

# Improving Discoms' Financial Viability

Learnings from  
Uttar Haryana Bijli Vitran Nigam

Bharat Sharma, Kanika Balani, Shalu Agrawal,  
Paras Bhattarai and Rashi Singh

Report | October 2023





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A suite of systematic interventions, concerted efforts for community engagement, and decisive leadership transformed UHBVN from a high-loss discom to a financially healthy one.

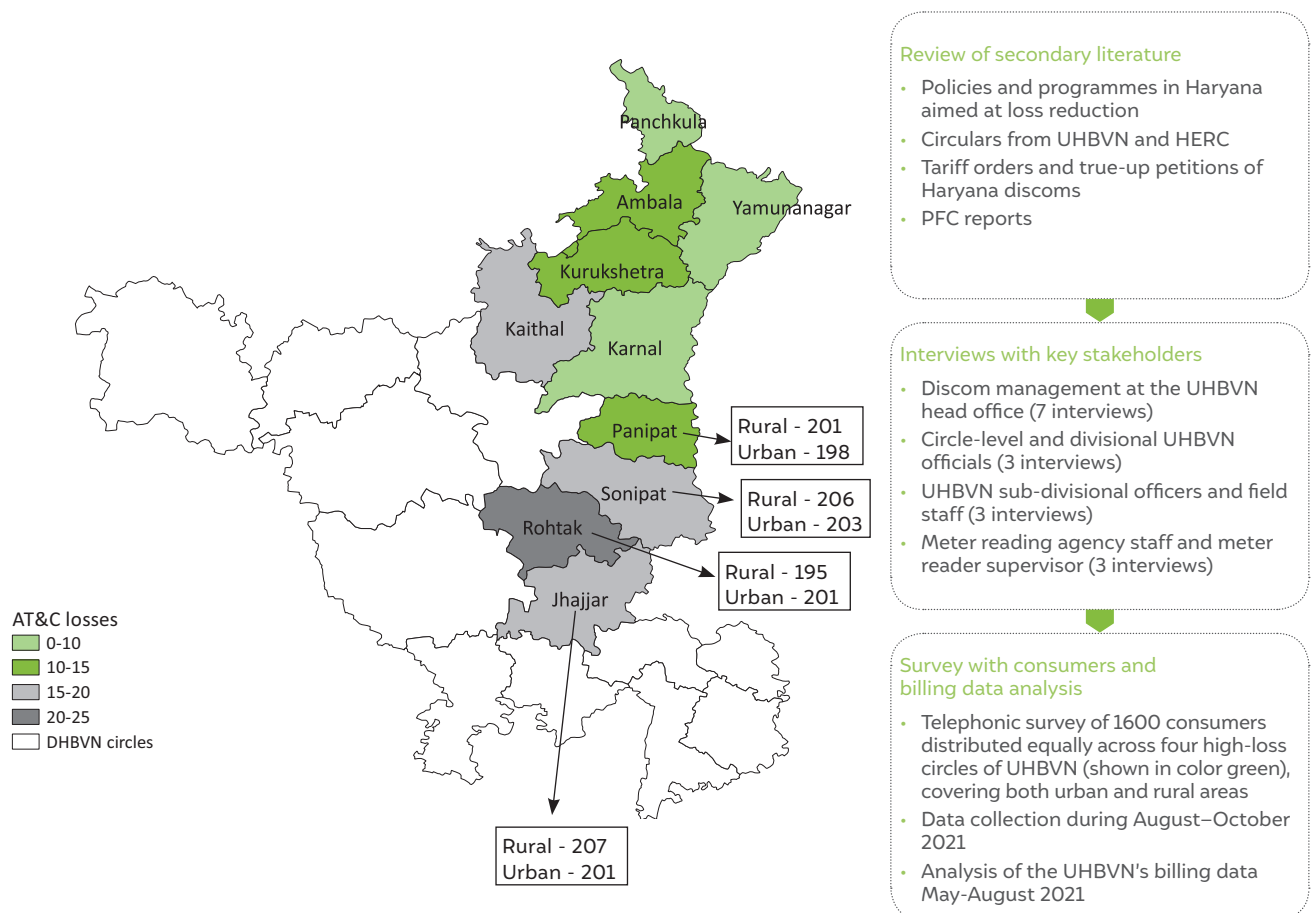
## Executive summary

India has made tremendous progress towards a clean energy transition, with 122 GW of installed renewable capacity and near-universal household electrification (Agrawal et al. 2020; PIB 2021). However, achieving India's recent commitment of a generation fleet comprising 50 per cent non-fossil fuel capacity by 2030 and a net zero economy by 2070 would require a fiscally sound power distribution sector (PIB 2022b). Majority of Indian power distribution companies (discoms) have been reeling from huge losses, with overall aggregate commercial and technical (AT&C) losses being 22 per cent as of fiscal year (FY) 2021 (PFC 2022a). This is despite several financial restructuring schemes, such as *Scheme for Financial Restructuring of State Distribution Companies* (2012) and *Ujjwal Discom Assurance Yojana* (2015). High losses impact discoms' capacity to invest in network and infrastructure upgradation and build the human resource capacity essential for integrating the increasing share of renewables in the energy market as well as improving the quality of supply to consumers.

Although discoms have been making several efforts to reduce losses, it will be helpful for them to learn from some discoms that have managed to achieve a financial turnaround. In this context, Uttar Haryana Bijli Vitran Nigam (UHBVN) offers an insightful case study for discoms to draw upon. The UHBVN has not only reduced its AT&C losses by half (34 per cent to 17 per cent) between FY 2015 and FY 2021, but it has also consistently ranked among the top 10 discoms since FY 2019, with an 'A' rating and a negative revenue gap (PFC 2021b).

This report unpacks the factors that enabled UHBVN's financial turnaround and also reflects on the sticky issues that need redressal to improve the discom's operational efficiency further. The study draws on diverse data sources, including semi-structured interviews with key stakeholders, a primary survey of ~1,600 consumers in four high-loss making circles of the UHBVN, and a review of policies, regulations, and discom circulars in Haryana (Figure ES1).

Figure ES1 Multi-pronged data collection method for assessment



Source: Authors' compilation.

## A. Key interventions driving UHBVN's financial progress

An in-depth assessment of UHBVN's journey through FY 2015–FY 2021, along with a review of tariff orders, discom circulars, and stakeholder discussions reveals that several combined systematic and targeted interventions contributed to the UHBVN's improved finances and operational efficiency. These are discussed below.

### Billing efficiency improved from 69.4% in FY 2015 to 82.8% in FY 2021



Upgrades to the distribution network, distribution asset mapping, consumer indexing, and near-universal metering of consumer connections enhanced the UHBVN's ability to account for energy properly and plan energy loss reduction through targeted efforts.



Systematic efforts to create a unified billing database of rural and urban consumers, with adequate checks and balances during the billing process, helped improve the accuracy and timeliness of bill delivery to consumers.



Establishment of a commercial back office for timely monitoring and resolution of consumer complaints, with a focus on metering and billing issues, helped improve consumer satisfaction.



Periodic vigilance drives and replacement of bare conductors with armoured cables helped reduce incidences of electricity theft.



Targeted loss reduction in high-loss rural feeders under the state-funded *Mhara Gaon Jagmag Gaon (MGJG)* scheme through measures such as introduction of Aerial Bunched (AB) cabling, replacement of electro-mechanical/defective/burnt meters, shifting meters outside consumer premises, and regular energy audits.

### Collection efficiency increased from 95% in FY 2015 to 100.8% in FY 2021



Introduced a 0.5 per cent incentive for digital payments and an additional INR 50 incentive on six consecutive digital payments.



Engaged with the community through platforms such as Bijli Panchayat to address consumer grievances and nudge consumers to pay bills.



At village level, power distribution infrastructure was strengthened under the MGJG scheme and villages witnessing improvement in collection efficiency (thereafter) received increased hours of electricity supply.

### Average cost of supply and Average Revenue Realised (ACS-ARR) gap dropped from INR 1.1 per unit in FY 2016 to INR 0 in FY 2018



Debt takeover by the state government under the *Ujwal DISCOM Assurance Yojana (UDAY)*, and its subsequent conversion to equity, helped lower the ACS-ARR gap and improved the UHBVN's ability to expend on infrastructure upgrades.

In addition to the above-mentioned interventions, interviews with key informants reveal **the major role of the leadership and support provided by political executives, UHBVN management, and state electricity regulators.** For instance, measures such as performance-based incentives, transfer policies, and establishing robust communication channels between the field staff and headquarters have been instrumental in effecting operational reforms towards achieving loss reduction. The Haryana Electricity Regulatory Commission (HERC) has also been stringent in monitoring UHBVN performance and compliance with directives – for instance, the replacement of electro-mechanical or faulty meters.

**The central government's UDAY also unlocked discom capital for investment in infrastructure augmentation and improvement in service delivery.** The overall impact of these efforts in improving the supply and service experience of consumers can be seen in the level of consumer satisfaction and complaint resolution: more than 70 per cent of the respondents in our survey, who had filed complaints in the past one year (FY2021) prior to the survey, were satisfied with the complaint resolution process. Also, 70 per cent of them had already had their complaints resolved.



## B. How can UHBVN reduce its losses further?

Notwithstanding the significant improvements observed in UHBVN's performance, any further loss reduction would require greater targeted efforts, especially focussed on rural domestic consumers. Our assessment of four high-loss circles in UHBVN through a consumer survey and stakeholder interviews indicates some persistent issues that require redressal. Here, we summarise key recommendations for the UHBVN. These would also be useful for discoms grappling with similar challenges.

- Digitalise the distribution network through smart meters and leverage granular data for targeted loss reduction and revenue recovery.** UHBVN has already installed 4 lakh smart meters and plans to install 32 lakh smart prepaid meters by FY 2025. As UHBVN transitions to advanced metering infrastructure, it must prioritise prepaid metering in high-loss areas while ensuring a consumer-centric deployment approach. The latter would entail making the smart meter mobile app user-friendly and increasing its uptake among users from different backgrounds. This will ensure timely and accurate billing, thus reducing consumer grievances and incentivising timely payments. UHBVN must also build capacity to leverage the smart meter infrastructure for targeted vigilance drives to reduce electricity theft, which has been a persistent challenge despite many efforts.
- Undertake a concerted drive to replace faulty and electro-mechanical meters on priority:** 95 per cent of the survey respondents mentioned that their meters were working fine and the rest perceived their meters to be running fast. As of September 2021, Haryana had 1.67 lakh electro-mechanical meters, despite repeated directives from the HERC to replace them. Recently, the UHBVN also reported that 2.6 per cent of meters were faulty – above the 2 per cent limit that the HERC has mandated. The majority of these faulty and old meters are in rural areas, which are yet to be covered by smart metering drives. Therefore, UHBVN should undertake a one-time drive to replace both electro-mechanical and faulty meters, particularly in rural areas, to ensure accurate billing and reduce losses.

**Targeted efforts to plug operational gaps would be critical to further enhance UHBVN's performance.**

- Replace minimum monthly charges (MMC) with a proper demand charge:** MMC are the minimum charges (per kW) that consumers have to pay if their total monthly electricity bill is lesser than the MMC. Around 35 per cent of rural respondents who did not trust their bills were being billed at MMC. HERC has termed MMC as “redundant and counter-productive” since it may encourage wasteful consumption (HERC 2022a). Therefore, it may also act as a deterrent to the adoption of energy efficiency measures, such as energy-efficient appliances, by consumers. Hence, UHBVN and HERC should replace MMC with a corresponding demand charge to improve consumer perception and trust.
- Targeted introduction of door-to-door payment collection combined with a GoDigital campaign:** One-third of the respondents who pay at UHBVN counters and common service centres (CSCs) complained of long queues and long travel time to facilities. Moreover, 70 per cent of respondents prefer doorstep bill collection. Introduction of door-to-door bill collection through self-help groups or rural revenue franchises – such as in Odisha and Bihar, respectively – in areas with poor bill collection and high losses will reduce opportunity costs for consumers dependent on offline payment modes and help in improving revenue recovery.

This can be combined with a targeted GoDigital campaign designed specifically for areas with low penetration of online payments and low revenue recovery. The campaign can build on the existing momentum of digital bill payments. Considering the *Revamped Distribution Sector Scheme* (RDSS), UHBVN can potentially utilise such a campaign to increase consumer awareness of the benefits of shifting to prepaid smart meters and spread information regarding the utility of their smart meter mobile application.

Overall, our findings confirm that there are no silver bullets for improving the financial health of discoms. A suite of systematic interventions, concerted efforts for community engagement, and decisive leadership is what transformed UHBVN from a high-loss discom to a financially healthy one. While each discom will have a unique transition journey, by documenting lessons from UHBVN, we hope to offer salient insights for interested policymakers, discoms, and actors working towards the transformation of the power distribution sector in India.

## 1. Introduction

Over the past decade, India has achieved two significant milestones: near-universal household electrification and a renewable energy capacity of more than 122 GW (excluding large hydro) (Agrawal et al. 2020; PIB 2021). For the coming decade, India has committed to ambitious climate targets: 50 per cent of the national power generation capacity to be non-fossil fuel based and a 45 per cent reduction in the economy's emissions intensity (over 2005 levels) by 2030 (PIB 2022b). The provision of reliable (24x7) and affordable power supply to all consumers is another interlinked policy objective.

A key factor that will underpin the success of India's leap to a clean and just energy future is the financial health of the power distribution companies (discoms). Discoms' financial health, measured through Aggregate Technical and Commercial (AT&C) losses, has been a persistent concern. As of Fiscal Year (FY) 2021, the AT&C loss of all discoms in India stood at 22 per cent (PFC 2022a). Though this is an improvement over past levels (25 per cent in FY 2013), India's losses were nearly three times that of the global average of 8 per cent in FY 2019 (Regy et al. 2021). As per the Ministry of Power, discom losses have come down to ~17% in FY 2022 (PIB 2022). However, these estimates are based on unaudited accounts, and the aggregate numbers do not show variations in losses across the discoms of various states. High-loss discoms are significantly constrained in their ability to invest in infrastructure upgradation, which is essential to absorb the increasing share of renewables in the grid as well as provide quality and reliable supply to consumers.

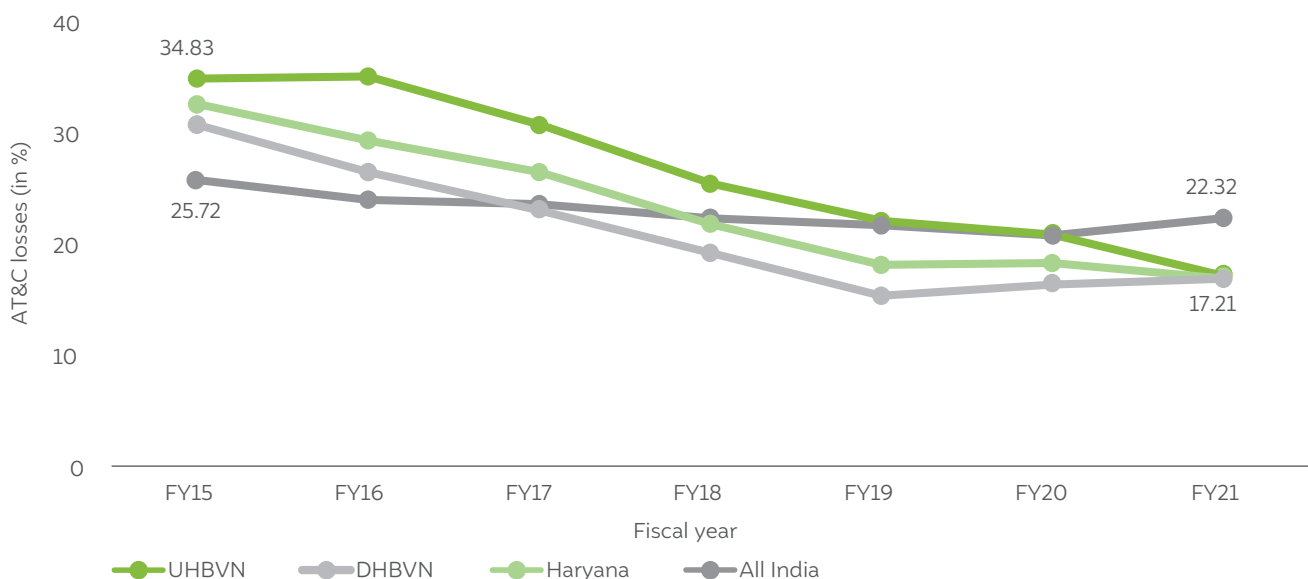
The urgency of finding a way to reduce the losses of public discoms cannot be overstated. Across India, governments and discoms are trying to bring down losses, with some discoms progressing faster than others. An understanding of the factors and approaches that underline the performance improvements of certain public discoms could be insightful for others.

In this regard, the Uttar Haryana Bijli Vitran Nigam (UHBVN), a discom in Haryana, proves to be an interesting case study for two reasons. One, the AT&C losses of UHBVN reduced from 34 per cent in FY 2015 to 17 per cent in FY 2021 – a significantly higher pace than all-India trends, as shown in Figure 1. Two, it is among the few public discoms in India with a negative revenue gap (INR 273 crore) and has consistently been ranked among the top 10 discoms of India (rated A) for the past three rating exercises conducted by the Power Finance Corporation (PFC) (see Annexure).

In order to draw lessons from the experience of Haryana discoms, our report presents a case study on the financial turnaround of the UHBVN discom. We reflect on the following questions:

- What kind of programmes and interventions did UHBVN undertake to reduce losses, and what factors explain the progress observed?
- What can UHBVN do to improve its operational efficiency and quality of service delivery to consumers further?

**Figure 1** AT&C losses in Haryana have reduced by half since FY 2015 – much faster than the all-India average



Source: Authors' compilation using data from PFC (2022a).

## 1.1 Data and methods

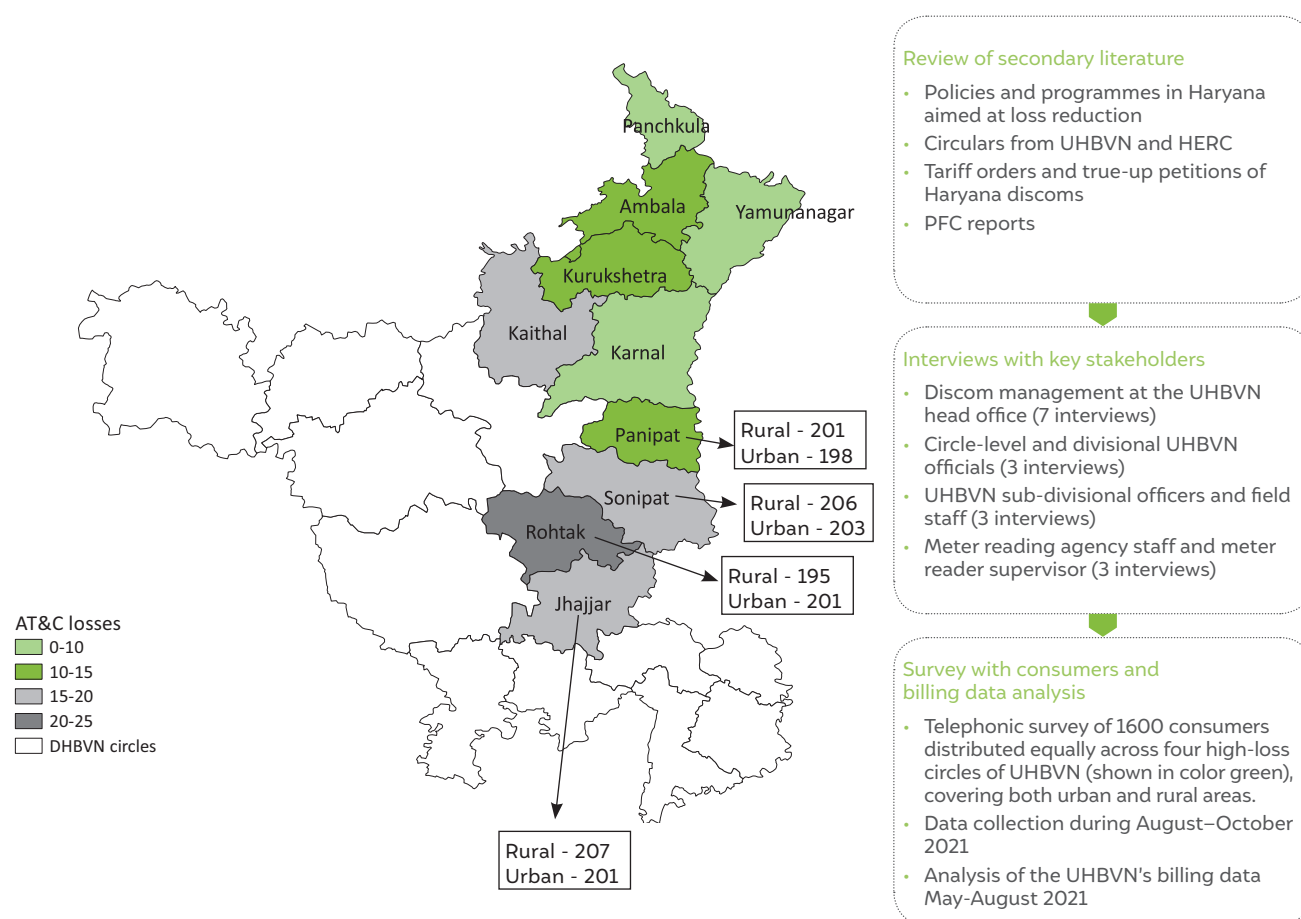
To answer these questions, we adopted a mixed-methods approach comprising a review of policies, regulations and discom circulars, interviews with key stakeholders, and a primary survey of consumers (Figure 2). We undertook a detailed review of the secondary literature on interventions by UHBVN management, schemes, and programmes in Haryana that have contributed to loss reduction in the state. Thereafter, we validated our assessment through interviews with more than 15 key informants.

To identify ways in which the UHBVN can reduce its losses further, we conducted telephonic surveys with

1,600 domestic consumers in four high-loss circles in Zone 2 of the UHBVN: Rohtak, Jhajjar, Panipat, and Sonipat.<sup>1</sup>

**Sampling strategy:** UHBVN has two zones, and we selected Zone 2 – which had higher losses – for our study (Figure 2). In FY 2022, the billing efficiency of Zone 2 was 84 per cent as compared to 88 per cent in Zone 1. Zone 2 also has lower collection efficiency and a higher share of pending payments from consumers (INR 1,372 crore) compared to Zone 1 (INR 877 crore) as of January 2022 (Table 1). Despite having a similar share of domestic consumers (~77 per cent), 75 per cent of the defaulters are in Zone 1 compared to 67 per cent in Zone 2.

**Figure 2** Multi-pronged data collection method for assessment



Source: Authors' compilation.

**Table 1** Higher number of defaulters and defaulting amount in Zone 2

Zone	Share of domestic consumers as of September 2022 (in %)	Billing efficiency for FY 2022 (in %)	Total number of defaulters as of January 2022	Defaulting amount as of January 2022 (in INR crore)
Zone 1	75	88	3,60,459	877
Zone 2	79	84	4,09,121	1,372

Source: Authors' analysis based on data from UHBVN, n.d.e.

<sup>1</sup> This telephonic survey was conducted between August 2021, and September 2021.

Given that domestic consumers form the bulk of the total consumer base as well as defaulters, our investigation focuses on them. We adopted a stratified random sampling strategy wherein we surveyed ~400 consumers from each circle, equally distributed across rural and urban locations. We triangulated the survey findings by analysing UHBVN's billing data and insights from tariff orders and the discom's commercial circulars.

## 1.2 Scope of the study

Our study aims to highlight the key interventions and best practices that helped UHBVN bring down its losses as well as to identify the additional efforts required to fill the gaps observed on the ground. We leverage diverse data sources to identify interventions that could be considered by other discoms when crafting loss-reduction plans. However, the study does not present an exhaustive list of measures, as a comparative assessment of several discoms would be necessary for the same. The study's scope is also limited to exploring the association between interventions and losses. Further research is needed to decompose and quantify the direct impact of different interventions.

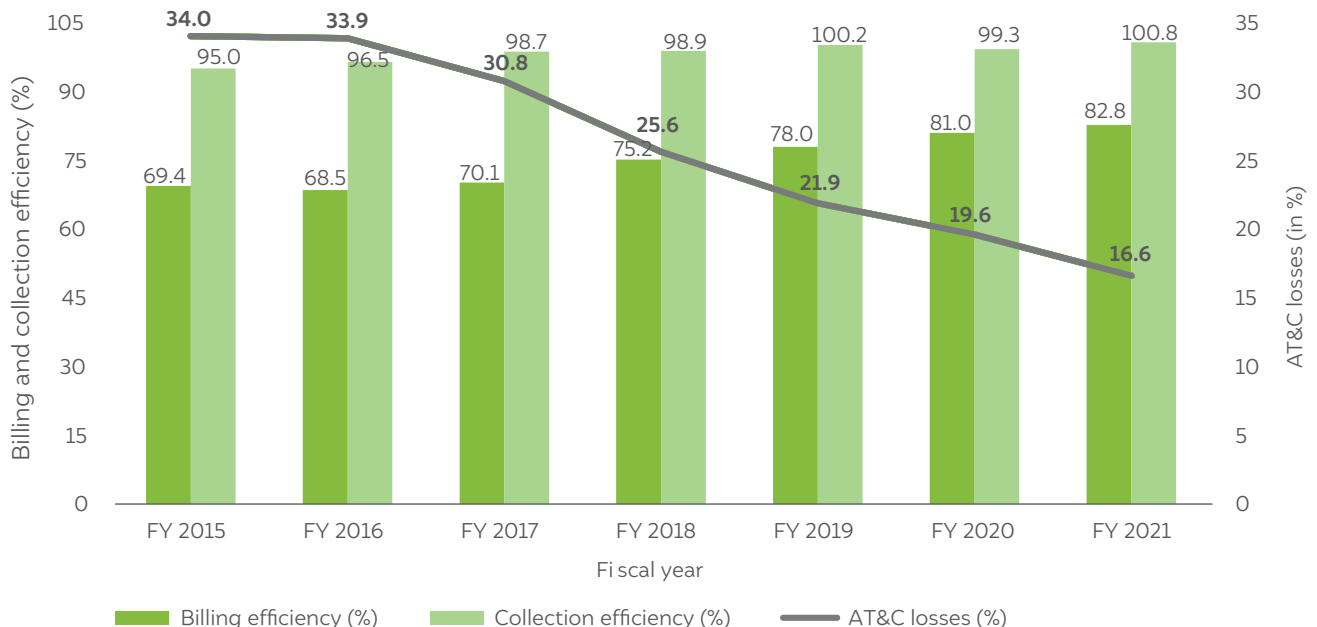
The report is structured as follows. In Chapter 2, we discuss the role of governance reforms and different initiatives to improve the metering, billing, and collection

operations; special schemes such as *Mhara Gaon Jagmag Gaon* (MGJG); and the discom's performance on central government schemes such as *Ujwal DISCOM Assurance Yojana* (UDAY). In Chapter 3, we analyse how billing and collection inefficiencies contribute to high losses in the four circles of UHBVN. In Chapter 4, we conclude with a list of recommendations for discoms to reduce losses further and the key lessons that other discoms can learn from Haryana.

## 2. Reforms and initiatives behind UHBVN's financial turnaround

To assess UHBVN's performance in recent years, we analyse two key parameters that determine the AT&C losses of the discom: billing efficiency and collection efficiency.<sup>2</sup> UHBVN's billing efficiency improved from 69.4 per cent in FY 2015 to 82.8 per cent in FY 2021. During this period, the discom's collection efficiency increased from 95 per cent to 100.8 per cent (UHBVN, n.d.a). Figure 3 illustrates how the improvement in these parameters, especially the billing efficiency, led to a decline in AT&C losses.

**Figure 3** Consistent improvement in billing efficiency has driven the loss reduction in UHBVN



Source: Authors' analysis using data from UHBVN, n.d.a.

Note: If the total amount collected by the discom in a year is higher than the total amount of bills generated (due to payment of pending arrears), collection efficiency becomes more than 100 per cent.

<sup>2</sup> Billing efficiency is an indicator of the proportion of energy that has been billed (both metered and unmetered sales) to consumers with respect to (w.r.t.) the energy supplied to an area. Collection efficiency is an indicator of the proportion of amount that has been collected from consumers w.r.t. amount billed (National Power Portal 2022).

## Box 1 What is the current status of metering among DTs and feeders in UHBVN?

The discom has completed metering in around 66 per cent of DTs in urban areas and 7 per cent of DTs in rural areas (MoP, n.d.). Similarly, a tariff order dated 30 March 2022 highlights the discom's efforts on the consumer-metering front, where UHBVN replaced 62,580 defective meters in rural areas and 37,275 defective meters in urban areas in FY21 (HERC 2022a).

Source: UDAY Portal and HERC (2022a)

## 2.1 Interventions to improve billing efficiency

Billing efficiency remains a hard nut to crack for the discom. However, over the past years, UHBVN has focused on improving its billing efficiency through a suite of interventions discussed below.

### Asset mapping, consumer indexing, and metering:

The discom focused on asset mapping and consumer indexing under the ambit of the *Integrated Power Development Scheme (IPDS)*, *Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)*, and the *Restructured Accelerated Power Development and Reforms Programme (R-APDRP)*, geotagging all its electrical assets, such as substations, 11 kV feeder with high tension (HT) lines, distribution transformers (DTs), low tension (LT) lines, and allied electrical accessories. While other discoms have also undertaken such measures, poor maintenance of these databases makes the exercise ineffective. Since UHBVN outsourced the task of updating the database (e.g., adding new assets) to a third party, the discom was able to conduct energy accounting and plan future investments in an informed manner (UHBVN 2022b).

Similarly, to reduce energy leakage – including electricity theft – UHBVN expanded the metering

coverage (Box 1). As per the officials and the UDAY portal, all 11 kV feeders have been metered (MoP, n.d.). In addition, the majority of DTs in urban areas are also being metered. Further, to improve meter readings and reduce theft incidences, UHBVN replaced defective and old electro-mechanical meters with digital meters and shifted a majority of the meters outside the consumers' premises to nearby poles.

These improvements in metering at the feeder, DT, and consumer levels improved the discom's ability to measure loss accurately and take appropriate measures to address hiccups.

### Meter reading, bill generation, and bill distribution:

During the stakeholder interviews, UHBVN officials highlighted that they conduct bi-monthly meter readings and bill distribution (MRBD) for rural domestic consumers to save costs and allow more time to resolve consumer grievances (see Box 2 for details). However, the discom officials and other stakeholders highlighted several concerns associated with MRBD. Therefore, in line with our recommendation post the field surveys conducted in August 2021, UHBVN is planning to move to a monthly billing cycle and introduce spot billing for rural consumers to reduce the processing time and payment burden on them. UHBVN is already spot billing urban consumers across circles.

**Interventions to reduce theft:** To reduce theft, UHBVN replaced live wires with aerial bunched (AB) cables and introduced incentives for reporting theft incidence. This resulted in a high number of people being caught in thievery, which in turn reduced theft in the affected areas. Further, to reduce theft incidence in high-loss areas, the cables were replaced by armoured cables and metres were shifted to the poles outside consumer premises (UHBVN 2015). This infrastructure upgrade reduced the incidence of meter-bypassing and consumers hooking from live wires, which contributed towards a reduction in commercial losses.

## Box 2 What are the different stages of meter reading and bill distribution (MRBD)?

MRBD is a meter reading, bill generation, and distribution system implemented for rural domestic consumers. Every billing cycle lasts for two months and is divided into 4 different stages, with each stage lasting for 15 days. The first 15 days are dedicated towards meter reading, followed by bill generation. The third stage involves bill aggregation at the sub-division offices. The cycle concludes with bill distribution in the final stage.

Consumers generally receive bills a month after the meter reading takes place. Discom checks for anomalies in the generated bills based on consumers' past average bills and their contracted load. If there are anomalies in the bills, revised bills are sent to consumers. The meter readers deliver the bills either to households or a nearby location (such as the village *pradhan's* office) from where the consumers can collect their bills.

Source: Authors' compilation based on interviews with stakeholders

**Billing data management:** Earlier, three agencies managed consumers' billing data for UHBVN. However, the varied data formats used by these agencies made data management and analysis challenging. Therefore, UHBVN has been working toward creating a unified billing system to standardise the billing database, ease data handling, and improve data-management practices. The billing systems of 100 out of 125 sub-divisions have been changed to similar formats. Systems of all sub-divisions will gradually transition to the same format. In addition, UHBVN is sanitising consumer information and verifying the know-your-consumer (KYC) information of the consumers in the ledger data. This has helped the discom to come up with centralised customer support services for billing-related and meter change-related issues, known as the commercial back office (CBO) (Figure 4). Moreover, logical checks have been built into the database, such as flagging sudden increases or drops in bills vis-à-vis the average of the past three months. As per UHBVN officials, these checks help them identify anomalous billing cases and initiate the required actions.

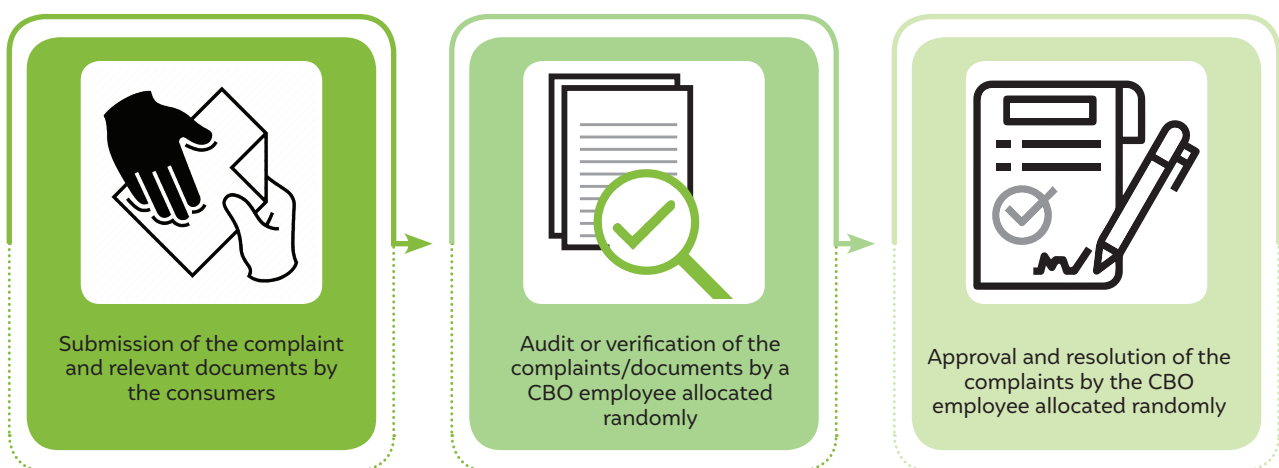
**Centralised complaint redressal through the commercial back office:** As mentioned before, UHBVN has established a dedicated centralised customer support service, referred as commercial back office (CBO), under the commercial wing of the discom. It consists of around 150–200 employees. The CBO aims to ensure the timely resolution of consumer complaints through the allocation of complaints to concerned teams:

1. Bill revision
2. Meter change approval
3. Permanent disconnection
4. High billing (due to inherent system logic)
5. Net-metering/solar billing

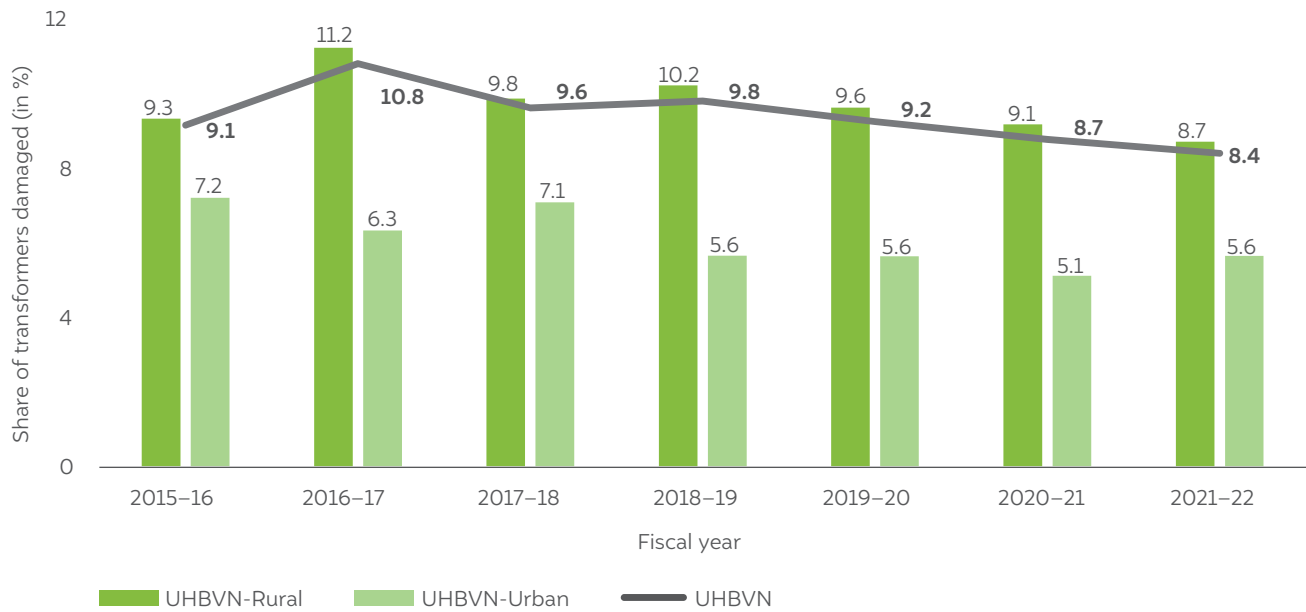
Complaints that arrive at different desks and various levels of redressal are forwarded randomly to anonymous CBO employees, who keep a tab on the time taken to complete the requisite process for faceless and timely management of the complaints and also aim to circumvent biases such as favoritism or political influence (Figure 4). This allows the top management to monitor the overall performance of the grievance redressal system. Overall, the concept of a CBO seems promising, though limited data is available to assess its efficacy on the ground. Nonetheless, centralising key back-office operations in Haryana has also contributed to the improvement in payment terms and optimisation of talent (PFC 2023).

Similarly, the discom has also prioritised the reduction of provisional billing. Sub-divisional officers (SDO) and executive engineers (XEN) verify exceptional cases of meter readings and ensure that correct readings are provided within 2–3 days. Along these lines, they also hold weekly and bi-weekly meetings to monitor the performance of meter reading agencies (UHBVN 2021b).

**Figure 4** Commercial back office follows a rigorous process for complaint resolution



Source: Authors' compilation

**Figure 5** DT burnout rate in UHBVN reduced from 9.1% in FY 2016 to 8.4% in FY 2022

Source: Authors' analysis based on data received from UHBVN officials

**Improvement in distribution infrastructure and periodic maintenance:** Lack of periodic maintenance accounted for high technical losses, poor supply quality, and high burnout in DTs before FY 2015. To reduce the associated energy losses, UHBVN undertook various infrastructure improvements and periodic maintenance of the DTs and load dispatch (LD) system (UHBVN 2015). To measure the impact of these steps, we compared the DT burnout rate over time, starting with FY 2015 (Figure 5). While the DT burnout rate in rural areas reduced from 9.3 per cent in 2015–16 to 8.7 per cent in 2021–22, the drop in burnout rate was slightly higher in urban areas (from 7.2 per cent in FY 2016 to 5.6 per cent in FY 2022). As per HERC (2020), the annual transformer failure rate should be below 3 per cent and 6 per cent in urban and rural areas, respectively. Thus, though the overall trend of DT burnout rate is downward, the discom needs to put more effort into the regular maintenance of DTs.

## 2.2 Interventions to improve collection efficiency

While the collection efficiency for UHBVN was 95 per cent in FY 2015, it increased to 99.26 per cent in FY 2020. Since then, it has consistently remained ~100 per cent (UHBVN, n.d.a). The factors driving these improvements are:

**Incentives for timely and digital bill payments:** To promote timely payments, UHBVN encourages villages – where revenue realisation and digital payments are more

than 90 per cent – by honouring them with a one-time sum of INR 2 lakh for development purposes (UHBVN 2021a). To promote digital payments, the discom has partnered with MRBD agencies and introduced a 0.5 per cent incentive on the total bill amount up to INR 10 per bill. Further, on paying six consecutive electricity bills using the digital mode, consumers get a one-time incentive of INR 50 (UHBVN 2021a). Consumers have also been provided with the option to make payments in instalments. UHBVN's efforts have led to an increase in the frequency of online payments, which has brought about an exponential increase in the share of revenue realised via digital payments from less than 1 per cent in FY 2016 to ~80 per cent in FY 2022.

**Community engagement and doorstep delivery of services:** UHBVN introduced *Bijli Panchayat* in 2015, which is a program for community engagement at the village level. The discom staff and district administration used this program to create awareness among rural consumers about the concerns related to electricity such as the resolution of billing disputes, meter-related concerns, approval for new connections and load extension, etc. Further, discom officials utilised support from the *sarpanch* (village headman) and village residents to improve electricity services (UHBVN 2015). During *Bijli Panchayats*, the discom also provided doorstep services to consumers such as issuing new connections, the extension of sanctioned loads, and settling bill disputes.

## 2.3 Smart metering initiatives

Building on the success of several systematic reforms to improve billing and collection efficiency, UHBVN has now turned to smart meters for sustained gains in its operational efficiency. As of March 2023, UHBVN has deployed ~4 lakh smart meters, with most operating on post-paid mode; only 0.2% of smart meter users have availed of the prepaid option (NSGM, n.d.). Under the *Revamped Distribution Sector Scheme (RDSS)*, 32.4 lakh smart prepaid meters have been sanctioned to UHBVN, which are to be installed across all the districts under its ambit by FY 2025 (NSGM, n.d.).

As per CEEW's recent study on consumers' perception of smart meters, consumers with smart meters in Haryana reported a smooth installation process and an improved billing frequency (from bi-monthly to monthly) (Agrawal et al. 2023). Around half of the consumers were satisfied with the technology and 48 per cent reported a reduction in theft in their locality after the installation of smart meters (Agrawal et al. 2023). This progress can be attributed to UHBVN's rigorous social media strategy and awareness drives such as 'smart meter awareness week' (Bishnoi 2021). The Haryana Electricity Regulatory Commission (HERC) has also been proactive in devising incentives, such as a 5 per cent rebate to prepaid consumers, devising regulations on the smart grid and prepaid smart metering, and settling disputes between discoms and the advance metering infrastructure service providers (AMISP) (HERC 2023a; 2022a; 2016).

However, there is scope for improvement in the services offered to consumers and consumer awareness efforts. For instance, as per CEEW's previous study, only 14 per cent of the surveyed consumers in Haryana were using UHBVN's smart meter application – the lowest among the six surveyed states (Agrawal et al. 2023). Despite the introduction of rebates, prepaid smart metering has not taken off as expected (HERC 2023b). With smart metering in prepaid mode planned at scale across the state under RDSS, such teething issues must be addressed.

## 2.4 Special scheme to reduce losses and improve supply in rural areas

Haryana launched MGJG, a state-funded initiative in FY 2015 to sanitise all rural feeders. By FY 2022, around 2,900 out of the 3,445 villages served by 637 feeders were brought under the scheme (UHBVN, n.d.c; HERC 2022).<sup>3</sup> The scheme focused on upgrading infrastructure as well

as incentivising the villages by increasing the supply hours upon improving billing and collection efficiency. Under the scheme, discoms were mandated to reduce the losses of high-loss rural feeders below 50 per cent through the following measures:

- replacement of live wires with AB cables
- replacement of defective electro-mechanical meters
- shifting meters outside the consumer premises
- maintenance of the LD system
- preventive maintenance of the DTs and feeders before the paddy season
- timely replacement of defective/burnt meters
- regular energy audits and aggressive vigilance drives
- linking supply hours with collection efficiency

The scheme's impact can be gauged by the fact that the combined losses of rural domestic (RDS) feeders in UHBVN have come down by half between FY 2016 and FY 2021 (Figure 6). During our interviews, officials opined that MGJG has played a crucial role in decreasing the losses and improving consumer behaviour in rural areas. The scheme also focused on encouraging consumers to pay their pending arrears by linking the duration of supply with improvements in collection efficiency.<sup>4</sup>

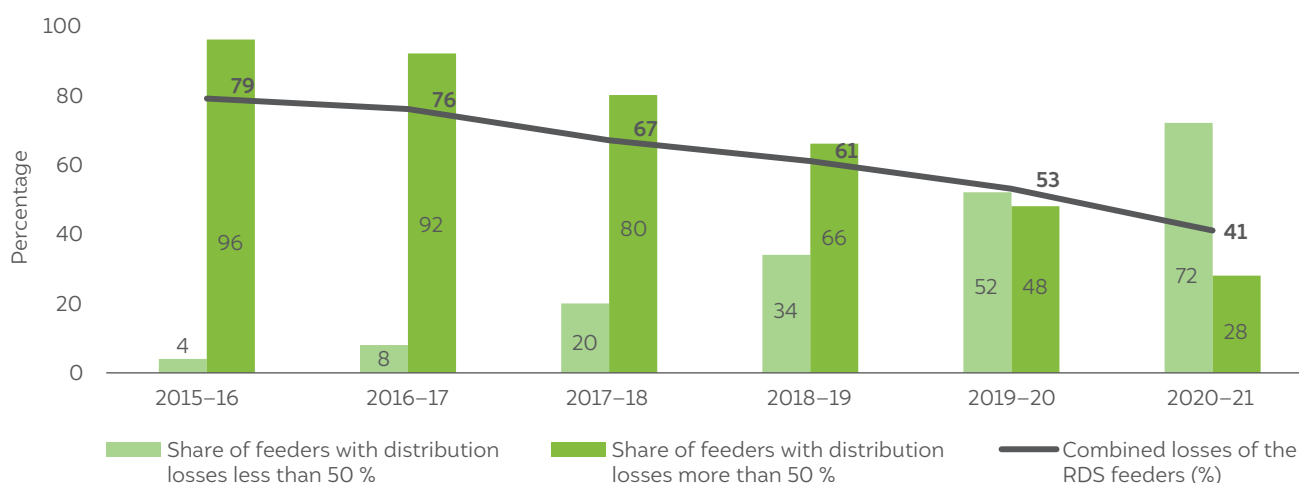
We notice an overall improvement in the supply scenario across the state, including the rural areas. For instance, the number of RDS feeders in Haryana receiving 24-hour supply increased from 19 (serving 272 villages) in March 2016 to 637 (serving 2,951 villages) in March 2021 (UHBVN, n.d.d). Moreover, UHBVN's system average interruption frequency index (SAIFI) and system average interruption duration index (SAIDI) show that SAIFI and SAIDI decreased from 3.49 and 4.18 in FY 2016 to 2.56 and 1.92 in FY 2021, respectively (Figure 7). This corroborates the discom's claim of improvement in supply. In our survey, a significant share of the households in the MGJG villages (76%) reported improved supply as compared to those in non-MGJG villages, indicating the positive impact of the scheme.

**Haryana launched *Mhara Gaon Jagmag Gaon* to upgrade the rural electrical infrastructure and incentivise the villages to improve billing and collection efficiency.**

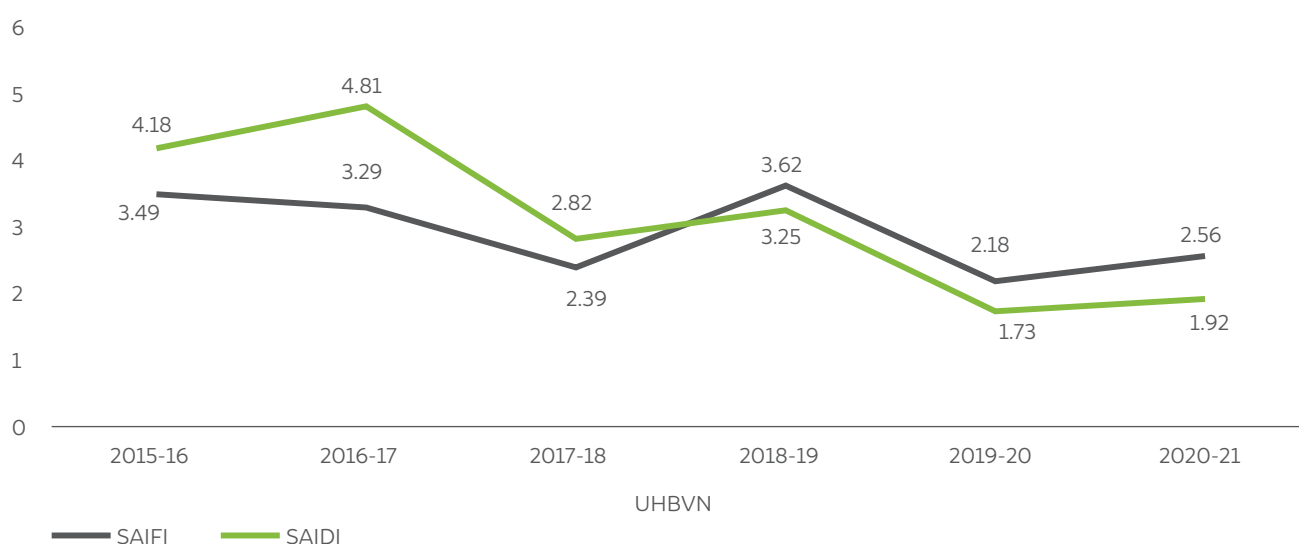
<sup>3</sup> As per HERC's tariff order for FY 2023, there are a total of 2,133 rural domestic feeders in Haryana.

<sup>4</sup> Our assessment includes all the feeders in UHBVN and is not limited to feeders in MGJG villages because of the absence of segregated data for MGJG feeders or villages.



**Figure 6** The share of high-loss rural feeders decreased from 96 per cent in FY 2016 to 28 per cent in FY 2021

Source: Authors' analysis using data from UHBVN, n.d.a.

**Figure 7** UHBVN's SAIFI and SAIDI have improved over the years

Source: Authors' analysis based on quarterly SAIFI & SAIDI data published by UHBVN.

Note: The SAIFI and SAIDI values for FY 2018 were calculated using the average of Q2, Q3, and Q4, and for FY 2019 they were calculated using the average of Q1 and Q2 due to the unavailability of data for the remaining quarters.

## 2.5 Impact of UDAY

One of the schemes that provided the necessary impetus for the turnaround of discoms' financial condition is *UDAY*, a financial turnaround scheme introduced by the central government in 2015. Under *UDAY*, states were to take over 75 per cent of the discom debt (50 per cent in FY 2016 and 25 per cent in FY 2017) (MoP 2015). As per the terms and conditions of *UDAY*, by FY 2019, state governments were supposed to reduce the AT&C loss to 15 per cent and the gap between the average cost of supply and average revenue realised (ACS-ARR) was to be brought down to zero.

The Haryana government took over the discoms' debt worth INR 25,950 crore during FY 2016–20. But unlike most states, the Haryana government converted the entire debt into equity, which significantly expanded the discoms' ability to raise low-cost loans by improving their credit rating and expend on infrastructure upgrades (Table 2). For instance, UHBVN more than doubled its capital expenditure on network upgradation from INR 369 crore in FY 2016 to INR 875 crore in FY 2021 (Figure 8).<sup>5</sup> The reduction in losses upon increasing capital investment in infrastructure upgradation highlights the impact of infrastructure upgradation on the UHBVN's performance.

<sup>5</sup> This includes expenses on activities such as replacement of live wiring with AB cabling, feeder augmentation, feeder and DT metering, consumer metering, and relocating meters to the nearest electricity poles.

Parallely, UHBVN focused on reducing their ACS-ARR gap – UDAY’s key parameter to indicate improvement in a discom’s financial performance – by optimising their

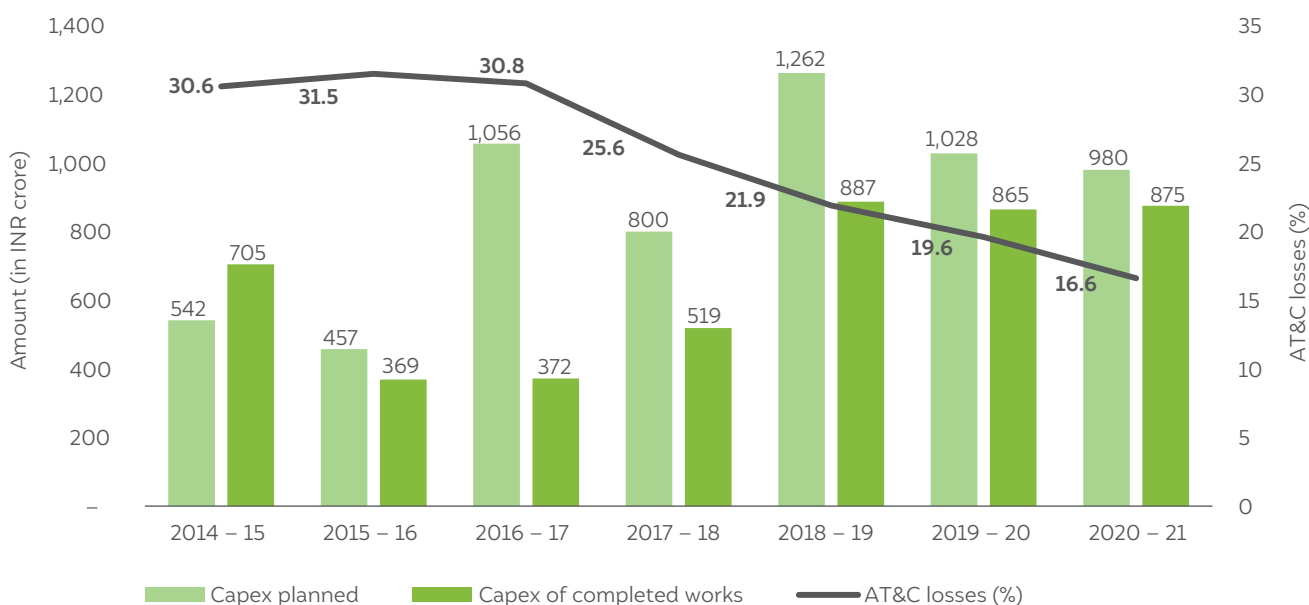
power purchase and interest expenses (MoP, n.d.). Figure 9 shows that UHBVN was able to meet the UDAY target by FY 2018 – two years ahead of schedule.

**Table 2** Detailed breakup of debt conversion under the UDAY scheme in Haryana

Year	INR (in crore)			
	Equity	Loan	Grant	Total
FY 2016	1,298	12,110	3,893	17,300
FY 2017	1,298	3,460	3,893	8,650
FY 2018	5,190	(5,190)	—	—
FY 2019	12,975	(5,190)	(7,785)	—
FY 2020	5,190	(5,190)	—	—
As of 31 March 2020	25,950	—	—	25,950

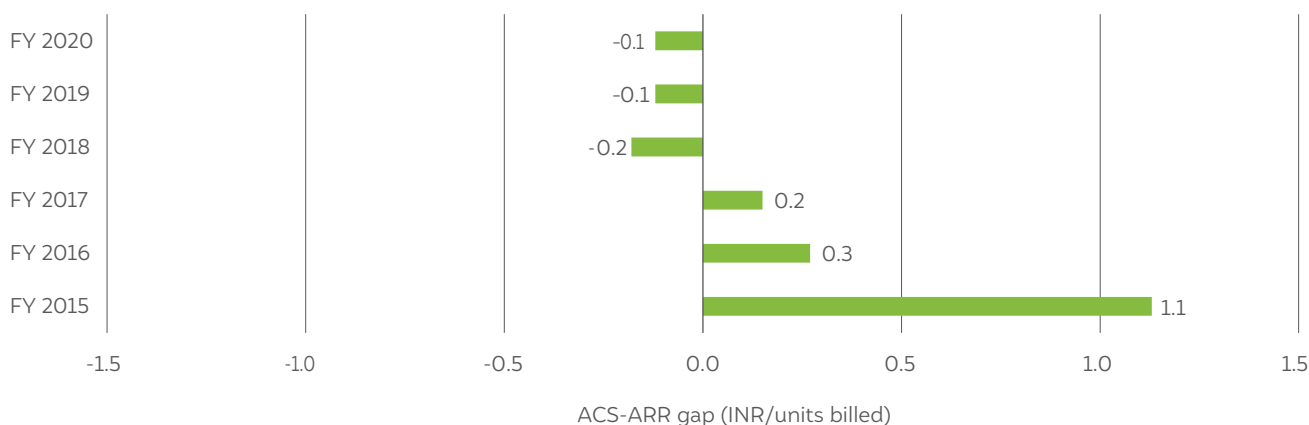
Source: Authors’ analysis based on data published in the CAG General purpose financial report of Haryana PSUs for FY20

**Figure 8** The AT&C losses of UHBVN decreased vis-à-vis their capital investment in network upgradation



Source: Authors’ analysis of HERC tariff orders from FY 2016-2022

**Figure 9** Through the interventions proposed under UDAY, UHBVN’s ACS-ARR gap became negative in FY 2018



Source: Authors’ analysis using data from UHBVN, n.d.a.

## 2.6 Visionary leadership by political executives, UHBVN management, and state electricity regulator

During our stakeholder interviews, the role of political leadership, UHBVN management, and the state electricity regulator i.e., HERC, emerged as key factors driving the improved financial health of Haryana discoms. Post-2014, the new political executive was keen on providing a 24x7 power supply to consumers, including rural consumers. As per UHBVN officials, the state prioritised improving infrastructure and revenue recovery to improve the supply quality, rather than just focusing on subsidies and waiver schemes. Equity infusion under *UDAY* and the launch of MGJG demonstrate the state's intention on this front.

UHBVN officials also reported that strong leadership helped its management implement diverse measures to improve staff performance. RMI and NITI Aayog's report in FY 2022 titled *Turning around the Power Distribution Sector: Learnings and Best Practices from Reforms* also mentions the following measures undertaken by UHBVN to improve its operations:

- monetary incentives to UHBVN staff and consumers reporting thefts
- tackling theft and other sensitive cases with on-ground support from the police
- performance-based transfer policy
- rewards and recognition for vigilance work
- regular touring and interaction with field staff (Regy et al. 2021)

The HERC ensured compliance with its directives through stringent monitoring. It conducts periodic regulatory

proceedings to follow up on the status of compliance with directives such as consumer metering, billing, replacement of defective meters, installation of smart meters, etc. (HERC, n.d.). The proceeding records available on the HERC website indicate that it conducts regular hearings on the directives. UHBVN officials also shared that discoms submit the status of compliance to the commission on a monthly or bi-monthly basis. On failure to do so, Haryana discoms are liable for the penalty prescribed under Section 142 of the *Electricity Act*.

## 3. How can UHBVN reduce its losses further?

As highlighted in Chapter 2, UHBVN has made significant strides in reducing its AT&C losses since FY 2015 through a mix of interventions at the policy, programme, and management levels. However, a further reduction in losses, with improvements in billing and collection efficiency, demands a targeted approach addressing a few sticky issues around metering, billing, and payment collection.

To identify suitable approaches for UHBVN to cut losses further, we investigated four high-loss circles in Zone 2 of the discom, i.e., Panipat, Sonipat, Rohtak, and Jhajjar, with a focus on domestic consumers. Our analysis reveals that several factors contribute to high losses in these circles (Table 3). Incidentally, UHBVN has already been acting on most of these aspects (as discussed in Chapter 2), but the continued presence of several issues indicates an implementation gap and scope for improvement. We discuss the key issues in detail in the subsequent sections.

**Table 3** Billing and payment-related factors contribute to high losses in the four select circles

<b>1. Gaps observed in metering of the domestic consumers</b>
<ul style="list-style-type: none"> <li>• Presence of electro-mechanical and defective meters</li> <li>• Inaccessibility of meters and presence of meters without backup</li> </ul>
<b>2. Gaps in timely and correct billing and distribution of bills</b>
<ul style="list-style-type: none"> <li>• Delay in bill distribution, inequitable workload, and inadequate incentives for meter readers</li> <li>• Billing inaccuracy and consumers' trust</li> </ul>
<b>3. Prevalence of electricity theft across circles</b>
<b>4. Issues around revenue recovery from consumers</b>
<ul style="list-style-type: none"> <li>• Irregular income of the consumers</li> <li>• Under-recovery of bills from financially stable consumers</li> <li>• Inaccessible offline payment modes in select areas</li> <li>• Unresolved consumer complaints</li> </ul>

Source: Authors' analysis based on the consumer survey and stakeholder interviews

### 3.1 Gaps in metering of the domestic consumers

Proper metering is imperative for UHBVN to account for each energy unit sold. All the survey respondents had a metered connection, of whom 95 per cent mentioned that their meters were running fine. The remaining respondents perceived their meters to be running fast. Despite these numbers, we encountered several gaps in metering.

#### Presence of electro-mechanical meters

The UHBVN staff mentioned the presence of electro-mechanical meters in the circles studied. As of September 2021, 1.67 lakh electro-mechanical (5 per cent of the total metered connections) meters were still to be replaced in the UHBVN region, despite regular HERC directives for their replacement. One of the reasons for this is the incorrect accounting of such meters by the MRBD staff (HERC 2022a). Around 96 per cent of these meters were in rural areas. UHBVN's staff as well as the MRBD agency reported the presence of manual meters, especially in Rohtak circle. Electro-mechanical meters are less accurate in recording consumption; they do not capture maximum demand (MDI), instantaneous power, etc., and are more prone to tampering for the purpose of electricity theft (Sarwar 2017). These disadvantages may have a direct or indirect effect on the loss levels.

#### Presence of defective meters

HERC has been issuing orders to the UHBVN regularly to ensure their compliance with regulations and limit the share of defective meters to less than 2 per cent at any point (HERC 2022a). However, UHBVN has reported the presence of more than 2.6 per cent (80,000) faulty meters (HERC 2022b). Faulty metering adversely impacts the correct recording of consumer consumption and inflates the loss numbers.

#### Inaccessibility of meters and presence of meters without backup

Since 2006, UHBVN has been following the policy of installing meters on electric poles outside the consumers' premises. These meters are weather-proofed and not more than 5 metres from the ground, which improves meter accessibility for consumption recording, maintenance, testing, etc. (UHBVN 2016). However, according to UHBVN's field staff, the MRBD agency, and the discom's circulars, the issue of meter accessibility persists. Relocation of meters without the requisite planning and consumer resistance against shifting of meters

have contributed to this issue (UHBVN 2017). Besides accessibility, meters without back-up coupled with extended electricity outages, particularly in non-MGJG rural areas, have further exacerbated the challenge of recording meter readings on time.

### 3.2 Gaps in timely and correct billing and distribution of bills

Correct billing of the energy sold is critical from the perspective of a discom's revenue recovery and consumer trust. UHBVN bills the consumers once in two months in most of the urban and rural areas. It has introduced spot billing in urban areas and plans to extend the service to rural areas in phases. At present, the primary bill generation and distribution mode in rural areas is A-4 sized bills that are distributed via MRBD agents, and 88 per cent of respondents in Rohtak, Jhajjar and Sonapat concurred with the same. However, several hitches persist, particularly with the MRBD system in rural areas.

#### Delay in bill distribution, inequitable workload, and inadequate incentives for meter readers

More than 80 per cent of consumers surveyed in the four circles reported that they were regularly billed once in two months. Respondents in the Panipat circle (urban and rural both) raised the issue of irregular billing (Figure 10).

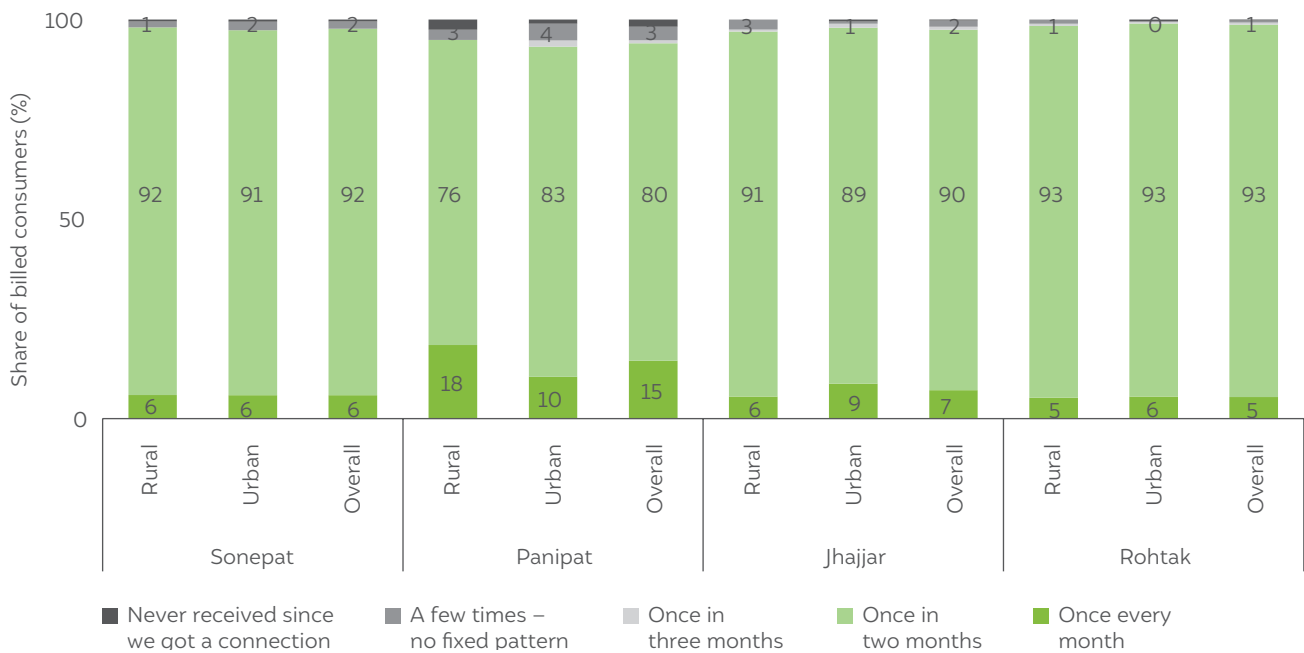
However, as per the UHBVN staff, consumers have been reporting delays in receiving bills as well as even non-delivery of bills in areas where MRBD is operational. One of UHBVN's field officials even mentioned a few instances where the MRBD agent drops the bills at a gram panchayat office or in a well-known public place rather than delivering directly to each consumer.

The issue with bill distribution is an outcome of:

- The high workload of the MRBD agent, wherein each agent is expected to cover around 2,200 consumers in a month.
- Inefficient allocation of consumers in meter reading groups, which has made off-route visits challenging for readers.
- Low incentives vis-à-vis the costs involved in covering less densely populated areas for the MRBD agents.

Bill distribution can be improved by sending billing details to consumers through SMS or WhatsApp. However, 20 per cent of randomly chosen consumers from UHBVN's billing data lacked working phone numbers recorded in the database. While UHBVN has recently introduced bill

**Figure 10** Around 93 per cent of the consumers reported receiving bills once in two months



Source: Authors' analysis based on the consumer survey data.

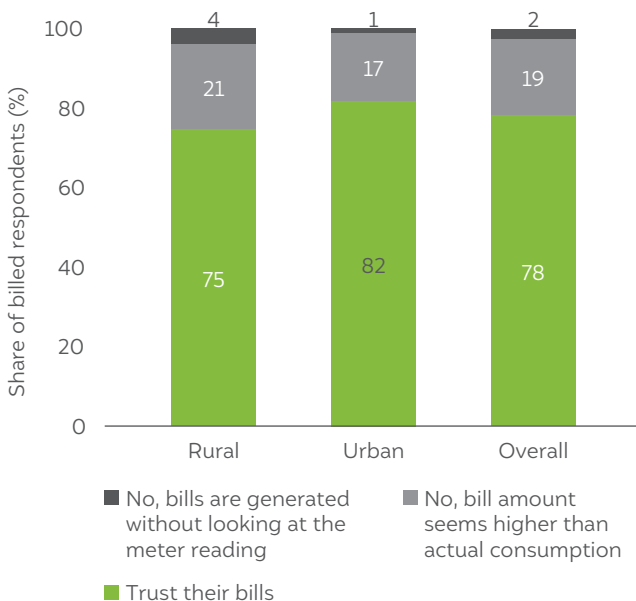
delivery through WhatsApp, the lack of correct/updated mobile number details is an issue that should be resolved at priority through periodic Know Your Consumer (KYC) exercise.

### Billing inaccuracy and consumers' trust

Around one-fifth of the respondents in our survey did not trust their bills and felt that the bills were either higher than the actual consumption or were generated without

looking at the meter (Figure 11). While the latter issue needs stricter monitoring of meter readers, the former is a matter of perception, at least in part. Many studies have found that households typically underestimate their electricity usage, especially for high-energy appliances (Lesic et al. 2018; Attari et al. 2010). According to our survey, consumer distrust of bills also appears to be linked to the tariff construct and gaps in billing. For instance, 35 per cent of rural respondents who did not trust their bills were being billed a minimum monthly charge (MMC) as per the UHBVN's billing data. Around 15 per cent of distrusting urban respondents were being billed on a provisional basis.

**Figure 11** A fifth of the survey respondents did not trust their bills



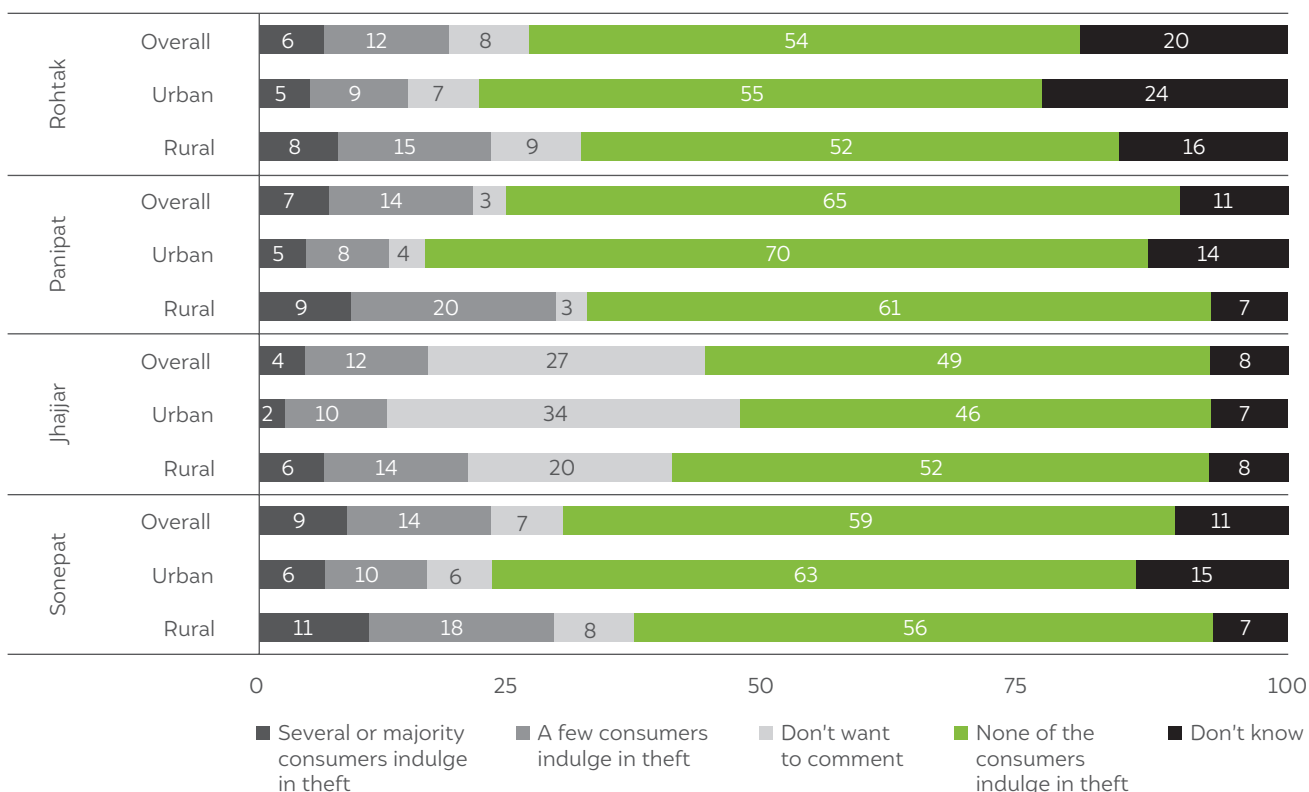
Source: Authors' analysis based on the consumer survey data.

HERC has also discussed the issues of MMC and provisional billing. It deems MMC “redundant and counter-productive”, as it may encourage wasteful consumption and act as a deterrent for the adoption of energy efficiency measures, such as energy-efficient appliances (HERC 2022). Therefore, a demand charge should replace MMC (HERC 2022a). On provisional billing, HERC has directed UHBVN to bring down the share of provisional billing below 1 per cent, which stood at 4.27 per cent in August 2022 (HERC 2022b).

### 3.3 Prevalence of electricity theft across circles

It has proved challenging for UHBVN to curb electricity theft, with almost all consumer categories indulging in this unscrupulous activity (TNN 2022). In FY 2021, more than 24,000 theft cases were detected and filed, with

**Figure 12** Around 40% of the respondents in Jhajjar reported theft incidence or refused to comment

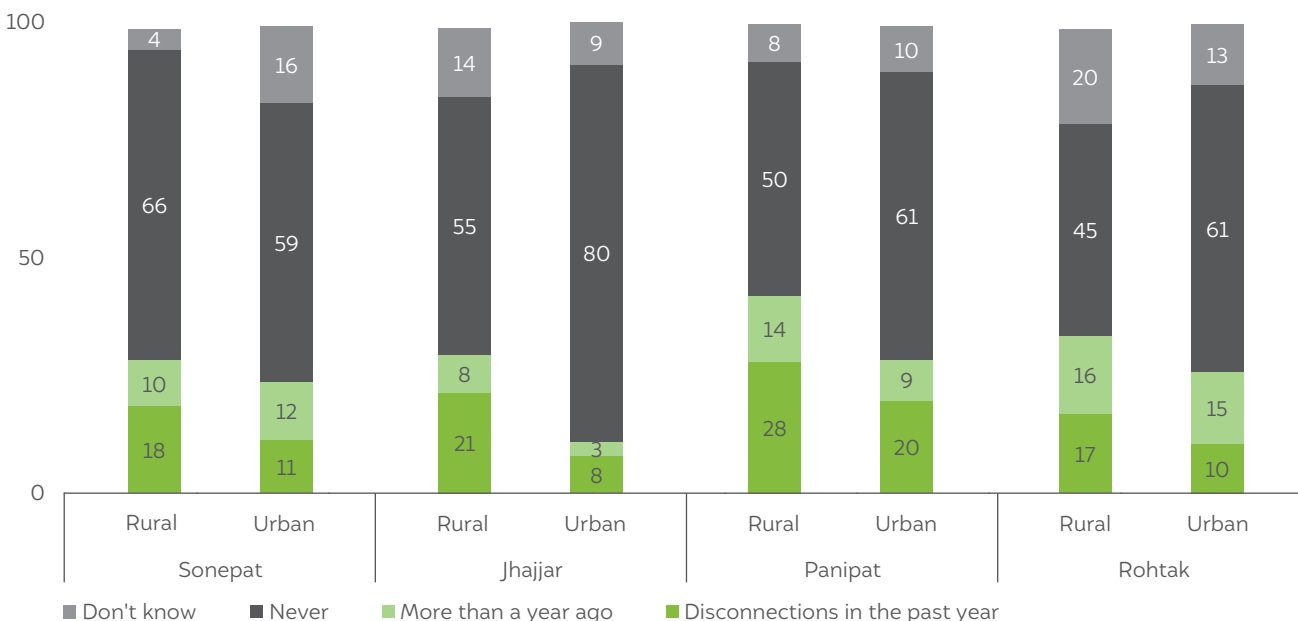


Source: Authors' analysis based on the consumer survey data.

around INR 46 crore recovered as a penalty/assessment (UHBVN, n.d.c). In our survey, 31 per cent of respondents reported the prevalence of theft in their neighbourhood or chose not to comment. In Jhajjar, more than 40 per cent of respondents reported theft incidences or chose not to comment (Figure 12).

Around 28 per cent of the respondents recalled disconnection drives undertaken by UHBVN in past one year (Figure 13). This indicates the need to bolster efforts to curb theft incidences on UHBVN's behalf.

**Figure 13** Majority of the consumers reported no disconnection drives in the year prior to the survey



Source: Authors' analysis based on the consumer survey.

According to the discom staff, UHBVN has been deploying load shedding as a mechanism to punish consumers in feeders that have high theft indulgence. This is corroborated by our survey data – we found longer power outages in sub-divisions with higher theft reports (correlation coefficient of 40 per cent). At the same time, higher penetration of inverter use was observed in areas with longer outages (correlation coefficient of 25 per cent). Thus, the consumers seem to counter the inconvenience caused by load shedding by using inverters instead. This also illustrates that electricity theft is affecting all consumers in these circles and forcing, even those not indulging in theft, into investing in an inverter-battery backup.

Further, our qualitative interviews with UHBVN officials suggest that even in parts of MGJG feeders, the use of supply hours as an incentive/disincentive has not been effective in reducing theft, compared to the impact resulting from infrastructural changes. Notably, high outages also result in billing inefficiencies by disallowing meter readers from recording timely readings from meters with no backup. This compounds billing inefficiency.

### 3.4 Delays in timely revenue recovery from consumers

Remarkably, around 90 per cent of our survey respondents claimed to pay their electricity bills on time. The highest share (17 per cent) of irregular payments was reported in rural Panipat. However, UHBVN's billing data showed that 20 per cent of urban and 29 per cent of rural

respondents, who claimed to pay their bills on time, had pending arrears in August 2021 (when the survey was conducted). This shows that a social desirability bias influenced our survey responses.

Figure 14 reflects the key factors reported by consumers that result in irregular payments. These include irregular incomes, distantly located UHBVN payment counters, and unresolved billing complaints.

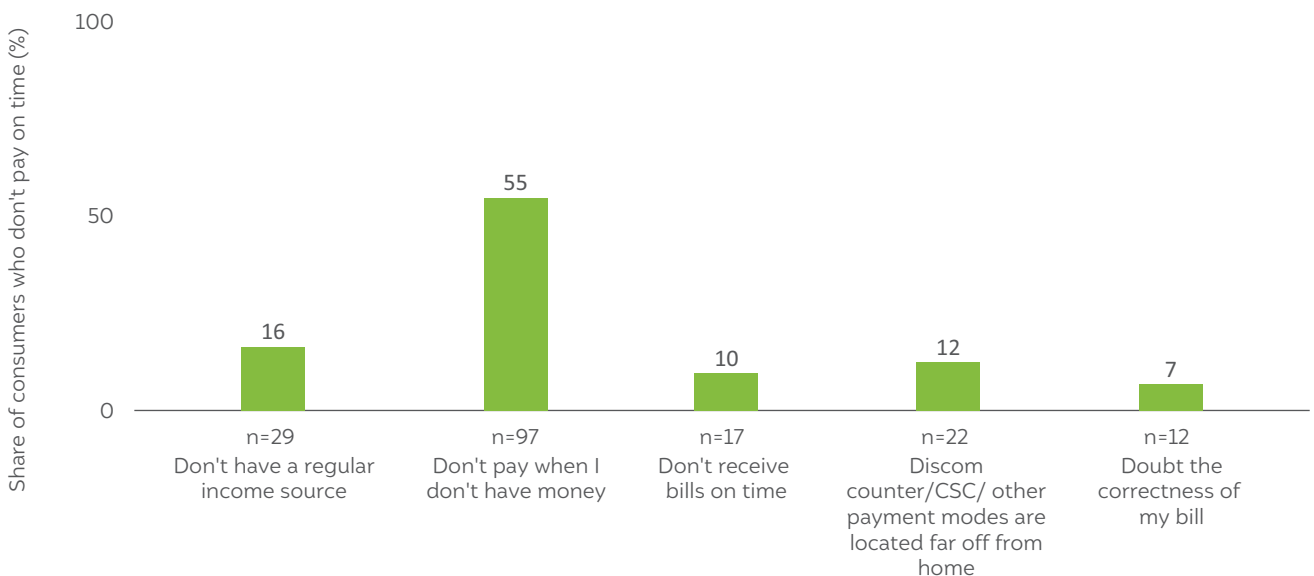
Regardless, the number of UHBVN consumers who make online payments is encouraging. Around three-fourths of the urban respondents and half of the rural respondents reportedly make payments digitally, with the highest online payments reported in the urban areas of Rohtak (77 per cent) and Panipat (74 per cent).

While the promotion of digital payments is important, there are certain other issues contributing to inadequate revenue collection by UHBVN. These issues are summarised below.

#### Irregular payments and under-recovery of bills from financially capable consumers

Around 70 per cent of the respondents who make irregular payments cited cash flow constraints. However, 78 per cent of these consumers also own energy-intensive appliances such as refrigerators, room coolers, and air conditioners (AC). This indicates that even asset-wealthy households are not making payments on time and rationalising non-payment by giving inadequate or irregular income as the reason.

**Figure 14** Irregular incomes are a key factor resulting in irregular payments across circles



Source: Authors' analysis based on the consumer survey.

**Table 4** Higher average due amount to be recovered from AC users

Appliance ownership	Share of respondents with arrears (in per cent)	Average due amount per respondent (in INR)	Total arrear of the respondents (in INR)
LEDs and fans	34	7,853	3,73,535
TV/fridge	31	10,338	18,32,270
Cooler	28	10,552	32,53,094
Air conditioner (AC)	21	18,969	18,82,266

Source: Authors' analysis based on UHBVN's billing data from June–August 2021 and the survey data.

Note: The sequencing of appliance ownership is in ascending order of the energy intensity of the appliance. A consumer with a higher energy-intensive appliance may also own a lower energy-intensive appliance.

It should be noted that asset-wealthy households have the highest overall as well as average payment due to UHBVN. On triangulating the findings from the survey with the UHBVN billing data, we found that the average due amount from each respondent is highest in the case of AC users (~INR 19,000) and lowest (~INR 8,000) for respondents with basic appliances such as fans and LEDs (Table 4). The share of respondents with arrears is lowest in the case of AC users. This points towards the potential of recovering larger dues from a smaller set of consumers. Hence, UHBVN can prioritise recovery of dues in a targeted mode from consumers using energy-intensive appliances such as air conditioners.

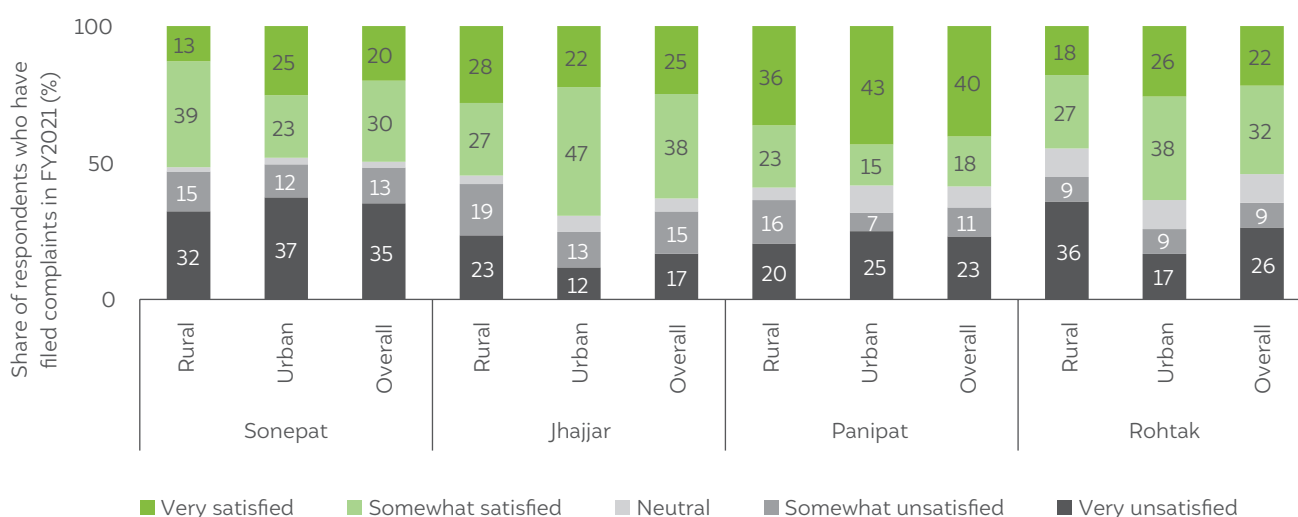
### Inaccessible offline payment modes in select areas

Despite growth in digital payments, several respondents continue to rely on offline payment modes. However, among those respondents who pay at discom counters and CSCs, one-third complained of long queues and distantly located facilities. In rural Jhajjar and Panipat,

around 40 per cent of the offline payers highlighted the issue of needing to travel more than 5 km for making a payment. Therefore, around 70 per cent of all respondents prefer doorstep bill collection. E-pay agents do visit villages for collection in each billing cycle but only once. The respondents also mentioned that they cannot pay bills at any time as per the convenience of e-pay agents. The inaccessibility of bill payment modes creates opportunity costs for consumers in terms of the time spent on payment and may hinder timely bill payments.

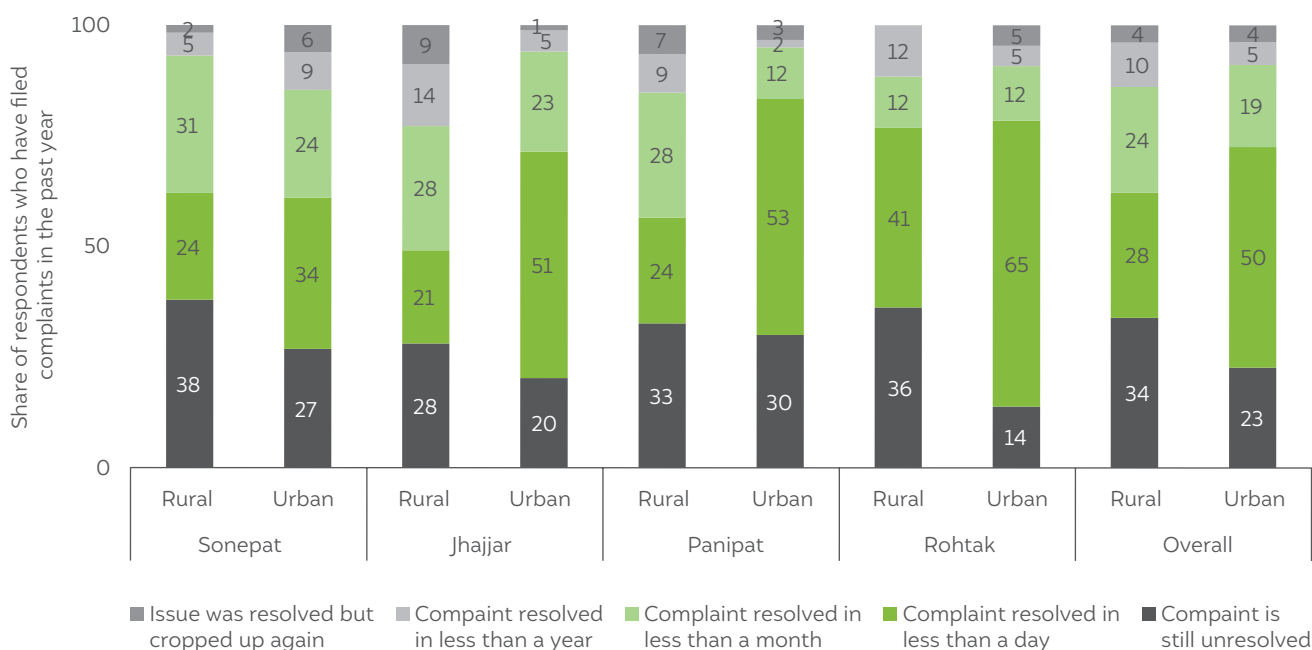
### Unresolved consumer complaints in rural areas

Among one-third of the consumers who had filed complaints during the year prior to the survey (FY2021), more than half expressed satisfaction with the complaint redressal mechanism. Overall, the highest satisfaction (63 per cent) was found among consumers in Jhajjar (includes both very satisfied and somewhat satisfied respondents) (Figure 15).

**Figure 15** Around 55 per cent of the respondents were satisfied with the complaint redressal mechanism

Source: Authors' analysis of consumer survey data.



**Figure 16** Around 25 per cent of complaints filed in the past year remained unresolved

Source: Authors' analysis of consumer survey data.

Among consumers who had filed complaints in the year prior to the survey (FY2021), ~70 per cent had their complaints resolved (Figure 16). Complaints of one-third of these respondents had their complaints resolved within 24 hours which shows the effectiveness of UHBVN's complaint resolution system. However, UHBVN should focus on timely resolution of complaints from rural consumers since around 33 per cent of rural respondents had unresolved complaints (Figure 17).

The highest number of overall unresolved complaints reported were related to billing issues. In terms of proportion, 42 per cent of billing- and meter-related complaints were not resolved at the time of the survey. Untimely resolution of the complaints adversely affects consumers' trust and their willingness to make bill payments.

## 4. Conclusion: Lessons from and for UHBVN

Over the past decade, the central and state governments have taken various measures to improve the financial as well as the operational performance of discoms. Despite this, state discoms continue to face challenges, especially pertaining to operational aspects such as metering, billing, and revenue protection. However, UHBVN exhibits how planned measures and dedicated efforts from all stakeholders can improve a discom's billing efficiency,

collection efficiency, and consumer satisfaction and, consequently, turn around its financial health. It is in this context that our study offers insights that other discoms may use to develop strategies for loss reduction.

Since the timing of reforms is critical, one key takeaway is how UHBVN used the capital unlocked after the debt takeover (under *UDAY*) to invest in infrastructure upgradation and key systemic interventions such as granular asset mapping, consumer indexing, a unified billing database, and a centralised complaint redressal system. Moreover, UHBVN adopted a targeted strategy with a focus on high-loss locations and rural domestic consumers. Under this approach, UHBVN adopted integrated planning and implementation under MGJG vis-à-vis infrastructure upgradation, vigilance drives, and consumer awareness. This ensured proper accounting of MGJG's impact and the creation of feedback loops for course correction. These efforts would not have led to the intended outcomes without the support of the higher management of UHBVN and the state's political executive. The HERC's role in ensuring the UHBVN's compliance with its directives was also crucial.

However, there is scope for UHBVN to improve its operational performance by resolving persistent issues such as the presence of faulty, electro-mechanical, and inaccessible meters; delays in the distribution of bills to consumers; the mismatch between meter reader incentives and workload; the continued prevalence of theft in select rural pockets; unresolved consumer

complaints and inaccessibility to offline payment modes.

At the same time, an important development for the discoms in India is the transition to smart metering infrastructure, with a focus on prepaid modes of billing. This will help discoms address on-ground challenges related to billing accuracy and timeliness, revenue recovery, theft detection and curtailment, and network health management. Barring a few challenges, UHBVN has made substantial progress in switching to smart meters in comparison to other states.

With this in mind, UHBVN needs to incorporate planned smart meter deployment and infrastructure augmentation under *RDSS* while plugging the gaps in its operations. We, therefore, recommend the following actions as the way forward for UHBVN:

- Targeted metering drive using smart meters:** To comply with the HERC's directives, there should be a concerted drive to install new meters – preferably, smart prepaid meters – outside the premises of consumers who have electro-mechanical and defective meters. While preparing plans for smart meter deployment, UHBVN should also prioritise replacing electro-mechanical and faulty meters with smart prepaid meters in the initial roll-out of *RDSS*. Smart prepaid metering will also address challenges around timely and correct billing that are being faced under the MRBD set-up in rural areas. However, in the interim, spot billing can be introduced to solve the issues brought on by delayed billing.
- Introducing targeted door-to-door bill collection combined with a GoDigital campaign:** Taking into consideration the difficulties faced at offline payment centres, especially in rural areas, and till the time smart prepaid meters are installed, we suggest the involvement of self-help groups or rural revenue franchises – as in Odisha and Bihar, respectively – in locations with a low turn-up or bill collection due to limited offline avenues for bill payments. Parallely, to sustain the momentum built around digital payment adoption, UHBVN can execute a targeted GoDigital campaign in areas with high losses and low revenue recovery and deploy innovative ways to raise awareness of the benefits of digital payments and dispel any misconceptions. The campaign can also be used to increase consumer awareness of the utility of smart meter applications and the benefits of shifting to prepaid meters and address any fear around smart meters.
- UHBVN should replace minimum monthly charges (MMC) with a proper demand charge:** Responses to our survey show that billing on an MMC basis was linked to consumer distrust of billing. As mentioned, even HERC has termed MMC as “redundant and counter-productive” (HERC 2022a). Therefore, discoms in Haryana should replace MMC with demand charges to improve consumer perception and trust.
- Targeted revenue recovery from consumers:** UHBVN should prioritise the recovery of electricity dues from consumers using energy-intensive appliances, assuming they are economically well-off. UHBVN can also consider sending disconnection notices as a reminder to consumers to clear their dues. Recovering arrears in a mission mode is crucial before the rollout of smart prepaid meters (under *RDSS*) since, as per HERC regulations, consumers can be allowed to shift to prepaid mode after clearance of arrears .
- Regulation of theft incidences:** Since load shedding has not been effective in reducing theft incidence, we suggest that the UHBVN start disconnection drives in locations with a high incidence of theft. Besides, UHBVN, particularly at the sub-divisional and divisional levels, needs to enhance its data-handling capacity and build on analytical skills to effectively utilise the events data from smart meters, after their installation under *RDSS*, for identification of instances of theft or meter bypass.
- Improving consumer satisfaction with complaint redressal:** There should be mass-awareness drives among consumers regarding the toll-free number for complaint redressal and its utility. A regular feedback mechanism should also be instituted to gather consumers' perceptions of the complaint-redressal system.

Our study presents a unique case of a discom undertaking multi-faceted actions to turn itself around financially. An important finding is that there is no silver bullet to a discom's turnaround – a combination of systematic and context-specific measures are critical ingredients of any success story. A comprehensive action plan for loss reduction with well-planned interventions, community engagement, decisive leadership from the management, capacity building, and the right incentives for the staff

**A bouquet of systematic and context-specific measures are critical ingredients to discom's financial turnaround.**

can transform a discom from a high-loss institution to a financially healthy one. *RDSS* captures some of these elements around capacity building and consumer awareness.

Insights from our study also provide an opportunity for peer learning for discoms grappling with challenges

in improving their operational performance. It also highlights the need to develop forums wherein discoms can interact and share their learnings or key initiatives periodically. Central agencies, such as Power Finance Corporation or REC Limited, can take the lead in developing such forums or mechanisms for cross-learning among discoms.

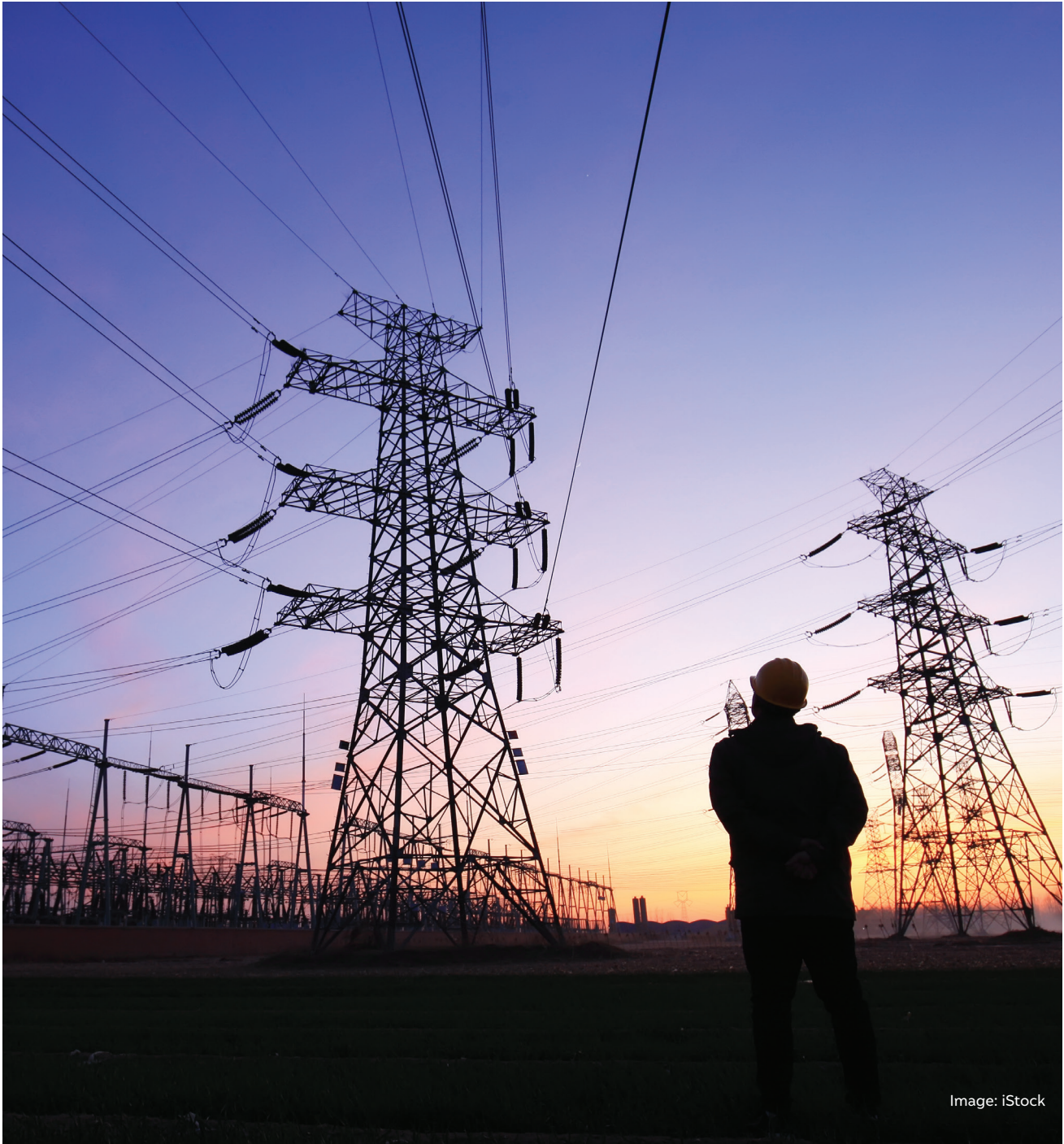


Image: iStock

## Annexures

### Top 10 state discoms as per 10th Annual integrated ratings

UHBVN and DHBVN discoms of Haryana have been among the top 10 discoms since FY 2017 as per the annual ratings of discoms by PFC.

Since 2019, both these Haryana discoms have been rated A or A+.

**Table 5** UHBVN has been consistently rated A since 7th integrated ratings

Utility ranking in 10th rating	Utility	State	5th rating (2017)	6th rating (2018)	7th rating (2019)	9th rating (2021)	10th rating (2022)
1	Dakshin Gujarat Vij Company Limited (DGVCL)	Gujarat	A+	A+	A+	A+	A+
2	Madhya Gujarat Vij Company Limited (MGVCL)	Gujarat	A+	A+	A+	A+	A+
3	Uttar Gujarat Vij Company Limited (UGVCL)	Gujarat	A+	A+	A+	A+	A+
4	Paschim Gujarat Vij Company Limited (PGVCL)	Gujarat	A+	A+	A+	A+	A+
5	Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL)	Haryana	B	B+	A	A+	A+
6	Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL)	Haryana	B	B+	A	A	A
7	Punjab State Power Corporation Limited (PSPCL)	Punjab	B+	B+	A	A	B
8	Uttarakhand Power Corporation Limited (UPCL)	Uttarakhand	A+	A+	A+	B+	B
9	Himachal Pradesh State Electricity Board Limited (HPSEBL)	Himachal Pradesh	A	B+	A	B+	B-
10	Assam Power Distribution Corporation Limited (APDCL)	Assam	B	B	B+	C+	B-

Source: Authors' compilation based on PFC (2017), PFC (2018), PFC (2019), PFC (2021b) and PFC (2022b)

Note: Only state distribution utilities have been considered for ranking. Private utilities, power departments and utilities from Union Territories have been excluded.

Table A2 mentions the grading methodology of 10th annual integrated ratings for rating the discoms as per their operational and financial parameters.

**Table A2** Grading system of discoms in the 10th annual integrated ratings report

Score distribution	Additional overriding ACS-ARR gap condition	Grade	Grading definition
Greater than or equal to 85	Should be in surplus (Gap should be less than or equal to 0 paisa/kWh)	A+	Exceptionally strong financial and operational performance
Greater than or equal to 65 and less than 85	Should be in top 33rd percentile (ACS-ARR Gap should be less than or equal to 15 paisa/kWh)	A	Very high financial and operational performance
Greater than or equal to 50 and less than 65	ACS-ARR Gap should be less than or equal to 50 paisa/kWh	B	High financial and operational performance
Greater than or equal to 35 and less than 50	ACS-ARR Gap should be less than Rs. 1.0/kWh	B-	Moderate financial and operational performance
Greater than or equal to 15 and less than 35	ACS-ARR Gap should be less than Rs. 1.25/kWh	C	Below average financial and operational performance
Less than 15		C-	Low financial and operational performance
Utilities under SMA-2		D	Very low financial and operational performance

Source: PFC, 2022b

Note: Some changes introduced in the grading methodology in 2022 with grade B+ and C+ removed and B-, C-, and D grades introduced.

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## Acronyms

<b>AB</b>	aerial bunched
<b>AC</b>	air conditioners
<b>ACS</b>	average cost of supply
<b>AMISP</b>	advance metering infrastructure service provider
<b>ARR</b>	average revenue requirement
<b>AT&amp;C</b>	aggregate commercial and technical
<b>CBO</b>	commercial back office
<b>CSCs</b>	common service centres
<b>DDUGJY</b>	<i>Deen Dayal Upadhyaya Gram Jyoti Yojana</i>
<b>Discom</b>	power distribution companies
<b>DTs</b>	distribution transformers
<b>HERC</b>	Haryana Electricity Regulatory Commission
<b>HT</b>	high tension
<b>IPDS</b>	Integrated Power Development Scheme
<b>KYC</b>	know-your-consumer
<b>LD</b>	load dispatch
<b>LT</b>	low tension
<b>MDI</b>	maximum demand
<b>MGJG</b>	<i>Mhara Gaon Jagmag Gaon</i>
<b>MMC</b>	minimum monthly charges
<b>MRBD</b>	meter reading and bill distribution
<b>PFC</b>	Power Finance Corporation
<b>R-APDRP</b>	<i>Restructured Accelerated Power Development and Reforms Programme</i>
<b>RDSS</b>	<i>Revamped Distribution Sector Scheme</i>
<b>REC</b>	Rural Electrification Corporation
<b>SAIDI</b>	system average interruption duration index
<b>SAIFI</b>	system average interruption frequency index
<b>SDO</b>	sub-divisional officer
<b>SoP</b>	standard of performance
<b>UDAY</b>	<i>Ujjwal Discom Assurance Yojana</i>
<b>UHBN</b>	Uttar Haryana Bijli Vitran Nigam
<b>XEN</b>	executive engineer
<b>w.r.t.</b>	with respect to

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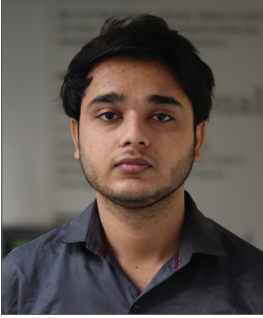
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This account of UHBVN financial turnaround provides an opportunity of peer learning and knowledge transfer among discoms.



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