VASUDHA
FOUNDATION

Green ways for a good earth!

A Study of Northern Region Discoms: Performance Trends and Insights

April 2026

Authors

Parul Babbar and Sonam Sinha

Reviewer

Vrinda Sarda, Rahul Patidar

Editorial

Nitin Kesar

About Vasudha Foundation

Vasudha Foundation is a non-profit organisation set up in 2010. We believe in the conservation of Vasudha, which in Sanskrit means the Earth, the giver of wealth, with the objective of promoting sustainable consumption of its bounties. Our mission is to promote environment-friendly, socially just and sustainable models of energy by focusing on renewable energy and energy-efficient technologies as well as sustainable lifestyle solutions. Through an innovative approach and data- driven analysis, creation of data repositories with cross-sectoral analysis, along with outreach to ensure resource conservation, we aim to help create a sustainable and inclusive future for India and Mother Earth.

D-2, 2nd Floor, Southern Park, Saket District Centre,
New Delhi-110 017, India
For more information, visit www.vasudha-foundation.org

A Study of Northern Region Discoms: Performance Trends and Insights

Power distribution in Northern India operates under layered challenges. Extreme weather events, difficult terrain in hilly areas, and a highly mixed consumer base all add complexities. Utilities must balance the needs of dense urban centres while ensuring reliable access in remote rural and mountainous areas.

Primer on Distribution Utilities in North India provides a comprehensive and structured overview of the power distribution sector across all Northern Region States and Union Territories (Delhi, Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Ladakh, Punjab and Uttarakhand).

Designed as a ready reference, this primer offers updated insights into the current performance and ongoing developments in distribution utilities, helping stakeholders/auditors better understand regional challenges and opportunities in the sector.

Haryana

DHBVN

Accumulated Loss
₹ 13,052 crores

AT&C Loss
12.20%

ACS-ARR Gap
₹0.03/kWh

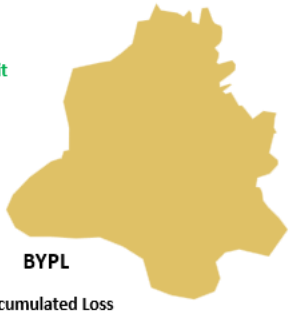
UHBVN

Accumulated Loss
₹ 14,862 crores

AT&C Loss
11.12%

ACS-ARR Gap
₹0.21/kWh

Delhi



BRPL

Accumulated Profit
₹ 12,892 crores

AT&C Loss
6.70%

ACS-ARR Gap
-₹0.89/kWh

TPDDL

Accumulated Profit
₹ 3,642 crores

AT&C Loss
5.70%

ACS-ARR Gap
-₹1.58/kWh

BYPL

Accumulated Loss
₹ 5,650 crores

AT&C Loss
7.15%

ACS-ARR Gap
-₹0.95/kWh

NDMC

AT&C Loss
8.36%

ACS-ARR Gap
-₹0.86/kWh

Punjab

PSPCL

Accumulated Loss
₹ 3,404 crores

AT&C Loss
19.21%

ACS-ARR Gap
-₹0.30/kWh

Himachal Pradesh

HPSEBL

Accumulated Loss
₹ 3,391 crores

AT&C Loss
19.44%

ACS-ARR Gap
₹0.23/kWh

Jammu and Kashmir

JKPDD

Accumulated Loss
-

AT&C Loss
-

ACS-ARR Gap
-₹1.0/kWh

Uttarakhand

UPCL

Accumulated Loss
₹ 5,482 crores

AT&C Loss
15.08%

ACS-ARR Gap
₹0.06/kWh

Chandigarh

CPDL

Accumulated Loss
-

AT&C Loss
-

ACS-ARR Gap
₹1.09/kWh

Ladakh

LPDD

Accumulated Loss
-

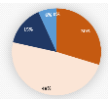
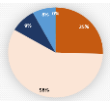
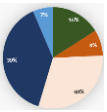
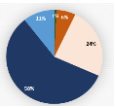
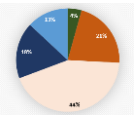
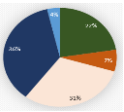
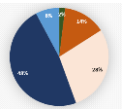
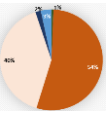
AT&C Loss
26.82%

ACS-ARR Gap
-₹0.89/kWh

Green: Lowest Value
Red: Highest Value
The data corresponds to the latest year, 2024-25.
ACS-ARR gap is on Input Energy basis.

1. A Quick Glance at Consumer Details

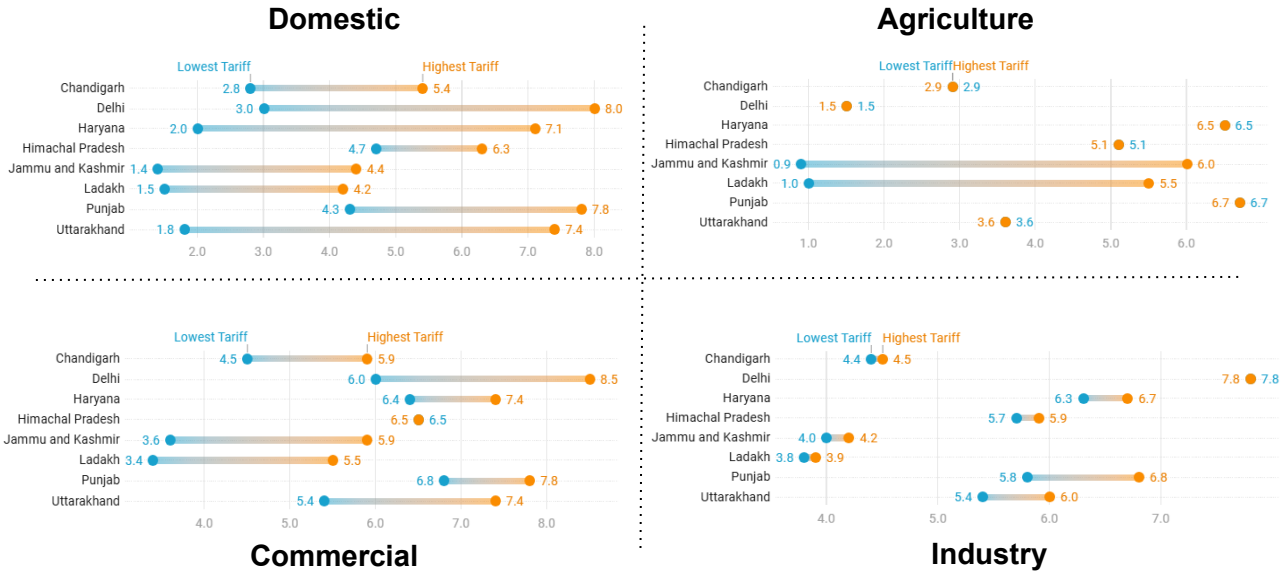
1.1 Category-wise Electricity Sales (MU) for the year 2024-25

Consumer Category	Chandigarh	Delhi	Haryana	Himachal Pradesh	Jammu & Kashmir	Punjab	Uttarakhand	Ladakh
Agriculture	2	42	9,478	92	484	15,258	284	1
Commercial	498	8,312	4872	770	2,406	4,821	2,081	113
Domestic	818	19,004	17,950	2,937	4,871	20,778	4,239	84
Industrial	248	2,854	22926	6,966	1,975	24,403	7,091	4
Others	111	2,585	3,831	1,275	1,462	2,475	1,152	7
Total	**1,677**	**32,797**	**59,057**	**12,040**	**11,197**	**67,735**	**14,848**	**209**
Dominant Sector	**Domestic (49%)**	**Domestic (58%)**	**Industrial (39%)**	**Industrial (58%)**	**Domestic (48%)**	**Industrial (36%)**	**Industrial (48%)**	**Commercial (54%)**
								

Source: India Climate and Energy Dashboard (ICED)

For Haryana, the tariff order 2024-25 does not provide category-wise consumer data for the commercial sector. Therefore, it is apportioned from Industrial Sales based on the previous year's data.

1.2 State-wise Tariff Comparison for Different Consumer Categories for the year 2024-25 (in ₹/kWh)



Source: India Climate and Energy Dashboard (ICED)

- **Jammu & Kashmir and Ladakh** have the lowest tariffs in both the Agriculture and Domestic categories.
- **In the Domestic category**, tariff patterns vary widely across northern states. While J&K and Ladakh have tariffs topping out at about **~ ₹4/kWh**, states like **Himachal Pradesh and Punjab begin their domestic tariffs at around the same level**, indicating a comparatively higher baseline for these states.
- **Uttarakhand shows the widest spread**, with domestic tariffs ranging from **₹1.8/kWh to ₹7.4/kWh**, reflecting substantial variation across domestic consumer categories.
- **Industrial tariffs are the highest across all states**, reflecting the cross-subsidisation mechanism to subsidise the domestic and agricultural consumers who pay significantly low tariff rates.

2. Performance Review: A Spotlight on DISCOMs Operational and Financial Health

2.1 Operational Performance for the year 2024-25

Parameters	Chandigarh	Delhi	Haryana	Himachal Pradesh	Jammu & Kashmir	Ladakh	Punjab	Uttarakhand
AT&C Loss* (in %)	-	6.48	11.76	19.44	-	26.82	19.21	15.08
Billing Efficiency (in %)	92.00	93.72	90.12	90.32	80.05	81.10	87.82	86.31
Collection Efficiency (in %)	-	99.78	97.92	89.20	-	90.23	92.00	98.39

Source: India Climate and Energy Dashboard (ICED)

*AT&C Loss- Aggregate Technical and Commercial Losses

2.2 Financial Health for the year 2024-25

Parameters	Chandigarh	Delhi	Haryana	Himachal Pradesh	Jammu & Kashmir	Ladakh	Punjab	Uttarakhand
Accumulated Profit/(Loss) [₹ Crores]	-	22,184	(27,915)	(3,391)	-	-	(3,404)	(5,482)
Profit/(Loss)* [₹ Crores]	(199)	4,497	(776)	(365)	(1376)	26	2,415	(94)
Total Outstanding Debt [₹ Crores]	-	2,914	20,311	7,024	-	-	17,411	1,729
Regulatory	-	34,005	-	-	-	-	-	-

Assets [₹ Crores]								
Average Cost of Supply (ACoS) [₹/kWh]	5.81	7.33	6.23	5.66	5.30	6.87	5.93	6.06
Average Revenue Realised (ARR) [₹/kWh]	4.72	8.45	6.13	5.43	4.30	7.76	6.23	6.00
ACoS-ARR Gap [₹/kWh]	1.09	-1.12	0.1	0.23	1.00		-0.3	0.06

Source: India Climate and Energy Dashboard (ICED)

*Profit/(Loss) with Tariff Subsidy Received, Excluding Revenue Grant under UDAY for loan takeover and Regulatory Income

3. A Snapshot of Ratings and Scores for Northern-Region DISCOMs

State	DISCOM	2020-21	2021-22	2022-23	2023-24	2024-25
Chandigarh	CPDL	A	B			
Delhi	BRPL	B-	B-	B-	B-	B-
	BYPL	B-	B-	B-	B-	B-
	NDMC			B	A+	A+
	TPDDL	A	A	A	B-	B-
Haryana	DHBVN	A+	A+	A+	A+	A
	UHBVN	A	A+	A+	A+	A
Himachal Pradesh	HPSEB	B-	B	C	B-	B
Jammu and Kashmir	JPDCL	C-				
	KPDCL	C-				
Ladakh	LPDD	C-	C	C	C	A
Punjab	PSPCL	B	A	B	A	A+
Uttarakhand	UPCL	B	A	B-	B	B

N.A. C- C B- B A A+

Source: Annual Integrated Rating and Ranking of Power Distribution Utilities, PFC[1] and [2]

North-region DISCOMs exhibit a mixed performance trend.

- State DISCOMs such as PSPCL (Punjab) and NDMC (Delhi) have achieved **A+** ratings in 2024-25 from B rating in 2022-23
- Private DISCOMs such as BRPL (Delhi), BYPL (Delhi) and TPDDL (Delhi) remain in the **B**– category due to an increase in regulatory assets, which has led to a grade override.
- In contrast, Haryana's DISCOMs require improvement, as their ratings have declined from **A+** in 2023-24 to **A** in 2024-25.

[1] https://pfcindia.co.in/ensite/Home/VS/25

[2] Chandigarh did not participate in rating exercise and Jammu & Kashmir have not been considered for ratings, as the financial statements of JPDCL and KPDCL are not representative of the actual financial condition of the DISCOMs due to the nature of their transactions.

4. Mapping Operational and Financial Progress of Northern Region Utilities

4.1 DELHI: BSES Rajdhani Power Ltd (BRPL), BSES Yamuna Power Ltd (BYPL), Tata Power Delhi Distribution Ltd (TPDDL) and New Delhi Municipal Council (NDMC)

Delhi's consumer base has grown from 51 lakh to over 75 lakh connections, supported by reliable power supply. The state has achieved a remarkable turnaround in reducing its AT&C losses through sustained investments in network upgrades and anti-theft measures. As a result, AT&C losses declined from 12.9% in 2014-15 to a single digit 6.5% in 2024-25, reaching levels comparable to global cities such as New York and London. Among Delhi's four DISCOMs, Tata Power Delhi Distribution Limited (TPDDL) consistently records the lowest AT&C losses.

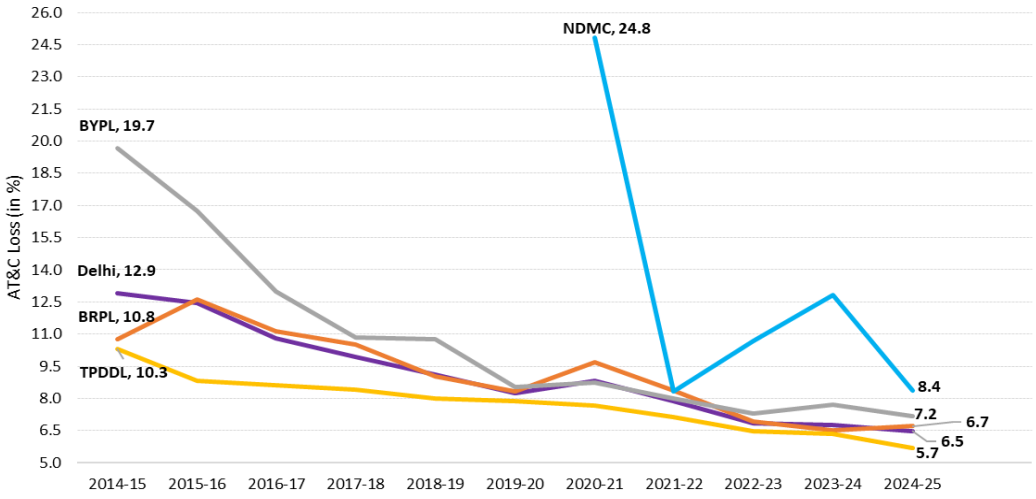


Figure 1: Decline in AT&C Losses in Delhi

Source: ICED

This success has been driven by smart meters, Geographic Information System (GIS) mapping, Artificial Intelligence and Machine Learning (AI/ML) tools, drones deployed for predictive maintenance and theft detection, along with strict enforcement.

Looking ahead, Delhi's DISCOMs are preparing for the future through full digitisation, Advanced Distribution Management System (ADMS), Distributed Energy Resources Management, low-voltage (LV) network automation using Internet of Things (IoT) technologies, Battery Energy Storage Systems (BESS) and peer-to-peer (P2P) energy trading pilots[3].

Delhi's DISCOMs have achieved nearly 100% collection efficiency, resulting in strong cash flow and healthy finances. This has enabled sustained reinvestment and the build-up of

[3] https://aida-india.org/wp-content/uploads/2026/01/aida-annual-publication-2025-17-01-2026-final-for-print.pdf

accumulated profit of ₹22,184 crores over the years. However, a serious concern lies hidden in the balance sheets. Regulatory assets, which represent revenue gaps that regulators allowed the DISCOMs to defer instead of increasing tariffs immediately, have ballooned to over ₹34,005 crore (including carrying costs) as of March 2025. These have accumulated over time due to subsidies, delays in tariff adjustments and decisions to keep electricity prices stable to avoid sudden bill shocks.

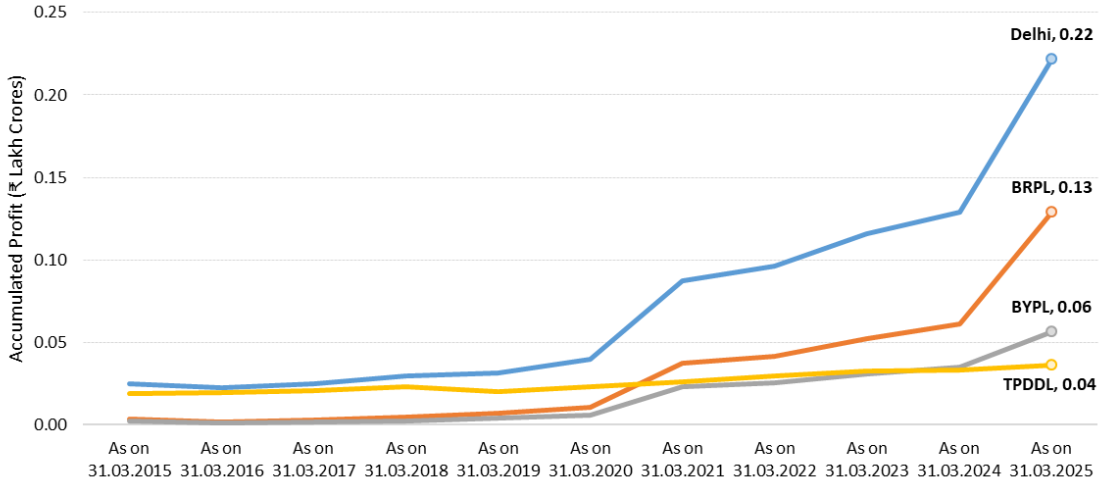


Figure 2: Accumulated Profit Trends for DISCOMs in Delhi

Source: ICED

Each year, the gap widened and DISCOMs borrowed more to keep the lights on. They paid interest on this borrowing and added these costs to the regulatory asset pile, increasing the burden further.

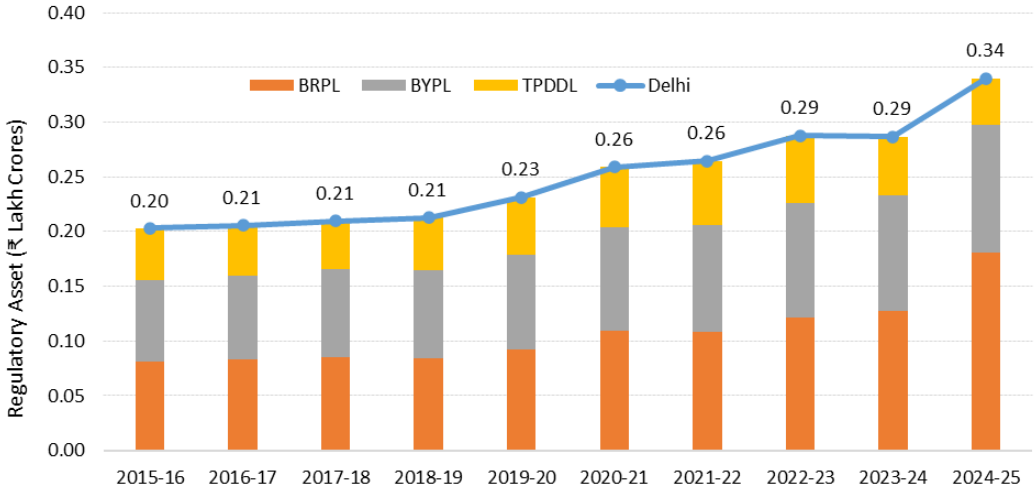


Figure 3: DISCOM-wise Regulatory Assets in Delhi

Source: PFC

In August 2025, the Supreme Court intervened and directed DISCOMS to clear the entire legacy amount within four years (and new gaps within three years), while capping future regulatory assets at 3% of Annual Revenue Realised (ARR)[4].

While Delhi has addressed operational challenges such as losses, theft, and inefficiency, the regulatory and governance challenge remains only partially addressed. True and sustainable financial health requires not just low AT&C losses, but timely and transparent recovery of legitimate costs, without burdening future consumers or increasing debt indefinitely.

4.2 CHANDIGARH: Chandigarh Power Distribution Limited

Chandigarh's government-run Chandigarh Electricity Department was privatised and transferred to Chandigarh Power Distribution Limited (CPDL), a company under the RP-Sanjiv Goenka (CESC) Group, on 1 February 2025. CPDL now serves a population of over 1.2 million and caters to more than 2.4 lakh customers[5] across an area of 114 square kilometres.

Soon after taking over, CPDL discovered a hidden problem: many consumers (especially domestic and commercial) were using significantly more electricity than their sanctioned load. This was causing overloading of transformers and feeders, leading to frequent voltage issues and reduced reliability.

To address this, CPDL launched a **Voluntary Declaration Scheme (VDS)** effective[6] from 1 July 2025 to 30 September 2025. Under this scheme, domestic and commercial consumers with a load up to 99 kW could voluntarily declare their actual connected load, regularise it, and apply for load enhancement without penalty. This encouraged compliance and helped CPDL plan its network more effectively[7].

At the same time, CPDL faced rising power purchase costs, which make up nearly 80% of total expenses. To upgrade the ageing distribution network and ensure a safe, reliable supply, the company proposed a tariff revision. The regulator approved a moderate hike, keeping cross-subsidy within +/- 20% of the average cost of supply, while protecting lifeline and agricultural consumers.

With power purchase costs constituting nearly 80% of total expenses, CPDL is following a prudent and cost-effective procurement strategy. The company does not plan to procure additional power from thermal or gas-based stations, given the high variable costs of gas-based generation, although fixed charges under existing agreements remain payable[8].

To ensure long-term resource adequacy as per CEA guidelines and meet peak demand, CPDL is focusing on tying up solar power from projects developed by the Chandigarh Administration and CREST, along with upcoming hydro and nuclear capacity. Any shortfall will be efficiently

[4] https://api.sci.gov.in/supremecourt/2015/14553/14553_2015_6_1501_62958_Judgement_06-Aug-2025.pdf

[5] https://chandigarhpower.com/

[6] https://www.tribuneindia.com/news/chandigarh/power-firm-extends-voluntary-declaratiSeptemberon-scheme-till-sept-30/

[7] https://jercuts.gov.in/wp-content/uploads/2025/10/Chandigarh-MYT-order-Final.pdf

[8] https://jercuts.gov.in/wp-content/uploads/2025/10/Chandigarh-Business-Plan-Final.pdf

managed through short-term sources such as power exchanges and Unscheduled Interchange mechanisms.

To improve transparency and curb theft, CPDL has introduced surprise inspections and random meter checks without prior notice. This helped detect meter tampering, technical faults and unauthorised usage, ultimately benefiting compliant consumers.

Looking ahead, CPDL is also working on introducing incentives to promote energy efficiency and encourage cleaner consumption practices.

4.3 HARYANA: Uttar Haryana Bijli Vitran Nigam and Dakshin Haryana Bijli Vitran Nigam

Haryana has two state-owned DISCOMs, Uttar Haryana Bijli Vitran Nigam (UHBVN) and Dakshin Haryana Bijli Vitran Nigam (DHBVN), responsible for electricity distribution across the state.

Both have made steady operational improvements that helped cut AT&C losses and strengthen finances. UHBVN dropped its AT&C losses from 34.83% in 2014-15 to 11.12% in 2024-25, while DHBVN cut down its AT&C losses from 31% to 12% over the same time period. These reductions were driven by targeted initiatives such as improved metering and billing, feeder sanitisation, theft control, network strengthening, and stronger collection practices.

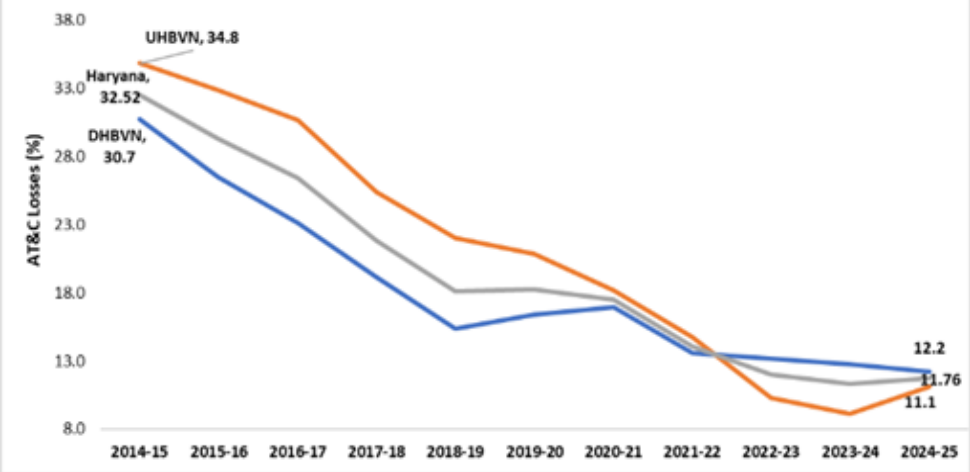


Figure 4: Haryana AT&C Loss Reduction Trends over a Decade

Source: ICED

Despite these efforts, both DISCOMs incurred losses in 2024-25, with DHBVN posting a deficit of ₹134 crore and UHBVN recording ₹642 crore. Financial pressures intensified due to delayed subsidy releases, weakening operational performance, and limited tariff revisions, which collectively constrained cost recovery.

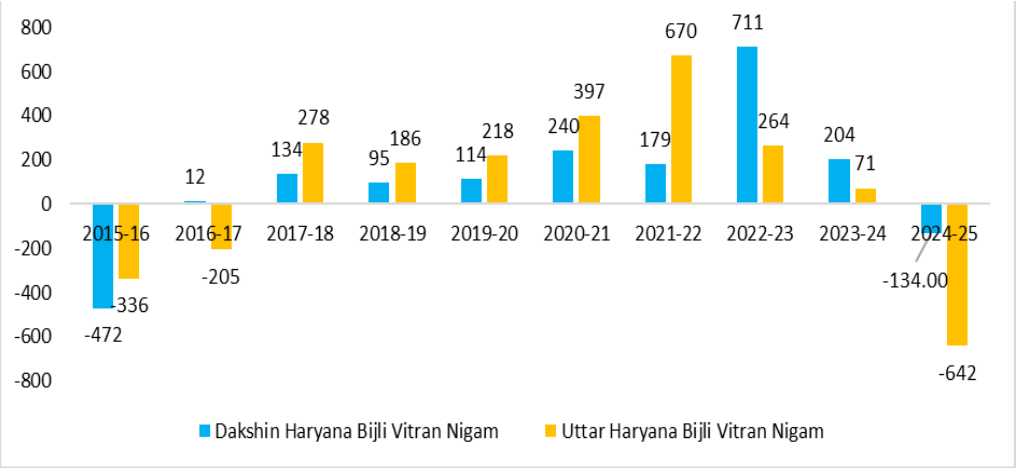


Figure 5: Profit & Loss Trends of Haryana DISCOMs

Source: ICED

Haryana's Average Cost of Supply over Average Revenue Requirement (ACS-ARR gap) reached ₹0.10/kWh in 2024-25, compared to -₹0.04/kWh in 2023-24. A key driver behind this deterioration is the high-cost short-term procurement undertaken by the DISCOMs during 2024-25, wherein 6,990 MUs were purchased through competitive bidding at a cost of ₹4,567 crore, translating to an average rate of ₹6.54/kWh.

Additionally, 1,050 MUs were procured from power exchanges for ₹596 crore at an average rate of ₹5.67/kWh — noticeably lower than bidding-based procurement. Simultaneously, HPPC sold 4,721 MUs of surplus power on the exchanges at an average realisation of only ₹4.76/kWh, earning ₹2,248 crore, which highlights an imbalance where power was purchased at higher prices and sold at lower market rates[9].

These dynamics underscore the need for stronger demand forecasting, more disciplined power procurement planning and portfolio optimisation to avoid costlier procurement and subsequent low-value disposal of surplus power that directly increases overall power purchase cost and, ultimately, the tariff burden on consumers.

Moreover, for 2026-27, the commission directed not to raise tariffs, despite projected revenue gaps[10], indicating that structural financial stresses persist, and even modest increases in losses or stagnation in efficiency can quickly convert potential surpluses into widening deficits.

To recover the revenue gaps, the utilities have to rely on improved revenue collection, continued AT&C loss reduction, optimised power procurement through prudent planning, and better financial management, including access to lower-cost funding and refinancing of existing debt at competitive rates.

[9] ICED

[10] https://timesofindia.indiatimes.com/city/gurgaon/no-change-in-power-rate-in-haryana-even-as-discoms-project-heavy-losses/articleshow/129810317.cms, https://herc.gov.in/WriteReadData/Orders/O2026250325.pdf

4.4 HIMACHAL PRADESH: Himachal Pradesh State Electricity Board Limited

Himachal Pradesh has 28.9 lakh electricity consumers, with domestic consumers accounting for nearly 83% of the total. Uniquely, the industrial sector consumes the highest share of power in the state, between 50% to 58% of total consumption, the highest among all states in the Northern Region. The state is also known for its remarkable engineering achievements in hydropower, notably the Rongtong Power House, located at an altitude of nearly 12,000 feet and the underground Bhaba Power House (120 MW), both considered engineering marvels[11].

Under the state government's "Vyavastha Parivartan" initiative launched in January 2026, HPSEBL undertook a major systemic overhaul. It replaced expensive outsourcing with transparent in-house systems and competitive bidding, reducing annual billing and Enterprise Resource Planning (ERP) support costs by 46%, resulting in savings of ₹5.61 crore annually (₹16.83 crore over three years)[12].

The Board accelerated digitisation and smart/prepaid metering, enabling online applications, real-time billing, faster grievance redressal and reduced revenue leakages. AI/ML-ready platforms improved power purchase planning, timely collections and focused AT&C loss reduction. A major recruitment drive, including "Bijli Upbhogta Mitras," to bridge the gap in technical staff and strengthen maintenance in rural/urban areas[13].

In October 2025, Himachal Pradesh government launched an Energy Management Centre[14] to optimise energy distribution, monitor consumption and ensure an uninterrupted supply, especially during winters. These reforms are expected to strengthen cash flows, rationalise costs and improve operational efficiency.

For decades, HPSEBL has faced challenges to deliver reliable power across its tough mountainous terrain. Long transmission lines, harsh weather, scattered villages and difficult geography lead to high technical losses, billing challenges and poor revenue collection. By March 2025, the DISCOM was burdened with accumulated losses of over ₹3,391 crore and high administrative costs, while continuing to provide subsidised power.

HPSEBL continues to provide subsidised power while facing multiple structural and operational challenges. Its financial health remains weak, reflected in a low financial sustainability score and a significant gap between ACoS and ARR. The utility carries a heavy debt burden, partly due to UDAY loans not being taken over by the state government, along with large outstanding dues from government departments and pending subsidy receivables.

Employee costs (~31% of the total cost) remain relatively higher, even after adjusting for terminal liabilities, compared to other DISCOMs in the northern region. Despite heavy CAPEX

[11] https://www.hpseb.in/irj/go/km/docs/internet/New_Website/Pages/history.html

[12] http://www.himachalpr.gov.in/OneNews.aspx?Language=1&ID=44873#:~:text=16.83%20Crore%20:CM,legacy%20contracts%2C%20the%20CM%20remarked.

[13] https://www.hrkatha.com/news/himachal-pradesh-launches-recruitment-drive-to-strengthen-power-sector/#:~:text=The%20move%20comes%20as%20the,to%20households%20and%20businesses%20alike.

[14] http://himachalpr.gov.in/OneNews.aspx?Language=1&ID=42776

on IT systems such as SAP, Enterprise Resource Planning (ERP), along with smart metering initiatives, the expected reduction in manpower costs has not materialised. Most IT projects remain underutilised due to a lack of in-house expertise and frequent employee transfers[15].

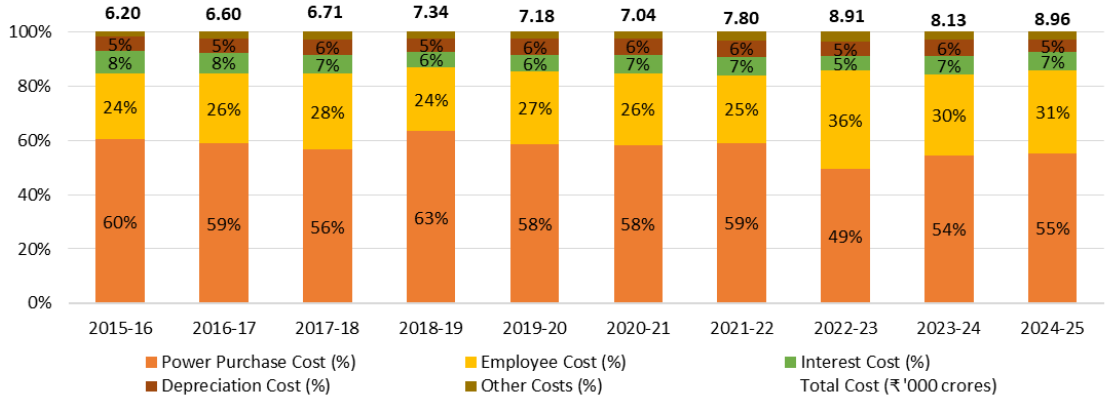


Figure 6: Share of Cost Components in HPSEBL

Source: ICED

Consumer service performance also remains weak, with low rankings driven by issues in reliability, grievance redressal, and outage management, along with gaps such as a non-functional National Feeder Monitoring System (NFMS).

Operationally, the utility faces high transmission and distribution losses in certain areas (e.g., Rohru 29.47%, Kullu 21.12%), low voltage and reliability issues in rural regions, delays in the implementation of the Revamped Distribution Sector Scheme (RDSS), and gaps in energy accounting and timely financial reporting.

In power procurement, reliance on costly short-term purchases and limited long-term planning have added to financial pressures. Additionally, fixed cost obligations under long-term power purchase agreements (PPAs) continue to burden the utility, requiring payments even when power is not drawn. For instance, despite not taking power from gas plants, HPSEBL paid ₹33.03 crore as fixed charges in 2023-24.

Regulatory and governance challenges further constrain performance, including delays in audited accounts, inconsistencies in energy accounting, and slow progress in implementing consumer compensation mechanisms.

HPSEBL is taking a series of steps to address its operational and financial challenges. It has introduced systems to ensure the timely completion of audits and is working to reduce the gap between ACoS and ARR while improving liquidity. At the same time, the utility is restructuring offices, centralising key functions, and outsourcing non-core activities to improve efficiency and reduce costs.

On the digital front, HPSEBL is implementing prepaid smart metering, digitising service records, and introducing employee and pensioner portals, while also centralising salary and

[15] https://hperc.org/wp-content/uploads/file/tariff2025-26.pdf

billing processes to optimise manpower use. To reduce losses, it is replacing defective meters, strengthening anti-theft enforcement, improving billing cycles, and undertaking loss reduction works under the Revamped Distribution Sector Scheme (RDSS).

The utility is also working to improve consumer services by strengthening call centre operations, standardising grievance redressal processes, and expanding smart meter deployment for better billing and collection. In parallel, it is preparing a Long-Term Distribution Resource Adequacy Plan (LTDRAP), with a focus on solar power tie-ups and exploring options such as small modular nuclear reactors and hydro-based storage solutions to meet future demand.

HPSEBL has committed to accelerating the implementation of RDSS projects, including smart metering, Supervisory Control and Data Acquisition (SCADA) systems, and loss reduction works, ahead of the March 2026 deadline.

Additionally, the utility procures power from state government hydroelectric projects under the “free power” entitlement (₹2.70 per unit for 2025-26). This low-cost power supports demand, especially during winter, reduces overall power purchase costs, limits reliance on expensive short-term procurement, and helps protect consumers from tariff increases, making it critical for long-term financial sustainability.

4.5 JAMMU AND KASHMIR: J&K Power Development Department

Jammu & Kashmir’s distribution sector is managed by two DISCOMs, JPDCL and KPDCL, which are responsible for supplying electricity across the Union Territory and ensuring reliable, affordable power for consumers.

The utility continues to experience high AT&C losses, with both billing efficiency and collection efficiency falling short of expected benchmarks. Operational performance remains weak due to energy theft, technical deficiencies, data quality issues, information gaps, and billing inefficiencies. In Kashmir, a large number of consumers are still unmetered and smart meter penetration remains limited, resulting in inconsistent and sometimes inequitable time-based billing.

To minimise technical losses in billing, the utility implemented a set of measures. These included Commission-approved loss reduction targets under the Business Plan and RDSS.

It also conducted regular Technical Validation Sessions (TVS) to improve data quality, along with public hearings and stakeholder consultations to enhance transparency.

Dedicated enforcement wings were set up to curb electricity theft and meter tampering, and energy audits were carried out to identify loss hotspots and reduce AT&C losses.

Given the weak operational performance, financial outcomes have also deteriorated. The DISCOM continues to incur significant losses, with Average Cost of Supply (ACoS) persistently exceeding ARR. In 2024-25, the net loss stood at ₹1,376 crore, marking a 37% reduction from ₹2,583 crore in 2023-24.

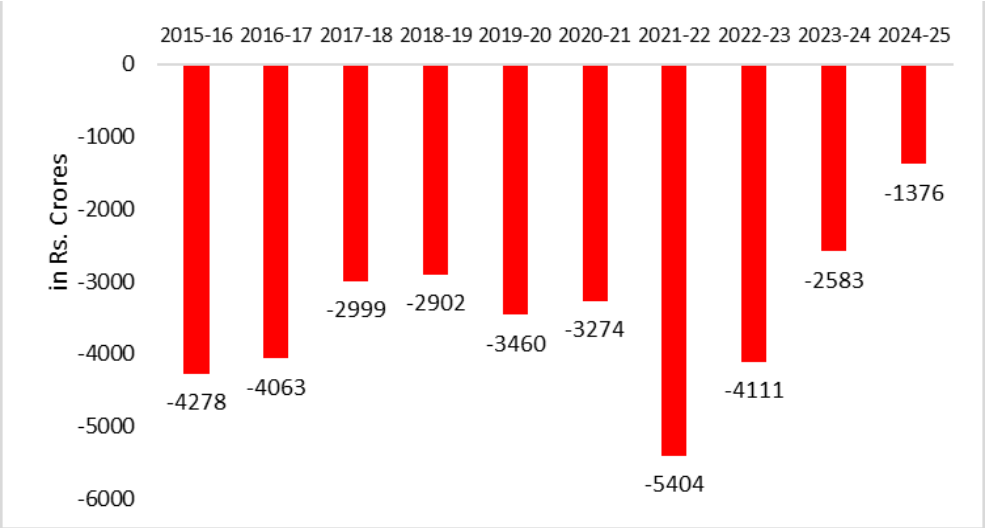


Figure 7: Profit & Loss Trends of Jammu & Kashmir

Source: ICED

Recognising the extent of these losses, the unbundling of the J&K Power Development Department and the creation of separate entities for generation, transmission, and distribution has been undertaken. This restructuring is intended to promote self-reliant and cost-efficient operations, and is expected to strengthen operational accountability and improve the financial performance of the sector over the medium term.

To support this transition, the new business plan mandates rigorous scrutiny of ARR components, a clear loss-reduction trajectory, and a revised tariff structure, such as updated energy charges for HT Power Intensive Units to help bridge the revenue, cost gap while driving improved operational performance.

4.6 UTTARAKHAND: Uttarakhand Power Corporation Limited (UPCL)

Uttarakhand continues to operate in losses, primarily due to persistently high ACoS. Uttarakhand Power Corporation Limited power procurement mix is heavily skewed toward short-term PPAs, which are cost-volatile and significantly more expensive than medium- or long-term contracts. These short-term agreements are expensive and point to the need for more balanced and efficient power procurement planning.

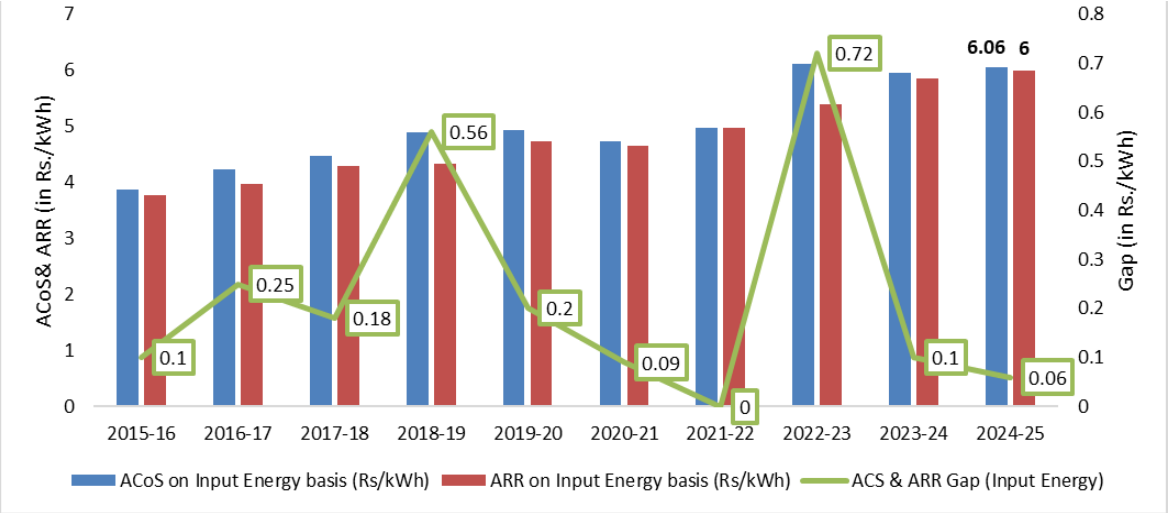


Figure 8: ACoS & ARR Gap Trends of UPCL

Source: ICED

Moreover, the DISCOM has shown an unusual dependence on high-priced gas-based stations[16] to meet the power demand during periods of power shortage. The reliance on costly gas-based power has further inflated UPCL's overall power purchase costs[17]. UPCL sourced power from short-term gas-based PPAs at notably high rates, including Anta Gas Power Plant at ₹20.84/kWh, Auraiya Gas Power Plant at ₹13.02/kWh, and Dadri Gas Power Plant at ₹12.15/kWh.[18] In addition, long-term PPAs with plants such as the Gama Gas Plant (₹11.21/kWh) and Shravanti Gas Station (₹13.76/kWh) obligate UPCL to procure power at high rates, adding further pressure to its financial performance.

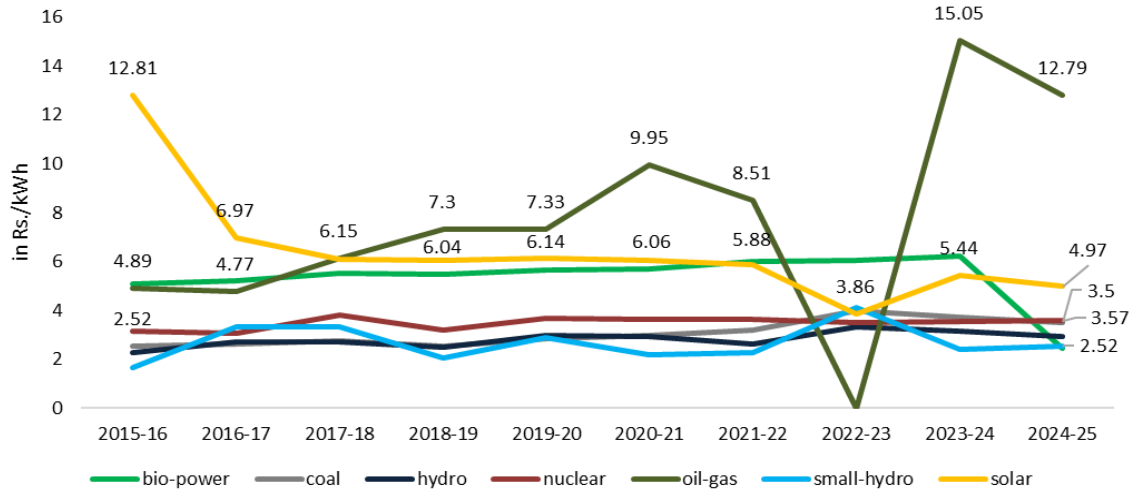


Figure 9: Source-wise Total (weighted) Cost Trends, UPCL

Source: ICED

[16] NTPC's Anta Gas Plant, Auraiya Gas Plant and Dadi Gas Plant with short term PPAs and Gamma & Sharavanthi Energy plant with long term PPAs.

[17] https://cdnbbsr.s3waas.gov.in/s303412aef4dcdee4f934f7bf599f89783/uploads/2025/05/20250516619724380.pdf, https://www.powerfoundation.org.in/assets/downloads/pfi_comments_UPCL_True-up_Petition_fy_2023-24_ARR_FY_2025-26.pdf?utm_source=chatgpt.com,

[18] ICED

UPCL continues to face several structural and operational challenges. Difficult terrain contributes to higher technical losses. Long-term power purchase agreements (PPAs), which have yet to be renegotiated, keep procurement costs elevated. Gaps in meter tamper detection and on-ground enforcement limit the effectiveness of metering investments.

Smart and prepaid metering remain limited in rural and hilly regions, which historically face higher losses. Infrastructure works such as feeder segregation and High Voltage Distribution System (HVDS) expansion are also progressing slowly due to funding constraints.

UPCL has prepared a multi-year plan for 2025-26 to 2027-28 to strengthen both operational and financial performance. The utility plans to reduce its dependence on short-term power procurement from around 20% to 5% of total energy availability at the state periphery, in line with Multi-Year Tariff (MYT) regulations, and meet the remaining deficit through medium- and long-term sources. It is also diversifying its portfolio by adding round-the-clock renewable energy and battery storage to manage costs more effectively.

In parallel, the utility has actively sought out cheaper power from open markets through platforms such as IEX, PXIL, and the DEEP[19] Portal, particularly when energy charges fall below the variable costs of gas-based plants.

While UPCL initially invited tenders through the DEEP Portal, high discovered prices prompted a strategic shift toward competitively priced products on power exchanges. The results have been significant — during the first nine months of FY 2025-26, UPCL procured 850 MUs through long-duration contracts at an average cost of ₹3.59 per unit, compared to ₹5.50 per unit on the DEEP Portal, generating savings of approximately ₹160 crore.

Additionally, being a hydro-rich state, Uttarakhand generates surplus Renewable Energy Certificates (RECs) after meeting its own Renewable Purchase Obligation (RPO) and by leveraging power exchanges to sell these surplus RECs, UPCL earned nearly ₹125 crore by selling 35 lakh RECs at an average clearing price of around ₹350 per REC. These measures collectively reflect a strategy to optimise costs through short-term market mechanisms while also generating additional revenue[20].

Operationally, UPCL is also using Machine Learning (ML) tools for demand forecasting, optimising short-term purchases, and analysing high-value consumer behaviour using Automatic Meter Reading (AMR) and Meter Reading Instrument (MRI) data.

To address the operational losses, the utility has intensified vigilance through raids and enforcement under Sections 126 and 135 of the Electricity Act. It is replacing defective meters, laying Low Tension Aerial Bunched Cables (LT ABC) in theft-prone areas, and introducing automated meter reading for high-value consumers.

Billing efficiency has improved with the introduction of Android-based systems, and smart meter installation is progressing under the Revamped Distribution Sector Scheme (RDSS). Monthly revenue collection targets have been set for all divisions, with close monitoring at the

[19] Discovery of Efficient Electricity Prices

[20] https://www.energetica-india.net/news/uttarakhand-power-corporation-upcl-deploys-innovative-power-procurement-strategies

corporate level. Disconnections of defaulting consumers are also being carried out to expedite arrear recovery.

In power procurement, a dedicated team continuously evaluates sourcing options and shifts to cheaper energy exchange purchases when market prices fall below variable costs. The utility has also been advised to internally assess and address the misallocation of funds towards non-essential infrastructure.[21]

Collectively, these reforms reflect UPCL's focused efforts to reduce AT&C losses, strengthen financial viability, and progressively overcome long-standing structural barriers[22].

4.7 PUNJAB: Punjab State Power Corporation Limited

Punjab State Power Corporation Limited (PSPCL), a fully state-owned Distribution Company following the unbundling of the erstwhile Punjab State Electricity Board, remains the sole integrated utility responsible for power generation and distribution across the entire state.

Reflecting on its operational performance, PSPCL has shown a fluctuating trend in AT&C loss over the years. Losses remained persistently high, ranging between 17-19% from 2014-15 to 2020-21, before improving to the 11-12% range during 2018-19 and again from 2021-22 to 2023-24. This highlights the gain from the efficiency-enhancing measures such as Agricultural Power Metered Tatkal Scheme[23] introduced in 2018-19, enabling accurate metering and billing of agricultural consumption, demand side management to lower LT load sale, reducing distribution losses.[24] Despite such efforts, the losses rose again in 2024-25.

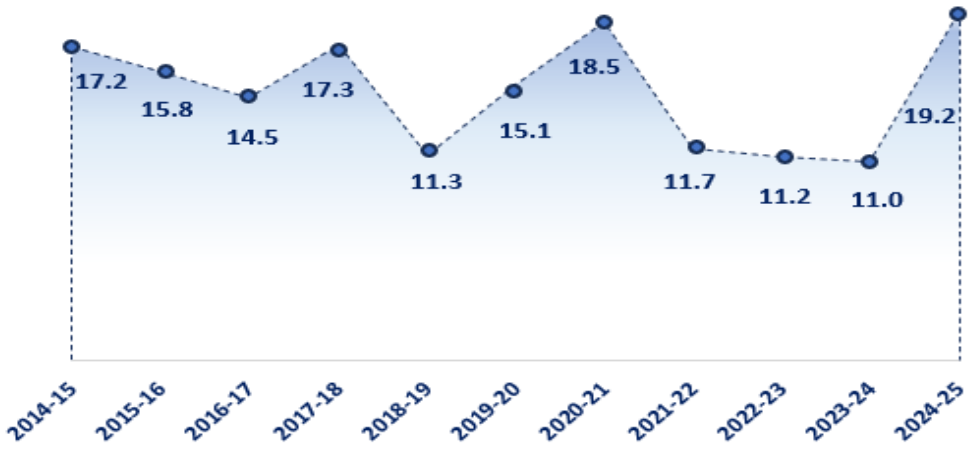


Figure 10: AT&C Loss Trends of PSPCL

Source: ICED

[21] https://cdnbbsr.s3waas.gov.in/s303412aef4dcdee4f934f7bf599f89783/uploads/2025/05/20250516112553646.pdf

[22] https://cdnbbsr.s3waas.gov.in/s303412aef4dcdee4f934f7bf599f89783/uploads/2025/05/20250516112553646.pdf

[23] https://pserc.punjab.gov.in/pages/PSPCL-Tariff-Order-2019-20.pdf

[24] https://pserc.punjab.gov.in/pages/Chapter%202%20TO-2026-27.pdf

In response, PSPCL invested ₹1,295.13 crore in system augmentation and loss reduction works in 2024-25, along with ₹226.47 crore under the Revamped Distribution Sector Scheme (RDSS) [22], supported by anti-theft measures.

Sustaining operational efficiency and achieving consistent loss reduction remains a critical challenge for the DISCOM. Government support through loss funding grants has, however, played a crucial role in stabilising its financial position and enabling a recent return to profitability.

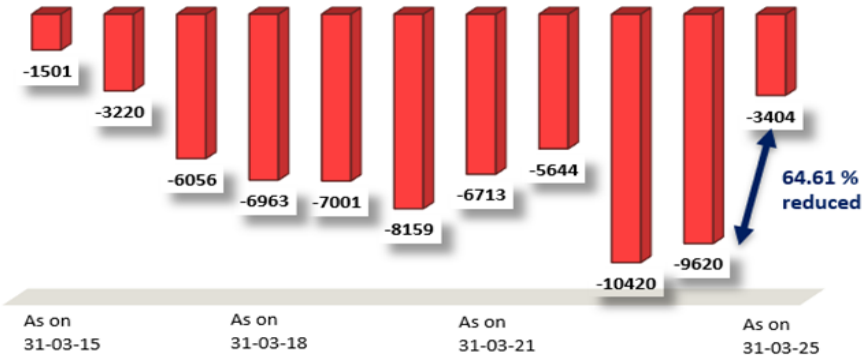


Figure 11: Accumulated Profit/Loss Trends of PSPCL

Source: ICED

PSPCL's accumulated losses had been rising over the years, peaking in 2022-23 due to factors such as high-power purchase costs, regulatory disallowances, underachievement of distribution loss targets leading to penalties, and delays in payments from the state government[25]. This trend reversed in 2024-25, when the state government provided an exceptional grant of ₹3,581.95 crore for loss funding[26]. This reduced cumulative losses by 64.61% and resulted in a profit of ₹6,216 crore[27] on an accrual basis in 2024-25.

However, the improvement in financial performance is largely driven by this one-time grant, which is non-recurring and outside the normal course of PSPCL's operations.

Amid these operational and financial challenges, PSPCL has demonstrated commendable innovation in its power procurement strategy. Recognised by the Indian Energy Exchange (IEX), PSPCL adopted a smart procurement approach by strategically shifting demand to solar hours and leveraging market-based procurement through IEX. This enabled the utility to secure a favourable average daytime procurement price of approximately ₹1.97/kWh[28], while reliably meeting peak demand of around 16 GW during the year. Furthermore, by selling surplus power on exchanges, PSPCL generated additional revenue and strengthened grid security — with over one billion units sold during the 2025-26 paddy season alone.

[25] https://pserc.punjab.gov.in/pages/03Chapter-3-2024-25.pdf

[26] https://docs.pspcl.in/docs/cearrtp20251208180339460.pdf

[27] https://www.pfcindia.co.in/ensite/DocumentRepository/ckfinder/files/Operations/Performance_Reports_of_State_Power_Utilities/Report%20on%20Performance%20of%20Power%20Utilities%202024-25.pdf

[28] https://www.linkedin.com/posts/indian-energy-exchange-limited_commending-punjab-state-power-corporation-activity-7407020246479540225-GNs4/

NOTES

Vasudha Foundation

D-2, 2nd Floor, Southern Park,

Saket District Centre, New Delhi-110 017, India

vasudha-foundation.org