data provided by state of Bihar, Jammu & Kashmir, Kerala, Puducherry and Tripura.

The recent database (January 2021) showcases 24 states reporting data on rural feeder audit. Out of the remaining 19 state utilities, the targets have been met by 15 of them. The audits have increased considerably over the years (see table A13). It is evident from the analysis that states with more installation of feeders, feeder meterings have conducted more audits as well. These states are Himachal Pradesh, Gujarat, Manipur, Goa and Uttar Pradesh.

Figure 12: State/UTs Rural Feeder Audit
(Progress w.r.t. Target as a %)



Source: (Basic Data) UDAY Portal, Government of India.

Table 13 : States/UTs Rural Feeder Audit

Sl. No.	States/UTs	Rural Feeder Audit as of May 2017 (no. of units)		Rural Feeder Audit as of May 2018 (no. of units)		Rural Feeder Audit as of 26 October 2018 (no. of units)		Rural Feeder Audit as of 22 January 2021 (no. of units)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	3183	7920	7920	7920	7963	7920	8182	7920
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	0	1756	1051	1051	1051	1051	1402	1051
4	Bihar	0	1572	0	1572	0	1572	0	1572
5	Chhattisgarh	72	2793	471	2793	1020	2793	2790	2793
6	Goa	289	289	289	289	289	289	289	289
7	Gujarat	34882	9456	78599	9456	115417	9456	306920	9456
8	Haryana	992	1638	2836	1638	2003	1621	2446	1621
9	Himachal Pradesh	2696	1027	6404	634	7946	634	21123	634
10	Jammu & Kashmir	0	1227	0	1227	0	1227	0	1227
11	Jharkhand	227	761	719	761	719	761	766	761
12	Karnataka	7389	7870	7535	7870	7552	7870	10668	7870
13	Kerala	0	1053	0	1053	0	1053	0	1053
14	Madhya Pradesh	11836	11457	12014	11457	12126	11457	39814	11457
15	Maharashtra	4185	3389	4281	3389	4445	3389	6096	3389
16	Manipur	213	95	644	95	644	95	644	95
17	Meghalaya	75	265	75	265	75	265	75	265
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	0	55	0	55	0	55	0	55
22	Punjab	0	6657	0	6657	7414	7414	7726	7414
23	Rajasthan	19756	19711	19756	19711	20248	19711	20248	19711
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	516	2558	1616	2558	2276	2558	2484	2558
26	Telangana	1440	5906	3305	5906	3595	5906	3595	5906

27	Tripura	0	235	0	235	0	235	0	235
28	Uttar Pradesh	4925	8743	11430	8743	49778	8743	233917	8743
29	Uttarakhand	0	1395	700	1395	775	1395	989	1395
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

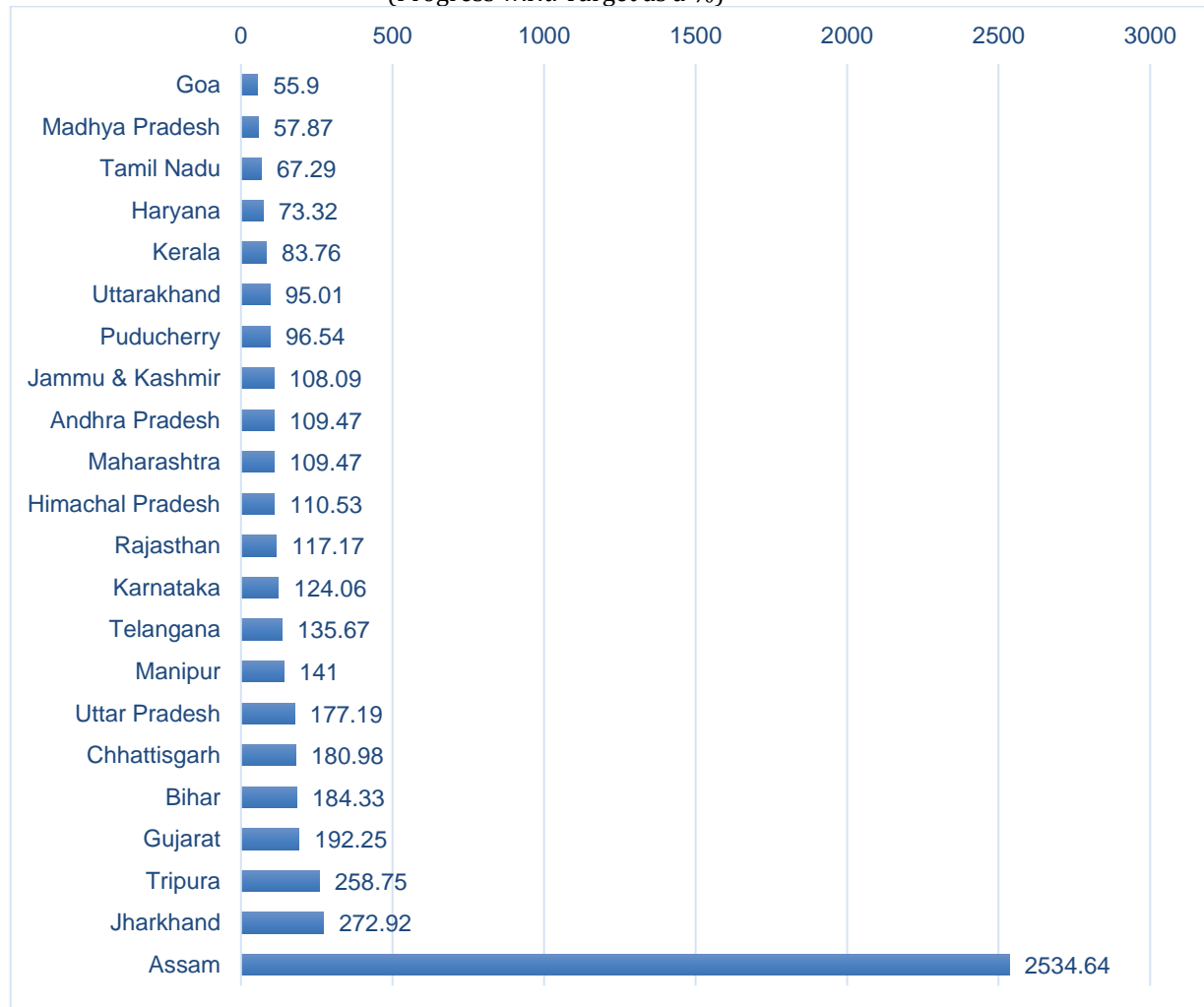
4.7 Distribution of LEDs under UJALA

UJALA, an acronym for Unnat Jyoti by Affordable LEDs for All, is being implemented by Energy Efficiency Services Limited (EESL). Under this scheme, superior quality energy efficient LED bulbs are distributed to domestic consumers at the rate of Rs.75 to 95, which is 80 per cent less than the market price of Rs. 350-450. The main idea is to promote energy conservation and creating awareness about energy saving technologies.

Figure 13 depicts State/UT-wise distribution of LEDs under UJALA scheme. Only 22 states have been reporting data while states like Arunachal Pradesh, Mizoram, Nagaland, Sikkim report no data on this parameter.

Out of the 22 States, 15 states have successfully achieved their targets and have also performed much ahead of the targets as seen in Figure 13. Other states are definitely catching up with their set targets. Assam now tops the list of distribution of LEDs and has left behind Jharkhand that performed remarkably on this parameter¹⁴ as per the May 2018, October 2018 estimates as well.

Figure 13: State/UTs Distribution of LEDs under UJALA
(Progress w.r.t. Target as a %)



Source: (Basic Data) UDAY Portal, Government of India.

9) Jharkhand distributed 120 lakhs (approx.) LED over their set target of 25 Lakhs.

Table 14: States/UTs Distribution of LEDs under UJALA

Sl. No.	States/UTs	Distribution of LEDs Under UJALA as of May 2017 (in Lakhs)		Distribution of LEDs Under UJALA as of May 2018 (in Lakhs)		Distribution of LEDs Under UJALA as of 26 October 2018 (in Lakhs)		Distribution of LEDs Under UJALA as on 22 January 2021 (in Lakhs)	
		Progress	Target	Progress	Target	Progress	Target	Progress	Target
1	Andhra Pradesh	202.84	185.3	202.84	185.3	202.84	185.3	202.84	185.3
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	2.8	2.8	6.8	2.8	8.84	2.8	70.97	2.8
4	Bihar	155.19	83.8	188.77	83.8	196.17	83.8	197.79	107.3
5	Chhattisgarh	79.2	75.04	109.69	75.04	135.51	75.04	135.81	75.04
6	Goa	8.2	14.67	8.2	14.67	8.2	14.67	8.2	14.67
7	Gujarat	354.18	202	380.25	202	386.08	202	388.35	202
8	Haryana	123.63	457	149.9	214	152.83	214	156.91	214
9	Himachal Pradesh	74.85	76.19	79.39	76.19	81.06	76.19	84.21	76.19
10	Jammu & Kashmir	64.31	80	69.98	80	76.38	80	86.47	80
11	Jharkhand	100	25	120.36	25	130.91	50	136.46	50
12	Karnataka	169.68	160.91	203.42	168.41	217.27	188.91	245.57	197.94
13	Kerala	87.56	161.9	126.64	161.9	132.57	161.9	135.61	161.9
14	Madhya Pradesh	132.04	203.66	165.39	300.4	171.09	300.4	173.83	300.4
15	Maharashtra	213.67	199.48	218.01	202.48	220.41	202.48	221.66	202.48
16	Manipur	0	1	1.41	1	1.41	1	1.41	1
17	Meghalaya	2	0	2.9	0	2.9	0	2.9	0
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP
21	Puducherry	6.7	6.97	6.7	6.97	7.01	7.52	7.26	7.52
22	Punjab	0	0	9.92	0	11.8	0	13.24	0
23	Rajasthan	136.53	143.76	151.52	143.76	157.69	143.76	168.44	143.76
24	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND
25	Tamil Nadu	2.06	54.2	16.3	54.2	27.83	54.2	36.47	54.2
26	Telangana	12.09	14.83	15.1	14.83	16.09	14.83	20.12	14.83

27	Tripura	5.1	0	6.11	0	7.86	4	10.35	4
28	Uttar Pradesh	195.43	175.12	271.42	175.12	301.13	175.12	310.3	175.12
29	Uttarakhand	40.94	59.33	46.87	59.33	50.51	59.33	56.37	59.33
30	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP

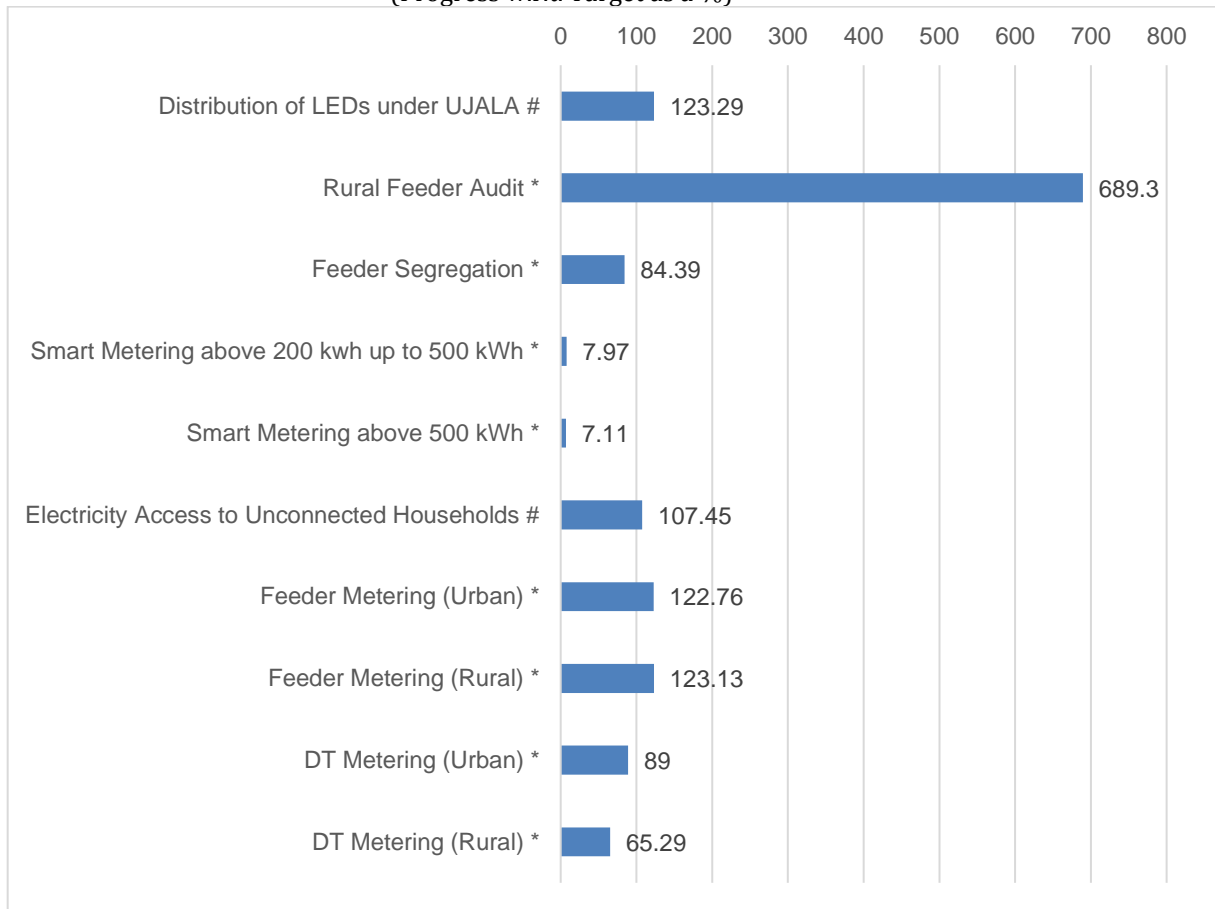
Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

5. The Aggregate Analysis

The UDAY portal gives the average “All India” figures for the financial and operational parameters of UDAY in the “national dashboard”. These average figures of the financial parameters do not show improvements in January 2021 vis-à-vis with the data accessed from the portal in 2017, and 2018. Our analysis reveals that the overall AT&C losses stand at 26.15 per cent (for 23 reporting states) for January 2021 which were 25.41 per cent (for 24 reporting states) as per the data accessed on October 2018 vis-à-vis 22.73 per cent (for 24 reporting states) noted in May 2018. It can be clearly seen that AT&C losses in the first year of the analysis were less than as compared to the current reference year (see table 15). While the ACC-ARR Gap declined from Rs. 0.46 per unit kWh in May 2017 to Rs. 0.29 per unit kWh in May 2018 and 0.27 per unit kWh in October 2018, we see widening gap ratio to Rs. 0.58 per unit kWh for recent data of January 2021. However, we must note here that as per the portal data, the AT&C losses are 26.20% (for 19 states) and ACC-ARR Gap ratio is Rs. 0.69 per unit kWh (for 16 states). Hence, these parameters in the financial front are the most crucial and concerning for the utilities as a large ACC-ARR gap as well as the AT&C losses reflect the need to improve the operational parameters which altogether build efficiency and a stronger power infrastructure system.

The low performance of efficiency parameters go together with the low performance of the operational parameters. Taking India as a whole, the aggregate picture of UDAY operational parameters is presented in Figure 14. Over time, electricity connections to unconnected households have been successfully achieved. Apart from this, feeder metering targets, distribution of LEDs have been met in due course as well. The real concern that still remains is the targets for Smart meters installations, feeder segregation and Distribution Transformer metering which have not paced up in the reference period (see Table 15).

Figure 14: Progress of UDAY Operational Parameters
 (Progress w.r.t. Target as a %)


Source: (Basic Data) UDAY Portal, Government of India.

Table 15 : Aggregate : Financial Indicators under UDAY

	India as of May 2017	India as of May 2018	India as of 26 October 2018	India as of 22 January 2021
UDAY Bonds Issued (crore)*	232163	232163	232163	232163
UDAY Bonds to be Issued (crore)*	269056.35	269056.35	269056.35	269056.35
AT&C Loss (%)	19.93(for 24 states)	21.17(for 24 states) 24.46(for 26 states*)	22.99 for 24 States 25.41 (for 25 states*)	26.20 (for 19 states) 26.15(for 23 states*)
ACS-ARR Gap (Rs/Unit) kWh #	0.46(for 24 states)	0.29(for 24 states) 0.63(for 26 states*)	0.27(for 24 states) 0.55(for 23 states*)	0.69 (for 16 states) 0.58 (for 23 states*)
Tariff orders issued	25/27 states/UTs	25/27 states/UTs	25/27 states/UTs	-

Source: UDAY Portal as accessed on May 2017, May 2018, 26 October 2018, and 22 January 2021.

* Depicts Data for 16 States

Author's calculation

Table 16: Aggregate: Operational Indicators under UDAY

	as of May 2017		as of May 2018		as of 26 October 2018		as of 22 January 2021	
	Progress	Target	Progress	Target	Progress	Target	Progress	Target
Feeder Metering (Urban) *	46844	42422	46684	41788	47071	42103	51907	42285
Feeder Metering (Rural) *	96977	97200	105427	97158	107512	98164	121270	98491
DT Metering (Urban) *	879540	1624193	884611	1534271	965156	1536033	1158146	1301226
DT Metering (Rural) *	1728778	4164334	2091086	4152546	2472428	4156483	2882198	4414149
Electricity Access to Unconnected Households #	1470.16	1851.38	1545.98	1855.31	1798.58	2053.1	2027.77	1887.25
Smart Metering above 500 kWh *	132660	5011130	150624	5011620	193115	5733302	407408	5733297
Smart Metering above 200 kwh up to 500 kWh *	155046	17449484	174999	17450398	191257	18429956	1469330	18429956
Feeder Segregation *	35736	61542	39028	62713	40574	63090	53081	62901
Rural Feeder Audit *	92896	97828	159645	96730	250458	97676	675536	98003
Distribution of LEDs under UJALA#	2168.99	2382.96	2556.88	2247.2	2709.1	2299.25	2880.62	2336.49

Source: UDAY Portal as accessed on May 2017, May2018, 26 October 2018, and 22 January 2021.

* measured as no. of units

measured in lakhs

Our analysis based on the state-specific file sheets – State Health Cards - given in the state-wise dashboards, finds that Gujarat tops the states/UTs on majority of the financial and operational parameters of UDAY scheme. Other states that have been performing well are Himachal Pradesh, Maharashtra, Uttar Pradesh. As per the recent estimates based on the UDAY portal data accessed on January 2021, we find that financial and operational parameters of power infrastructure for majority of the States in India have shown mixed revisions. Moreover, there are many states/UT utilities whose ATC losses as well as ATS-ARR Gap ratio have increased since its inception which is alarming. In addition, it is crucial to move beyond the “fallacy of aggregation” of UDAY indicators and focus on the financial and operational efficiency parameters of lagging states in meeting the UDAY targets.

6. The Conclusion

Though the generation of power has largely been addressed in India, the distribution of power still remains a concerns. DISCOMS are not able to meet their losses and pay their outstanding liabilities to the power generating companies. Many states do not even report data on the UDAY portal. This inturn raise questions about the efficacy of the UDAY scheme in materializing a turnaround in power sector. The latest push for DISCOM reform by the Union government in the power sector has been the Atam Nirbhar Bharat special economic package announced in May 2020 wherein privatization of utilities in the Union Territories shall be taken up soon. In addition, the new tariff policy includes reduction of cross subsidies, elimination of the regulatory assets and adding penalties to DISCOM if not provided standard service. These reforms appear promising but what is also required is to rework on targets of the existing UDAY scheme for better management and effective results. In addition, since the subject of power is a concurrent subject, it demands an effective harmonised approach involving both the Union and States.

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Appendix
Table A1.1: An Overall Picture of Operational & Financial Indicators for States under DAY (as of 26 October 2018)

S. N	States	ATC Losses (in %)	ACC-ARR Gap (Rs./unit)	Feeder Metering Urban (no. of units)	Feeder Metering Rural (no. of units)	DT Metering Urban (no. of units)	DT Metering Rural (no. of units)	Electricity Access to Households (in Lakhs)	Smart Meter Above 500 (no. of units)	Smart Meter Above 200 to 500 (no. of units)	Feeder seg. (no. of units)	Feeder Audit (no. of units)	Distribution of LEDs (in Lakhs)
1	Andhra Pradesh	11.16	0.06	110.84	101.48	92.48	51.42	104.48	0.09	0.09	100	100.54	109.47
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	21.82	1.04	103.76	71.46	100	35.32	72.98	18.51	5.14	18.91	100	315.71
4	Bihar	39.1	0.1	100	101.21	100	10.25	65.30	0	0	4.06	0	234.09
5	Chhattisgarh	31.62	0.5	107.05	132.47	64.94	45.58	94.23	0	0	36.32	36.52	180.58
6	Goa	11.3	1.17	100	100	93.80	94.11	100	0	0	ND	100	55.90
7	Gujarat	14.29	-0.04	134.90	123.62	116.26	137.81	107.26	0	0	110.18	1220.57	191.13
8	Haryana	23.81	0.58	101.17	103.27	18.01	28.73	92.42	1.52	0.47	100	123.57	71.42
9	Himachal Pradesh	3.29	0.03	100	100	104.10	70.35	100.05	81.02	101.20	ND	1253.31	106.39
10	J & K	53.78	1.96	100	100	43.22	0	86.41	0	0	0	0	95.48
11	Jharkhand	36.97	1.85	104.06	100	100.00	83.26	57.97	0	0	0	94.48	261.82
12	Karnataka	15.46	-0.01	103.81	102.64	96.66	68.98	89.84	0.44	0.64	97.69	95.96	115.01
13	Kerala	11.49	0.4	88.99	81.48	71.26	34.46	102.38	0	0	ND	0	81.88
14	Madhya Pradesh	31.06	0.37	106.18	109.31	81.76	41.39	85.27	20.29	1.21	97.83	105.84	56.95
15	Maharashtra	19.87	-0.02	140.65	131.16	30.71	19.15	99.40	0	0	65.97	131.16	108.86
16	Manipur	43.74	1.61	100	100	95.85	91.95	103.14	38.22	56.89	1/0	677.89	141
17	Meghalaya	34.64	1.3	88.89	22.86	102.16	40.74	74.47	1.73	2.76	3/0	28.30	2.9/0
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
21	Punjab	31.3	1.1	100	100	72.30	0.81	100.00	0	0	95.37	100	11.8/0
22	Rajasthan	27.31	-0.27	107.79	109.57	63.02	ND	96.48	57.82	0	23.58	102.72	109.69
23	Sikkim	ND	ND	ND	ND	25.34	ND	ND	ND	ND	ND	ND	ND
24	Tamil Nadu	14.76	0.55	102.20	94.72	ND	0.00	100.00	0	0	0	88.98	51.35
25	Telangana	12.55	0.39	100	100	75.98	119.94	100.86	12.24	1.38	9.22	60.87	108.50
26	Tripura	23	-0.17	100	100	126.16	43.29	86.21	16.95	20.87	ND	0	196.5
27	Uttar Pradesh	37.92	0.37	122.30	128.41	65.23	4.01	62.61	0	0.41	15.20	569.35	171.96
28	Uttarakhand	40.92	-0.02	100	100	69.52	0	95.61	0	0	1.67	55.56	85.13
29	West Bengal	NP	NP	NP	NP	88.98	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on 26 October 2018.

ND: No Data; NP: Not a part of UDAY Scheme

Table A1.2: An Overall Picture of Operational & Financial Indicators for States under DAY (as of 22 January 2021)

S. N	States	ATC Losses (in %)	ACC-ARR Gap (Rs./unit)	Feeder Metering Urban (no. of units)	Feeder Metering Rural (no. of units)	DT Metering Urban (no. of units)	DT Metering Rural (no. of units)	Electricity Access to Households (in Lakhs)	Smart Meter Above 500 (no. of units)	Smart Meter Above 200 to 500 (no. of units)	Feeder seg. (no. of units)	Feeder Audit (no. of units)	Distribution of LEDs (in Lakhs)
1	Andhra Pradesh	26.36	1.13	110.84	101.48	94.31	53.23	108.96	0.09	0.13	100	103.31	109.47
2	Arunachal Pradesh	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	Assam	31.09	0.2	103.76	85.44	111.82	37.7	113.34	45.55	39.8	22.44	133.4	2534.64
4	Bihar	43.73	0.29	100.34	102.42	112.69	33.68	116.82	0	21.7	207.43	0	184.33
5	Chhattisgarh	34.25	0.48	107.05	132.47	71.1	49.81	100	0	0	37.88	99.89	180.98
6	Goa	10.74	-0.09	100	100	93.8	94.11	100	0	0	ND	100	55.9
7	Gujarat	10.7	-0.02	166.61	142.45	133.72	168.16	113.35	1.1	3.67	119.21	3245.77	192.25
8	Haryana	25.34	0.16	101.17	103.27	66.24	6.67	100	37.83	0.49	100	150.89	73.32
9	Himachal Pradesh	7.54	-0.01	100	100	104.6	72.01	102.92	81.02	101.2	ND	3331.7	110.53
10	J & K	69.41	2.52	99.54	100	52.04	0	102.37	0	0	0	0	108.09
11	Jharkhand	44.26	0.64	104.06	100	100	99.82	100	0	0	55.19	100.66	272.92
12	Karnataka	16.89	0.34	105.56	105.41	107.63	84.01	106.59	0.45	0.66	116.48	135.55	124.06
13	Kerala	12.26	0.07	100.28	116.71	75.99	79.7	106.9	0	0	ND	0	83.76
14	Madhya Pradesh	26.91	0.79	111.93	114.44	85.96	43.39	101.13	25.4	13.7	101.81	347.51	57.87
15	Maharashtra	28.97	-0.06	180.4	180.73	31.09	19.33	108.63	0	0	139.78	179.88	109.47
16	Manipur	19.22	1.04	106.06	100	95.85	91.95	103.14	38.22	56.89	1/0	677.89	141
17	Meghalaya	ND	ND	88.89	22.86	102.16	40.74	100	1.73	2.76	3/0	28.3	2.9/0
18	Mizoram	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	Nagaland	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	Odisha	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
21	Punjab	32.42	0.46	103.6	104.21	63.02	0.81	102.72	0	0	99.53	104.21	13.24/0
22	Rajasthan	27.52	0.94	116.42	125.98	30.33	ND	113.04	58.42	0	35.67	102.72	117.17
23	Sikkim	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	Tamil Nadu	13.79	2	102.2	100	105.16	10.2	100	0	0	1.51	97.11	67.29
25	Telangana	16.33	1.24	100	100	143.37	122.85	106.15	15.83	1.47	9.22	60.87	135.67
26	Tripura	15.72	0.12	100	100	65.23	45.53	103.31	41.54	46.29	ND	0	258.75
27	Uttar Pradesh	42.21	0.66	143.63	141.99	144.12	9.5	111.1	0	129.26	69.74	2675.48	177.19
28	Uttarakhand	30.38	0.46	100	100	102.43	ND	106.05	0	0	71.67	70.9	95.01
29	West Bengal	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP

Source: UDAY Portal as accessed on 22 January 2021.

ND: No Data; NP: Not a part of UDAY Scheme

Table A2.1: An Overall Picture of Operational & Financial Indicators for UTs under UDAY (as of 26 October 2018)

S.N.	States	ATC Losses (in %)	ACC-ARR Gap (Rs. /unit)	Feeder Metering Urban (no. of units)	Feeder Metering Rural (no. of units)	DT Metering Urban (no. of units)	DT Metering Rural (no. of units)	Electricity Access to Households (in Lakhs)	Smart Meter Above 500 (no. of units)	Smart Meter Above 200 to 500 (no. of units)	Feeder seg. (no. of units)	Feeder Audit (no. of units)	Distribution of LEDs (in Lakhs)
1	Andaman & Nicobar Islands	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	Chandigarh	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
3	Dadra & Nagar Haveli	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	Daman & Diu	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	Delhi	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
6	Lakshadweep	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7	Puducherry	18.91	ND	100	100	72.3	32.95	100	16000/0	5000/0	ND	0	93.22

Source: UDAY Portal as accessed on 26 October 2018.

ND: No Data; NP: Not a part of UDAY Scheme

Table A2.2: An Overall Picture of Operational & Financial Indicators for UTs under UDAY (as of 22 January 2021)

S.N.	States	ATC Losses (in %)	ACC-ARR Gap (Rs./unit)	Feeder Metering Urban (no. of units)	Feeder Metering Rural (no. of units)	DT Metering Urban (no. of units)	DT Metering Rural (no. of units)	Electricity Access to Households (in Lakhs)	Smart Meter Above 500 (no. of units)	Smart Meter Above 200 to 500 (no. of units)	Feeder seg. (no. of units)	Feeder Audit (no. of units)	Distribution of LEDs (in Lakhs)
1	Andaman & Nicobar Islands	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	Chandigarh	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
3	Dadra & Nagar Haveli	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	Daman & Diu	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	Delhi	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
6	Lakshadweep	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7	Puducherry	14.94	0.09	100	100	83.75	33.79	100	32231/0	6962/0	ND	0	96.54

Source: UDAY Portal as accessed on 22 January 2021.
 ND: No Data; NP: Not a part of UDAY Scheme

Table A3: List of Electricity Distribution Companies for States/UTs

S. No	States	Electricity Distribution Companies
1	Andhra Pradesh	1. Andhra Pradesh Eastern Power Distribution Company (Visakhapatnam) 2. Andhra Pradesh Southern Power Distribution Company (Tirupati)
2	Arunachal Pradesh	1. Power Department*
3	Assam	1. Assam Power Distribution Company Ltd.
4	Bihar	1. North Bihar Power Distribution Company Limited 2. South Bihar Power Distribution Company Limited
5	Chhattisgarh	1. Chhattisgarh State Power Distribution Company
6	Goa	1. Goa Electricity Department
7	Gujarat	1. Dakshin Gujarat Vij Company Limited 2. Madhya Gujarat Vij Company Limited 3. Paschim Gujarat Vij Company Limited 4. Uttar Gujarat Vij Company Limited
8	Haryana	1. Uttar Haryana Bijli Vitran Nigam Limited 2. Dakshin Haryana Bijli Vitran Nigam Limited
9	Himachal Pradesh	1. Himachal Pradesh State Electricity Board
10	Jammu & Kashmir	1. Jammu & Kashmir Power Development Department
11	Jharkhand	1. Jharkhand Bijli Vitran Nigam Limited
12	Karnataka	1. Bangalore Electricity Supply Company (BESCOM) 2. Mangalore Electricity Supply Company (MESCOM) 3. Hubli Electricity Supply Company (HESCOM) 4. Gulbarga Electricity Supply Company (GESCOM) 5. Chamundeshwari Electricity Supply Corporation (CESC)
13	Kerala	1. Kerala State Electricity Board Limited (KSEBL)
14	Madhya Pradesh	1. Madhya Pradesh PoorvKshetra Vidyut Vitaran Company Ltd 2. Madhya Pradesh Madhya Kshetra Vidyut Vitaran Company Ltd 3. Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company Ltd.
15	Maharashtra	1. Maharashtra State Electricity Distribution Co. Ltd (MSEDCL) Mumbai
16	Manipur	1. Manipur State Power Distribution Company Limited
17	Meghalaya	1. Meghalaya Power Distribution Corporation Ltd.
18	Mizoram	1. Power department*
19	Nagaland	1. Power department*
20	Odisha	<i>Not part of the UDAY Scheme</i>
21	Punjab	1. Punjab State Power Corporation Limited (PSPCL)
22	Rajasthan	1. Jaipur Vidyut Vitran Nigam Limited 2. Ajmer Vidyut Vitran Nigam Limited 3. Jodhpur Vidyut Vitran Nigam Limited
23	Sikkim	1. Energy and Power Department*
24	Tamil Nadu	1. Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO)
25	Telangana	1. Southern Power Distribution Company of Telangana Ltd (Hyderabad) 2. Northern Power Distribution Company of Telangana Ltd (Warangal)
26	Tripura	1. Tripura State Electricity Corporation Ltd. (TSECL)
27	Uttar Pradesh	1. Dakshinanchal Vidyut Vitran Nigam Limited (Agra)

		2. Kanpur Electricity Supply Company Limited (Kanpur) 3. Madhyanchal Vidyut Vitran Nigam Limited (Lucknow) 4. Paschimanchal Vidyut Vitran Nigam Limited (Meerut) 5. Purvanchal Vidyut Vitran Nigam Limited (Varanasi)
28	Uttarakhand	1. Uttarakhand Power Corporation Limited
29	West Bengal	<i>Not part of the UDAY Scheme</i>

Table A4: List of Electricity Distribution Companies for States/UTs (Contd..)

S No.	Union Territories	Electricity Distribution Companies
1	Puducherry	1. Puducherry – Electricity Department
2	Andaman and Nicobar Islands	1. Administration of UT of Andaman & Nicobar Islands*
3	Dadra & Nagar Haveli	1. DNH Power distribution Corporation Limited (DNHPDCL)*
4	Chandigarh	<i>Not part of the UDAY Scheme</i>
5	Daman & Diu	1. Administration of UT of Daman & Diu*
6	Delhi	<i>Not part of the UDAY Scheme</i>
7	Lakshadweep	2. Administration of UT of Lakshadweep*

Source: UDAY Portal, Government of India.

Note: * indicates that the name of the electricity distribution company/corporation is not listed on the UDAY Dashboard but the mention of such electricity distribution companies is present in MoU signed between the Government of India, respective States/UTs and with the power distribution companies of the states/UTs. However, some MoU agreements have been bipartite as well.

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