

CHAPTER-III

Operational Turnaround of DISCOMs under UDAY

Summary

For operational turnaround of the DISCOMs, UDAY prescribed certain operational milestones *i.e.* compulsory metering at feeders and distribution transformers, smart metering of consumers, consumer indexing and Geographic Information System (GIS) mapping of losses and upgradation/change of transformers and meters which were to be achieved by the DISCOMs. Further, UDAY/ the MOUs also envisaged certain other initiatives viz. conducting energy audit of 11 kV feeders, implementing Enterprises Resource Planning (ERP), Demand Side Management (DSM), conducting Information, Education and Communication (IEC) Campaign and vigilance checking drives by the DISCOMs.

We noticed that the DISCOMs could not ensure installation of dedicated metering devices on 9,018 feeders (31 *per cent* of total feeders). Further, the DISCOMs also wrongly considered these feeders as metered, based on the metering devices in-built in the Vacuum Circuit Breakers installed on such feeders.

Further, none of the three DISCOMs initiated efforts for ensuring metering at the Distribution Transformers till the milestone date (June 2018) as the progress of Distribution Transformer metering was negligible (1.48 *per cent* up to March 2021). Resultantly, the DISCOMs were not in a position to identify Distribution Transformer-wise losses and trace high-loss Distribution Transformers, which defeated the very effort of trying to reduce the Aggregate Technical and Commercial losses.

The DISCOMs planned for implementing smart metering between 2.70 *per cent* and 13.87 *per cent* of the total sub-divisions only. Further, despite lapse of original implementation schedule, the Jaipur, Ajmer and Jodhpur DISCOMs could install 81.44 *per cent*, 35.98 *per cent* and 54.93 *per cent* respectively of the awarded quantity of smart meters till March 2022.

The DISCOMS did not implement consumer indexing with Geographic Information System mapping as envisaged under UDAY till March 2022. Besides, the directions of the Chairman DISCOMs to authenticate/ verify 100 *per cent* feeder-wise consumer indexing and updating the data on monthly basis were not adhered to. Resultantly, the DISCOMs could not generate proper and reliable energy audit reports.

The Jaipur and Ajmer DISCOMs significantly lagged behind in achieving the targets of augmenting single-phase Distribution Transformers whereas achievement of the Jodhpur DISCOM was negligible. Further, the DISCOMs did not take suitable measures to overcome the problem of high failure rate of Distribution Transformers.

The DISCOMs also not ensured replacement of failed Distribution Transformers in time and had significant balance (11,387 failed Distribution Transformers) for replacement till March 2021.

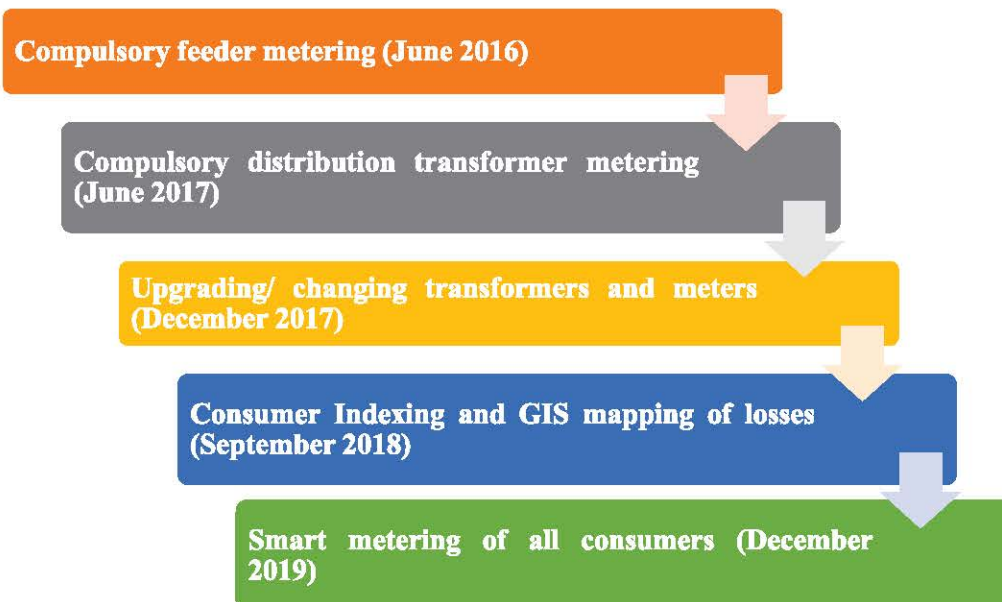
The DISCOMs did not adhere to the norms for replacement of defective consumer meters and thus, had to allow ₹ 56.35 crore towards rebate on defective meters during 2016-21.

Besides, the DISCOMs could not ensure 100 *per cent* automation of feeder monitoring system to avert manual interference/ inaccuracies in the system, implementation of ERP to harmonize the processes and DSM for energy savings. The DISCOMs also did not ensure compliance with the provisions of the Energy Conservation Act. Further, the efforts to enhance vigilance drives were not undertaken by the DISCOMs. Also, the Vigilance Monitoring Committees, envisaged under the Action Plan of UDAY, were not constituted by the DISCOMs/ GoR.

Resultantly, the very purpose of improving operational efficiency of the DISCOMs could not be achieved.

Milestones for improving operational efficiency of DISCOMs

3.1 UDAY prescribed certain operational milestones to be achieved by the DISCOMs. The milestones included in UDAY/tripartite MoUs were:

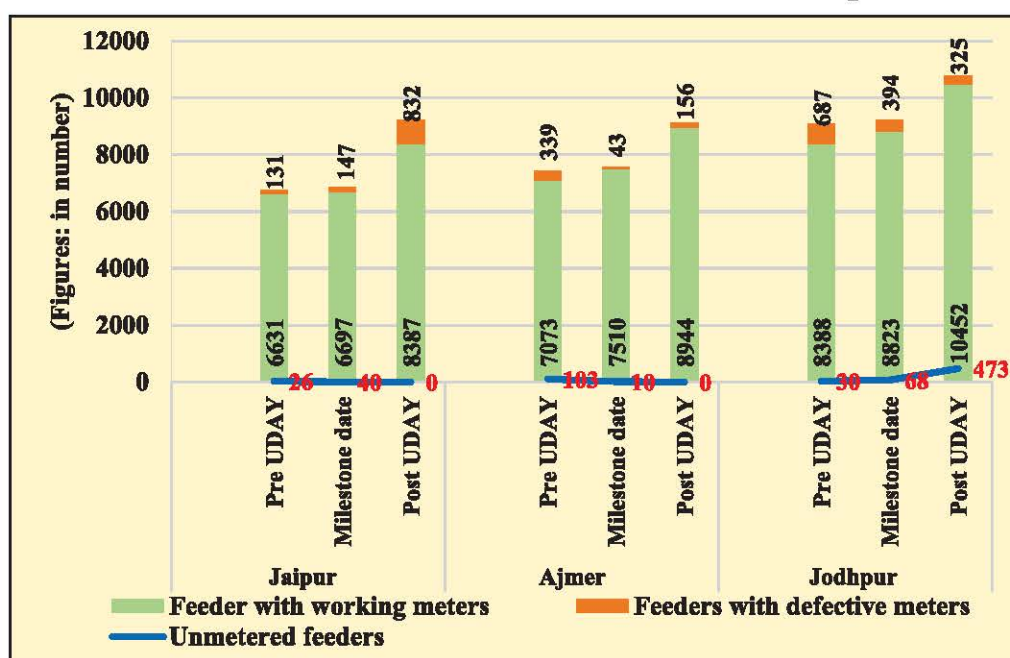


Compulsory Feeder Metering

3.2 Feeder metering helps in tracking feeder-wise energy losses by comparing energy input recorded in feeder meter with the energy billed to consumers connected with the respective feeder. UDAY envisaged completion of compulsory feeder metering by 30 June 2016.

Status of feeder metering as on 31 March 2016 (Pre UDAY), 30 June 2016 (Milestone date) and 31 March 2021 (Post UDAY) is given in the chart below:

Chart No. 3.1: DISCOM-wise status of feeder metering



Source: MIS maintained by Meter and Protection (M&P) Wing of State DISCOMs.

Audit noticed that the Meter and Protection (M&P) wings of the three DISCOMs depicted all their feeders as metered (except 473 unmetered feeders in Jodhpur DISCOM) as on 31 March 2021 (Post Uday). Audit however noticed that out of 29,096 metered feeders, 9,018 feeders¹ (31 per cent), had only Vacuum Circuit Breakers (VCBs) equipped with metering device, instead of having dedicated metering device.

Audit observed that VCBs equipped with metering device were not sufficient to record energy intake/offtake on the feeder as these may have irregular/inaccurate energy readings in case the VCBs remain out of order due to interruptions/ outages in power supply. Hence, DISCOMs were required to deploy dedicated meters on the 9,018 feeders where the metering device was inbuilt in VCBs only. Further, 1313 feeder meters² were lying defective as on 31 March 2021.

During the Exit Conference (January 2023), the Government agreed that feeder metering through VCBs was not an effective way and may yield defective readings. The Government further directed the DISCOMs to ensure feeder metering through dedicated feeder meters instead of relying on metering device embedded in VCBs. It also assured for carrying out 100 per cent feeder metering under Revamped Distribution Sector Scheme (RDSS).

1 1048 feeders in Jaipur DISCOM, 28 feeders in Ajmer DISCOM and 7942 feeders in Jodhpur DISCOM.

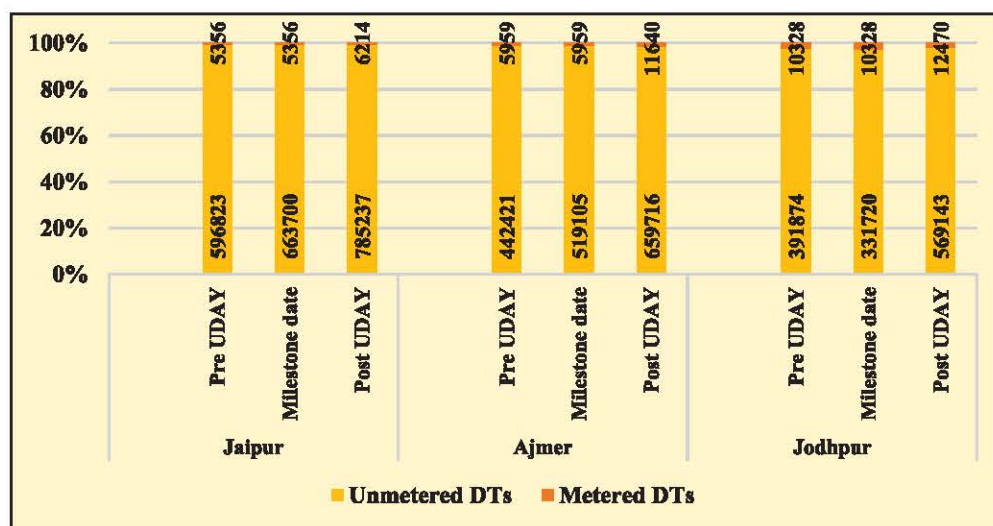
2 832 feeders in Jaipur DISCOM, 156 feeders in Ajmer DISCOM and 325 feeders in Jodhpur DISCOM.

Compulsory metering of Distribution Transformer (DT)

3.3 (a) UDAY envisaged completion of compulsory DT metering by 30 June 2017 (revised to 30 June 2018 in the MoUs). As per the trajectory committed in MoUs, the DISCOMs were to meter 20 per cent DTs by September 2016, 40 per cent DTs by March 2017, 60 per cent DTs by September 2017, 80 per cent DTs by March 2018 and 100 per cent DTs by June 2018.

Status of DT metering as on 31 March 2016 (Pre UDAY), 30 June 2018 (Milestone date) and 31 March 2021 (Post UDAY) is given in the chart below:

Chart No. 3.2: DISCOM wise status of metering of Distribution Transformer



Source: MIS maintained and information furnished by the DISCOMs.

Audit noticed that none of the DISCOMs initiated efforts for ensuring metering at the DTs till the milestone date. Further, the DISCOMs belatedly awarded (between August 2018 and November 2019) work orders for carrying out DT metering. Resultantly, the three DISCOMs collectively could arrange metering at merely 1.48 per cent of the total installed DTs (20.44 lakh DTs) upto 31 March 2021.

(b) Planning and Implementation of DT metering

The DISCOMs formulated (December 2016) a DT metering policy as per which metering of DTs was to be done first in the municipal towns having higher AT&C losses. In order to achieve the cost benefit ratio, the policy was to be implemented in three phases³. Considering the capital intensity of the work, the policy also provided to take up DT metering in rural areas only after assessing its feasibility from the outcomes of DT metering in municipal towns and by prioritising metering of high loss DTs.

Audit observed that DISCOMs belatedly framed the policy in December 2016 without considering the milestone decided under the MoUs (January 2016) and without specifying any timeframe for implementation of the three phases envisaged under it. Audit observed that DISCOMs could not complete the first phase of DT metering till March 2022.

3 R-APDRP towns (Phase-I), balance towns (Phase-II) and rural areas having AT&C losses of more than 40 per cent (Phase-III).

In the absence of implementing the DT metering, the DISCOMs were not in a position to either identify DT-wise losses or trace high loss DTs. Further, non-achievement of the timeframe committed under UDAY defeated the very purpose of reducing AT&C losses in the DISCOMs.

The DISCOMs while accepting the facts stated (October 2022) that since nature and technology of the DT metering work was new and crucial, they decided to meter the DTs in phased manner by commencing from the municipal towns having higher AT&C losses. The Government endorsed (October 2022) the reply furnished by DISCOMs.

Recommendation 8: The DISCOMs may ensure installation of meters at all the feeders and distribution transformers to identify the specific loss areas and take appropriate measures to reduce the AT&C losses.

Smart metering of consumers

3.4 Clause 4.1 of UDAY provided to complete smart metering of consumers having consumption above 500 units per month by December 2017 and others (*i.e.* consumers having consumption above 200 units and upto 500 units per month) by December 2019. While executing the MoUs (January 2016), the target dates for consumers with consumption above 500 units/month was considered as June 2018 and for others with consumption above 200 units/month by June 2020, subject to cost benefit analysis.

The MoP, GoI allocated (June 2017) funds (₹ 68.21 crore) to the DISCOMs for installation of smart metering solutions for UDAY participating States under Integrated Power Development Scheme (IPDS) and issued (October 2017) general guidelines for the same. In accordance with the IPDS guidelines, the DISCOMs submitted (November 2017 to March 2018) DPRs for smart metering by covering 60 sub-divisions (19 Circle Offices⁴) out of total 600 sub-divisions under 33 Circle Offices⁵.

Further, in pursuance of the DRC⁶ meeting (August 2018), wherein it was decided that only the Jaipur DISCOM will implement the smart metering project and the other two DISCOMs will follow based on the outcome of the Jaipur DISCOM, the Jaipur DISCOM awarded (August 2018) contracts for implementation of advanced metering infrastructure (AMI)/ smart metering of 4.31 lakh consumers with completion period of one year. Subsequently, on intervention of PFC (nodal agency for IPDS) and the MoP, GoI (January 2019), the Ajmer and Jodhpur DISCOMs also awarded (July-August 2019) contracts for implementing the AMI/ smart metering of 1.91 lakh consumers and 1.02 lakh consumers respectively with completion period of two years.

4 Jaipur DISCOM (29 sub-divisions under eight Circle Offices), Ajmer DISCOM (26 sub-divisions under 10 Circle Offices) and Jodhpur DISCOM (only five sub-divisions under one Circle Office).

5 Jaipur DISCOM (209 sub-divisions under 13 Circle Offices), Ajmer DISCOM (204 sub-divisions under 12 Circle Offices) and Jodhpur DISCOM (185 sub-divisions under 11 Circle Offices).

6 Distribution Reforms Committee.

The DISCOMs-wise details of number of sub-divisions covered, award and completion of smart metering at the consumers end as of March 2022 is given in table below:

Table 3.1: DISCOMs-wise details of sub-divisions covered, award and completion of smart metering at the consumers end as of March 2022

DISCOM	Total Sub-divisions	Sub-divisions proposed for coverage	Number of consumers for which work order was issued	Number of consumers for which smart metering was done
Jaipur	209	29	4.31 lakh	3.50 lakh
Ajmer	204	26	1.91 lakh	0.68 lakh
Jodhpur	185	5	1.02 lakh	0.56 lakh

Audit observed that no efforts were made by the DISCOMs for implementation of smart metering under UDAY till allocation of funds under IPDS. Further, the criteria adopted for implementation of smart metering was not in accordance to the provisions of UDAY/MoUs as the DISCOMs selected the sub-divisions having high T&D losses and low per consumer consumption. Besides, the actual scale of the implementation was much lesser as coverage of merely 13.87 per cent and 12.74 per cent of the total sub-divisions of the Jaipur and Ajmer DISCOMs respectively were planned in DPRs. The same was negligible in the Jodhpur DISCOM (2.70 per cent).

Audit further observed that despite lapse of original implementation schedule, the Jaipur, Ajmer and Jodhpur DISCOMs could install 81.44 per cent, 35.98 per cent and 54.93 per cent respectively of the awarded quantity of smart meters till March 2022. Audit noticed that Ajmer and Jodhpur DISCOMs had 3.80 lakh and 6.80 lakh consumers respectively whose monthly consumption was above 200 units whereas Jaipur DISCOM did not have consumption-wise details of consumers. However, in the absence of consumption-wise identification of consumers in DPRs, it could not be ensured that the smart meters were installed as per provisions of UDAY.

Thus, the DISCOMs were neither cognizant to achieve the milestones set/committed under UDAY nor ensured timely completion of contracts awarded for smart metering of consumers.

The DISCOMs stated (October 2022) that scattered installation of smart meters (only for consumers above 200 units and 500 units) instead of covering the entire revenue unit would have constraints, viz. no reduction in manpower deployed, disturbance in route sequencing and billing cycle, etc. The Government endorsed (October 2022) the reply furnished by the DISCOMs.

The reply was not convincing as the DISCOMs did not take up the smart metering as per provisions of UDAY. Further, deficient approach and inadequate efforts of DISCOMs led to insignificant implementation of smart metering till March 2022, which in turn impacted the effectiveness of UDAY.

Recommendation 9: The DISCOMs may take necessary steps to install smart meters at consumers' end on priority in accordance with the provisions of UDAY.

Consumer Indexing and GIS mapping

3.5 Consumer Indexing is a mechanism to locate the feeder or the distribution transformer by which electricity is supplied to a particular consumer. Geographic Information System (GIS) mapping is a technique of capturing, storing, checking, integrating, manipulating, analysing and displaying geo-data related to positions of the Earth's surface.

Clause 4.1 of UDAY *inter alia* provided for complete Consumer Indexing and GIS mapping of losses upto 30 September 2018 for enabling the DISCOMs to identify the loss-making areas for taking corrective action.

Consumer Indexing with GIS mapping

3.5.1 The GoI introduced (December 2008) Consumer Indexing and GIS mapping under R-APDRP⁷. Accordingly, DISCOMs initiated (September 2009) GIS survey of consumers in 188 towns of the State with the help of a private vendor (HCL Infosystems). However, due to dispute on methodology adopted for GIS survey, the private vendor discontinued the work in 2015.

Audit noticed that the Corporate Level Purchase Committee (CLPC) of three DISCOMs, considering practical difficulties in implementation and high cost of updating GIS data, decided (May 2016) to adopt Network Indexing Module (NIM⁸) instead of GIS mapping. Accordingly, Jaipur DISCOM was directed to arrange updating/changing the GIS data through an outsource agency post go-live of the system.

Audit observed that the GIS survey data of 188 towns covered in R-APDRP got outdated (March 2021) due to discontinuation of work in 2015. Further, Jaipur DISCOM ignored the directions to outsource the GIS mapping work till March 2021. Thus, the GIS mapping and Consumer Indexing as envisaged under UDAY remained unimplemented till March 2022 and the desired objectives remained unmet.

The Government stated (October 2022) that the project would be completed as per the contractual agreement. It further stated that NIM without GIS has been developed as an alternative to GIS based network indexing and consumer indexing module. Presently, this work is carried out manually, but GIS based consumer indexing shall be undertaken under Revamped Distribution Sector Scheme (RDSS).

The fact remained that even after lapse of the implementation period of UDAY in 2018-19, consumer indexing with GIS mapping as envisaged under UDAY could not be implemented till March 2022. Further, the Government reply to carry out GIS based consumer indexing under RDSS confirms that the NIM without GIS mapping developed as an alternative does not serve the purpose.

Consumer Indexing without GIS mapping

3.5.2 Considering the compulsion of Consumer Indexing, the Chairman, DISCOMs⁹ directed (January-February 2019) the DISCOMs to ensure 100 *per*

7 Restructured Accelerated Power Development and Reforms Programme.

8 Under NIM, Consumer Indexing was to be done with reference to feeder concerned and distribution transformer instead of GIS mapping.

9 Chairman DISCOMs is the Chairman of all the three DISCOMs.

cent authentication/ certification of consumer indexing by 31 March 2019 as per the prescribed methodology and updating the data on monthly basis.

(a) In case of feeder-wise Consumer Indexing, Jaipur, Ajmer and Jodhpur DISCOMs could authenticate/verify feeder-wise indexing of 99.87 per cent, 84.77 per cent and 80.88 per cent respectively till 1 February 2022. Thus, Ajmer and Jodhpur DISCOMs could not ensure compliance of the directions of Chairman, DISCOMs.

(b) In case of DT-wise Consumer Indexing, Jaipur, Ajmer and Jodhpur DISCOMs depicted indexing of 47.10 per cent, 98.98 per cent and 98.35 per cent consumers respectively as on 1 February 2022. Thus, Jaipur DISCOM lagged behind significantly in achieving the DT-wise Consumer Indexing.

Audit observed that authentication/ verification of partial data of consumer indexing did not serve any purpose as in the absence of fully verified data, the DISCOMs could not generate proper and reliable energy audit reports. The discrepancies (*viz.* feeders having no consumers) in energy audit reports due to unauthenticated/unverified consumer indexing data is discussed in **para 3.5.3 below**. Besides, planning to achieve 100 per cent Consumer Indexing with real-time updation of the indexed data was not possible without implementing GIS mapping and arranging for automatic data capturing from each feeder/DT on real-time basis. Resultantly, the main purpose of identifying the loss areas remained unachieved.

The Government accepted (October 2022) that a real-time monitoring tool is more effective to know the present status of consumer indexing and taking corrective action accordingly. During the Exit Conference (January 2023), the Government assured to carry out GIS based Consumer Indexing under RDSS.

Lack of realistic data without implementing envisaged Consumer Indexing

3.5.3 Audit analysed AT&C losses of all the 32,175 feeders (including split/cross feeders¹⁰) depicted in feeder-wise energy audit reports and Circle-wise summary reports for the year ended 31 March 2021.

Audit observed that 8,179 feeders (25.42 per cent) depicted negative/non-numerical AT&C losses whereas 8,728 feeders (27.13 per cent) depicted AT&C losses of more than 50 per cent (including 66 feeders¹¹ having AT&C loss beyond 100 per cent). Considerable size of data depicting impossible/abnormal results indicated that the data was not properly verified/ authenticated by the field offices and thus, it was not reliable. In view of abnormality of results generated from the software, possibility of significant deficiencies in the Consumer Indexing figures/ numbers projected by the DISCOMs cannot be ruled out.

Audit also observed that DISCOMs did not take necessary steps to remove the discrepancies in data which not only vitiated the reports generated by the DISCOMs but also led to representation of incorrect data and reports. Further,

10 Refers to a feeder created out of a physical/direct feeder to arrange/manage power supply requirements of any area and subsequently discontinued on getting regular arrangement.

11 Jaipur DISCOM (nine feeders), Ajmer DISCOM (17 feeders) and Jodhpur DISCOM (40 feeders).

maintenance of unreliable/unauthenticated data did not serve any purpose as the loss areas remained untraced.

During the Exit Conference (January 2023), the Government accepted that due to incorrect indexing, there were deficiencies/ abnormalities in data. The Government also directed the DISCOMs to ensure proper data maintenance at their level.

Recommendation 10: The DISCOMs may adopt a time-bound approach to ensure implementation of GIS mapping and consumer indexing.

Upgrading/changing transformers and meters

3.6 Clause 4.1 of UDAY provided for upgrading/changing transformers and meters to reduce technical losses and minimize outages.

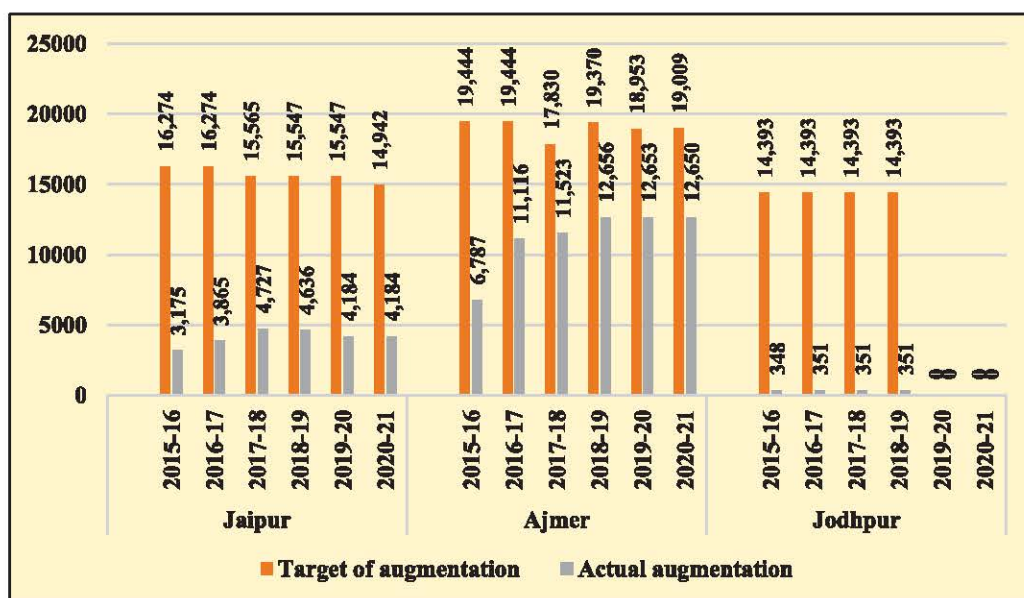
Further, considering the high failure rate of DTs and increase in losses of 11 kV rural feeders, the Chairman DISCOMs had also stressed upon (March 2014) the need to undertake a fifteen-point feeder maintenance programme, including augmentation of single-phase DTs, drawing three-phase system in villages, replacement of damaged DTs, etc.

Deficiencies in augmentation/upgradation of DTs and replacement of defective DTs and consumer meters are discussed hereunder:

Augmentation of Distribution Transformers (DTs)

3.6.1 The yearly targets *vis-à-vis* achievement of augmentation of single-phase DTs into three-phase DTs during 2015-16 to 2020-21 is indicated in the Chart below:

Chart No. 3.3: Targets *vis-à-vis* achievement of augmentation of single-phase DTs during 2015-16 to 2020-21



Source: MIS furnished by DISCOMs.

Audit noticed that the achievement against the targeted augmentation ranged between 19.51 per cent and 30.37 per cent in Jaipur DISCOM and 34.91 per cent

and 66.76 per cent in Ajmer DISCOM between 2015-16 and 2020-21. Thus, these two DISCOMs lagged behind in achieving the targeted augmentation of single-phase DTs during 2015-21. Further, performance of Jodhpur DISCOM was significantly poorer as achievement was negligible (less than three per cent) *vis-à-vis* the targeted augmentation during 2015-19¹².

Audit observed that despite the sub-optimal achievement against the targeted augmentation being reported on a monthly basis, the Management did not initiate any action for improving the performance.

The Jaipur and Ajmer DISCOMs stated (October 2022) that figures of augmentation for 2019-20 and 2020-21 did not include newly installed DTs which were also part of augmentation of existing distribution systems. Further, the Jodhpur DISCOM accepted (October 2022) the facts of excluding the proforma from MIS from 2019-20 onwards and assured to include the relevant proforma in the MIS henceforth. The Government endorsed the reply.

The replies of Jaipur and Ajmer DISCOMs are not convincing as facts and figures included in the observation were based on the MIS of DISCOMs whereas the figures mentioned in reply for 2019-20 and 2020-21 were not supported with evidence. And even if, for argument's sake the DISCOMs' replies are accepted, then they would need to explain why those newly installed DTs were not being reflected in the MIS concerned. Further, static data of actual augmentation shown in respect of Jodhpur DISCOM for the years 2016-17 to 2018-19 also raised doubt on the reliability of MIS.

High failure rate of distribution transformers

3.6.2 For proper reliability, DT failure rate was required to be less than 1.5 per cent per annum, as indicated by the Ministry of Power (MoP).

Audit noticed that the failure rate of DTs in DISCOMs during 2015-21 ranged between 7.26 per cent and 11.90 per cent¹³, as given in **Annexure-7**. Thus, the failure rate of DTs was very high. Further, share of DTs that failed beyond the guarantee period out of total DTs that failed during the period was also significant, ranging between 46.88 per cent and 65.22 per cent of the total DTs that failed during the period.

Audit observed that the high failure rate of DTs was because of overloading of DTs, improper earthing and protection, improper fuses, inadequate preventive maintenance, *etc.* However, the DISCOMs did not take suitable measures to overcome the problem of high failure rates of DTs.

The Government accepted (October 2022) the facts and stated that provision for installation of Molded Case Circuit Breaker (MCCB) has been introduced to prevent burning of transformer due to excess load. However, no reply was given with respect to other reasons for failure of DTs.

12 Jodhpur DISCOM excluded the relevant proforma from MIS from 2019-20 onwards.

13 Jaipur DISCOM (between 9.14 per cent and 11.90 per cent), Ajmer DISCOM (between 7.96 per cent and 10.91 per cent) and Jodhpur DISCOM (between 7.26 per cent and 9.53 per cent).

Replacement/deposition of defective/burnt Distribution Transformers

3.6.3 As per procedure for replacement of burnt/defective DT approved (December 2009) by the Coordination Committee¹⁴, the sub-divisions were to replace the DT within 72 hours and deposit the failed DT with the Assistant Controller of Stores (ACOS) concerned within 7 to 14 days.

Audit noticed that during 2015-21, the Jaipur, Ajmer and Jodhpur DISCOMs replaced 4,09,920 DTs, 3,11,523 DTs and 2,47,750 DTs respectively as given in **Annexure-8**. Of these, the three DISCOMs replaced 6,448 DTs, 597 DTs and 90 DTs respectively beyond the laid down period of 72 hours. Out of the failed DTs, 11,387 DTs were pending for replacement. Besides, the balance of DTs with the Jaipur, Ajmer and Jodhpur DISCOMs that had failed but were pending for deposit with respective ACOS ranged between 94 days and 137 days, 10 days and 73 days, and 11 days and 74 days respectively. Audit also observed that the pendency in deposit of failed DTs in Jaipur DISCOM was significantly high.

The Government accepted (October 2022) the facts and stated that ERP modules were being implemented for better analysis of overall functionality of stores. Also, CCTV cameras were being installed at ACOS for better monitoring of activities.

Non-replacement of defective consumer meters

3.6.4 The Terms and Conditions for supply of electricity (TCOS) of DISCOMs provided for replacement of stopped/defective meters within 24 hours in urban areas and within 72 hours in rural areas. Further, in case of non-replacement of a stopped/ defective meter within a period of two months (60 days), a rebate of five *per cent* on the total bill of the consumer (excluding electricity duty) shall be allowed.

The DISCOM-wise periodicity of defective consumer meters pending for replacement (including defective agriculture meters) as on 31 March 2021 is given in the table below:

Table 3.2: Breakup of defective consumer meters pending for replacement

DISCOM	Total metered consumers (in lakh)	Upto 3 months	3 to 6 months	6 to 12 months	More than 12 months	Total defective meters	% of defective meters
Jaipur	45.41	47805	45855	49762	81704	225126	4.96
Ajmer	48.40	98137	42144	27516	67227	235024	4.86
Jodhpur	43.31	76201	64008	49239	147212	336660	7.77

Source: Information provided by DISCOMs

Audit observed that the DISCOMs had failed in adhering to the norms laid down under TCOS and a major part of these defective consumer meters was pending for replacement for more than 12 months. Due to non-replacement of defective meters within the prescribed time-frame, the DISCOMs had to allow for ₹ 56.35 crore¹⁵ towards rebate on defective meters during 2016-21 and continued

14 A committee of State Power Sector Companies (representatives of the State DISCOMs) for coordination and uniformity in power sector activities.

15 Jaipur DISCOM (₹ 22.30 crore), Ajmer DISCOM (₹ 13.34 crore) and Jodhpur DISCOM (₹ 20.71 crore).

to bill their consumption on average basis. The loss of revenue that resulted from average billing however could not be worked out by Audit due to non-availability of actual consumption data.

The Government accepted (October 2022) the audit observation.

Recommendation 11: The DISCOMs may take measures to control the high failure rate of DTs and ensure replacement of defective DTs/ consumer meters in time.

Feeder Monitoring System

Automation of feeder metering data/readings

3.7 As per the MoUs, the DISCOMs were to undertake energy audit upto 11 kV level in rural areas by September 2016. Further, the MoP, GoI decided (March 2016) to provide communicable meters on 11 kV rural feeders and appointed (March 2016) REC Limited (REC) as the nodal agency for implementing the task and preparing the DPR for capturing real-time data of 11 kV rural feeders. The REC, therefore, sought (March 2016) details relating to feeder metering and remote communication availability thereon. Subsequently, the REC time and again sought (September to December 2016) confirmation from DISCOMs regarding their willingness on participation in the scheme to avoid duplicity of efforts.

(a) The Ajmer and Jodhpur DISCOMs opted (May 2017) to execute the work through REC under MoP, GoI scheme. The REC Transmission Projects Company Limited (a subsidiary of REC and the implementing agency) placed work order (July 2017) for implementation of 11 kV Rural Feeder Monitoring Scheme. The work order envisaged installation of modems on 8,000 feeders and 8,315 feeders of the Ajmer and Jodhpur DISCOMs respectively. Communication system in urban feeders were installed by both DISCOMs also.

Audit noticed that 1,452 feeders and 2,409 feeders of the Ajmer and Jodhpur DISCOMs respectively did not have communication system till 2020-21 as given in **Annexure-9**. Further, the number of feeders having defunct modems in the Ajmer and Jodhpur DISCOMs increased significantly from 878 to 1,690 feeders and 2,939 to 4,244 feeders respectively during 2018-21. In the absence of automatic/technological communication, the data from 34.53 *per cent* feeders of the Ajmer DISCOM and 59.14 *per cent* feeders of the Jodhpur DISCOM were being collected and fed in the system manually (March 2021). Subsequently, due to dispute between REC Transmission Projects Company Limited and the vendor, the vendor stopped operating the communication system in both the DISCOMs from July 2021. The dispute remained unresolved till March 2022.

Thus, in the absence of 100 *per cent* automation of feeder information monitoring system, manual interference and inaccuracies in the system still exist. Further, the purpose of real-time monitoring of the system remained unachieved till December 2022.

During the Exit Conference (January 2023), the Government accepted the facts and stated that the matter would be taken up with REC as action against the contractor can be initiated at the level of REC only.

(b) The Jaipur DISCOM, instead of opting for implementation through REC, awarded (March 2017 and February 2019) two build, own, operate and transfer (BOOT) contracts for feeder meter information system at 5,000 feeders and 2,500 feeders respectively for a period of five years on monthly payment of ₹ 275 per feeder. Audit noticed that the Chairman DISCOM, while granting his approval, directed (March 2017) the Jaipur DISCOM for communicating to REC regarding integration of the Jaipur DISCOM's proposed system with its feeder monitoring system and considering for financial assistance accordingly.

Audit observed that the Jaipur DISCOM did not adhere to the directions for integrating the systems with REC's system. Resultantly, the Jaipur DISCOM missed the opportunity to get financial assistance towards the expenditure of ₹ 5.05 crore incurred on implementing the system. Since the expenditure is of recurring nature, the actual opportunity loss will be much higher. Further, number of feeders without modem and number of feeders having defunct modems in the DISCOM increased significantly from 813 to 1,727 and 756 to 1,564 respectively during 2018-21, as given in Annexure-9. In the absence of automatic/ technological communication, the data from 35.70 *per cent* feeders of the DISCOM was being collected and fed in the system manually (March 2021).

Audit also observed that Jaipur DISCOM compromised with the quality of modems supplied by the vendor as it waived off (July 2017) verification/ inspection and testing of the modems despite having no Indian Standard Code for modem. Further, several deficiencies, *viz.* non-availability of feeders (no load feeders), allocation of duplicate numbers to feeders, non-replacement of burnt/defective meters, non-replacement of CTPT sets, non-communication of meter ports/compatibility issues of already installed meters, *etc.* were also noticed on the part of the Jaipur DISCOM in implementation of feeder meter information system. Further, the deficiencies on the part of the vendor involved lack of network connectivity, poor quality of cables used in modems, not updating multiplying factor of feeder meters and real-time clock, *etc.*

Thus, in the absence of 100 *per cent* automation of feeder information monitoring system, manual interference/ inaccuracies in the system still existed. Further, the purpose of real-time monitoring of the system remained unachieved.

The Jaipur DISCOM stated (October 2022) that to avoid complications of separate system for rural and urban feeders, it floated only one tender to fulfil its requirement. The DISCOM further stated that several constraints, *viz.* non-availability of network in remote areas, time-consuming process for replacement/ repair of CTPT/ meter/ modem, defects in due to extreme weather conditions, *etc.* The Government endorsed (October 2022) the reply given by the DISCOMs.

The reply did not address the audit observation and was silent on the issue of not adhering to the directions of Chairman DISCOM. Further, the DISCOM did not chalk out any action plan to resolve the constraints.

Recommendation 12: The DISCOMs may take steps for 100 per cent automation of feeder monitoring system to ensure real time monitoring of distribution system.

Other initiatives for improving Operational Efficiency of DISCOMs

3.8 UDAY also envisaged certain other initiatives for improving operational efficiency of DISCOMs. Deficiencies/shortcomings in the implementation of these other initiatives are discussed in subsequent paragraphs.

Implementation of Enterprises Resource Planning

3.9 Clause 1.3 g (xi) of the MoUs provided for the implementation of Enterprise Resource Planning (ERP) system by March 2018 for better and effective inventory management, accounts management, *etc.*

Audit noticed that the DISCOMs awarded (between May 2018 and June 2019) ERP work to RajComp Info Services Limited (RISL) at a total cost of ₹ 4.03 crore¹⁶ with scheduled completion period of 12 months for development of four modules for the DISCOMs in an integrated manner.

Audit observed that RISL could not develop all the modules as only nine to 21 sub-modules¹⁷ (out of total 39 sub-modules) under the four main modules were functional as on 31 March 2021 whereas the remaining sub-modules were in testing stage.

Thus, due to delay in implementation of ERP, the DISCOMs could not get the benefits of an integrated, centralised and unified database, improved information sharing and harmonization of process, improvement in transaction efficiency, reduction in work duplication and instantaneous MIS report generation capabilities, *etc.*

The Government accepted (October 2022) the delay and stated that the DISCOMs had decided (15 June 2022) to foreclose the ERP project on 31 July 2022 and penal provision for short closure of these modules/ sub-modules are being explored.

Demand Side Management

3.10 UDAY, as well as the MoUs executed thereunder, envisaged Demand Side Management (DSM) as per which the DISCOMs were to undertake measures for providing LED bulbs, agricultural pumps, fans/air-conditioners and efficient industrial equipment through Perform, Achieve and Trade (PAT)¹⁸.

16 Jaipur DISCOM: ₹ 1.52 crore, Ajmer DISCOM: ₹ 1.27 crore and Jodhpur DISCOM: ₹ 1.24 crore.

17 Jaipur DISCOM: 9 sub-modules, Ajmer DISCOM: 21 sub-modules and Jodhpur DISCOM: 12 sub-modules.

18 PAT, an initiative under the Energy Conservation Act, is a market-assisted compliance mechanism, designed to accelerate cost-effective improvement in energy efficiency in large energy-intensive industries, through certification of energy savings that can be traded.

Replacement of agriculture pump sets

3.10.1 The MoUs envisaged replacement of at least 10 *per cent* of existing agriculture pumps with energy efficient agriculture pump sets by March 2019 with an aim to reduce the energy consumption between 25 *per cent* and 30 *per cent*.

The Jaipur DISCOM decided (July 2016) to undertake replacement of ordinary agriculture pumps with energy efficient pumps at one feeder¹⁹ on pilot basis and awarded the work to Energy Efficiency Services Limited (EESL) for replacement of 50 agriculture pumps. The EESL was also required to inform the actual energy saved on these pumps so that further action to roll-out this project might be taken accordingly.

Audit noticed that the EESL replaced 28 agriculture pumps with energy-efficient agriculture pumps and accordingly intimated (October 2016) 31.70 *per cent* savings in energy. Thereafter, a proposal for replacement of 31,200 agriculture pumps in three²⁰ selected districts, with estimated total cost of ₹ 145 crore, was sent (May 2017) to the Finance Department, GoR to provide subsidy as it would reduce the subsidy burden (₹ 276 crore) of GoR on agriculture connections in five years. Audit observed that the Finance Department, GoR declined to provide the grant in its entirety, but agreed to finance the project cost upto the limit of saving in subsidy during implementation period. The DISCOMs, however, subsequently (August 2018) dropped the proposed project as they were not in a position to finance it.

Audit observed that the DISCOMs did not chalk out another plan to implement the commitment of replacement of agriculture pump sets despite the fact that the Finance Department, GoR agreed to provide funds to the extent of savings in subsidy on agriculture connections.

Thus, inaction on the part of the DISCOMs to implement the Action Plan and inability to get advantage of the funding committed by the GoR not only hampered the energy saving under DSM but also violated the provisions of UDAY.

The Government/DISCOMs accepted the audit observation.

Non-achievement of target under Perform, Achieve and Trade (PAT)

3.10.2 As per Section 14A of the Energy Conservation Act 2001, the GoI may issue the energy savings certificate (ESC) to the designated consumer whose energy consumption is less than the prescribed norms and standards. Rule 13 (b) of the Energy Conservation Rules 2012 further provided that where the measures for achieving compliance with the energy consumption norms and standards are found inadequate, the designated consumer shall purchase the Energy Savings Certificates (ESCs) equivalent in full satisfaction of the shortfall in the energy consumption norms and standards worked out in terms of metric ton of oil equivalent. Further with a view to incentivize energy efficiency, Bureau of Energy Efficiency under the MoP, GoI launched (July 2012) Perform, Achieve and Trade (PAT) scheme. The GoI included

¹⁹ Tejaji feeder of Chomu Sub-division.

²⁰ Jhalawar (Jaipur DISCOM), Pali (Jodhpur DISCOM) and Chittorgarh (Ajmer DISCOM).

(December 2015) the DISCOMs as designated consumers (DCs) under PAT and also notified (December 2020) the value of per metric ton of oil as ₹ 18,402 under Energy Conservation Rules 2012.

The excess energy savings are converted into tradable instruments called ESCs that are traded at the Power Exchanges which provide the trading platform where the DCs who fall short of their compliance, bid for purchase of ESCs.

The GoI set (March 2016) energy consumption norms and standards (as T&D loss²¹) for the Rajasthan DISCOMs for 2018-19 (target year) which were revised to 15 *per cent* in October 2018. Audit noticed that none of the DISCOMs could achieve the targeted reduction in T&D loss as actual T&D loss in 2018-19 remained 20.54 *per cent*, 18.03 *per cent* and 23.12 *per cent* in Jaipur, Ajmer and Jodhpur DISCOMs respectively. It was mandatory for the DISCOMs to purchase ESCs to fully satisfy the shortfall in energy conservation norms and standards. Accordingly, the DISCOMs were liable to purchase 3,11,462 ESC valued at ₹ 573.15 crore²² as the value of one ESC was to be equivalent to one metric ton of oil.

Audit observed that in the trading held in October-November 2021, the ESCs were traded at ₹ 250, however, the DISCOMs lost the opportunity to purchase ESCs at this rate. Audit further observed that the DISCOMs belatedly entrusted (December 2021) the work of purchase of ESCs to Rajasthan Urja Vikas Nigam Limited. However, ESCs were not purchased till March 2022.

Subsequently, the MoP, GoI specified (August 2022) the floor price for trading of ESCs at ten *per cent* of the price of one metric tonne of oil equivalent of energy consumed *i.e.* ₹ 1,840.

Thus, the inaction on the part of the DISCOMs may lead to liability of at least ₹ 57.30 crore on account of purchasing ESCs priced conservatively at the minimum floor price fixed.

The DISCOMs not only failed to achieve the targeted reduction in T&D loss but also could not ensure compliance with provisions of the Energy Conservation Act. Moreover, failure in reduction of T&D loss may lead to liability of at least ₹ 57.30 crore on account of purchase of ESCs.

The Government, while accepting the facts (October 2022), assured to comply with the provisions of the Energy Conservation Act.

Vigilance Checking

3.11 The Action Plan of UDAY envisages carrying out of vigilance drives and constitution of Vigilance Monitoring Committees by the DISCOMs/ GoR. The shortcomings/deficiencies in this regard are discussed hereunder.

21 Jaipur DISCOM-28.12 *per cent*, Ajmer DISCOM-24.53 *per cent* and Jodhpur DISCOM-22.80 *per cent*.

22 Jaipur DISCOM: ₹ 220.56 crore (1,19,854 ESCs*₹ 18,402), Ajmer DISCOM: ₹ 83.67crore (45,470 ESCs*₹ 18,402) and Jodhpur DISCOM: ₹ 268.92crore (1,46,138 ESCs*₹ 18,402).

Vigilance Drives

3.11.1 As per Action Plan of UDAY, the DISCOMs were required to carry out vigilance drives in each sub-division by deputing a team to check and curb the theft of electricity for reducing the commercial losses.

Audit noticed that the Ajmer and Jodhpur DISCOMs did not take any action to implement the vigilance drives as envisaged in the Action Plan. However, the Jaipur DISCOM initiated the action, though belatedly, in April 2019. Audit also noticed that the total number of vigilance checking conducted by the DISCOMs reduced significantly (exceptionally low in 2018-19 due to the State Assembly elections) from 2015 onwards to 2021, as given in **Annexure-10**. Audit observed that the DISCOMs, instead of enhancing the vigilance drive through the Vigilance Wing and O&M Circles, as envisaged in the UDAY Action Plan, actually reduced the vigilance checking and thus could not ensure reduction in AT&C losses as per the approved loss trajectory.

Further, details of dues assessed and realised against the theft cases detected in vigilance checks during 2015-21 is given as under:

Table 3.3: Status of dues assessed and realised against the theft cases detected in vigilance checks during 2015-21

(₹ in crore)

DISCOM	Number of theft cases detected	Dues assessed	Dues realised against assessment		Dues not realised against assessment	
			Amount	Percent	Amount	Percent
Jaipur	434820	929.25	469.27	50.49	459.98	49.51
Ajmer	358464	790.09	427.86	54.15	362.23	45.85
Jodhpur	145557	481.44	217.45	45.17	263.99	54.83
Total	938841	2200.78	1114.58	50.64	1086.20	49.36

Audit also observed that against 9.39 lakh theft cases detected during vigilance checks, the DISCOMs assessed dues of ₹ 2200.78 crore during 2015-21. However, only an amount of ₹ 1,114.58 crore was realized, representing only 50.49 per cent, 54.15 per cent and 45.17 per cent in the Jaipur, Ajmer and Jodhpur DISCOMs respectively. The performance of the Jodhpur DISCOM in comparison to the other two DISCOMs was extremely poor in all the fields, viz. vigilance checking, detection of thefts and realisation of assessed amount, which led to continuous increase in AT&C losses from 2018-19 onwards as detailed in **Para 5.3**. Further, increase in AT&C losses as compared to Pre-UDAY period depicted complete failure of the Jodhpur DISCOM in getting benefit out of the scheme.

The Government/DISCOMs accepted (October 2022) the audit observation. However, the reply was silent on the issue of declining trend in vigilance checking.

Constitution of Vigilance Monitoring Committees

3.11.2 Based on the vigilance drives initiated under the Action Plan of UDAY, each Circle was required to identify the two worst-performing sub-divisions in terms of AT&C losses and two worst-affected patches in each sub-division. Further, these identified patches were to be checked by external teams with the support of District Level Vigilance Drive Monitoring Committee (DLVDMC).

The implementation and outcome of these drives were to be monitored by the State Level Vigilance Drive Monitoring Committee (SLVDMC).

Audit noticed that the DLVDMC and the SLVDMC were not constituted till March 2022 for the monitoring of vigilance drives. A State Level Committee comprising of three members²³ was, however, constituted belatedly in February 2021.

The Government/DISCOMs accepted (October 2022) the audit observation.

Recommendation 13: The DISCOMs, especially Jodhpur DISCOM, may enhance the vigilance checking to curb the electricity thefts and to reduce the losses within the targeted limits.

Lack of Information, Education and Communication Campaign

3.12 UDAY envisaged conducting comprehensive Information, Education and Communication (IEC) campaign jointly with the State to check power theft through enhanced public awareness program upto December 2016. The MoP, GoI also issued (May 2016) directives to include IEC interventions in the State Action Plan document of UDAY and to take IEC campaign to control power theft from time to time.

Audit, however, observed that the DISCOMs did not comply with the directives issued by the GoI and thereby did not include the IEC interventions in the State Action Plan. Besides, any action to conduct comprehensive IEC campaign through public participation was not found on the records of the DISCOMs.

The Government stated (October 2022) that the DISCOMs had organized awareness programs/ campaigns from time to time to prevent electricity related accidents and misuse of electricity.

The reply was silent on the issue of not including the IEC interventions in the State Action Plan. Further, the DISCOMs did not furnish any evidence regarding organizing awareness programs/campaigns.

23 Energy Minister as Chairman and Industries Minister and State Minister (Independent Charge) of Education as Members.