

MS. KIRAN GUPTA

Chief - Customer Experience, Commercial, Govt. Affairs, EAC & Consumer Litigation
Tata Power Delhi Distribution Limited (Tata Power-DDL)

Pioneering Solar Adoption And Smart Grid Transformation In Delhi

KEY HIGHLIGHTS:

- Achieved 6,338 rooftop solar installations totaling 120 MWp, driving renewable adoption.
- Digitized distribution with smart meters, AI/ML, ADMS, and customer-centric digital platforms.
- Reduced AT&C losses to 5.54% and developed Net Zero roadmap for 2030.



Q Tata Power-DDL has led Delhi's renewable integration; what leadership strategies have driven large-scale adoption of solar and clean energy?

TATA Power-DDL: Leading Delhi's Renewable Energy Integration

Tata Power-DDL has been at the forefront of driving Delhi's transition towards clean energy and to reaffirm this commitment to sustainability, the company adopted the tagline 'Towards A Greener Tomorrow,' in 2023. The company's leadership has successfully combined a clear vision, strategic execution and strong partnerships to facilitate large-scale adoption of solar energy for its customers. In keeping with its parent company Tata Power's commitment towards net zero, Tata Power-DDL has ensured a suitable power purchase mix of conventional and renewable sources of power, with renewable energy accounting for 30% of its portfolio. It has also achieved a cumulative solar installation count of 6,338 with a load of 120 MWp in its licensed area to date.

Leadership Strategies Driving Renewable Growth

Tata Power-DDL has adopted multiple strategies to drive renewable energy adoption within its licensed area. The leadership has set a clear strategic intent

with measurable, time-bound renewable integration goals, aligning rooftop solar and MW capacity targets with national programs like the PM-Surya Ghar Muft Bijli Yojana (PMSGY). The company actively engages with regulatory bodies, municipal corporations, and state/central agencies to ensure policy and stakeholder alignment, contributing to more customer-friendly policies. Customer-centric business models and awareness initiatives — including doorstep promotional camps, media campaigns, bill inserts, and facilitation of net metering and financing — have helped reduce adoption barriers. Further, local ecosystem development through initiatives such as Solar Sakhis, trained village energy champions, and Solar Ambassadors has strengthened grassroots implementation, supported by a robust network of certified vendors and installers.

Q How is Tata Power-DDL using digital transformation and smart grids to improve efficiency, reliability, and customer experience in power distribution?

As part of its roadmap for "Utility of the Future", Tata Power-DDL has digitised and automated its entire electricity network through Advanced Distribution Management System (ADMS), Field Force Automation, Battery Energy Storage, AMI/Smart Meter,

As part of its roadmap for "Utility of the Future", Tata Power-DDL has digitised and automated its entire electricity network through Advanced Distribution Management System (ADMS), Field Force Automation, Battery Energy Storage, AMI/Smart Meter, Big Data Analytics Implementation, EV Charging infrastructure LV Automation (IoT), Behind the Meter services, DER Management System, Data Analytics, AI/ML usage, Vehicle to Grid (V2G), Power Voltage Transformer, among others.

Tata Power-DDL has developed a host of digital and service innovations such as the integration of SCADA and OMS enables end-to-end fault monitoring with automated responses, significantly reducing outage durations and enhancing reliability. AI/ML-based predictive maintenance prevents equipment failures, minimizes downtime, and lowers maintenance costs. The My Tata Power App further cements the company's digital leadership as a comprehensive self-service platform for payments, account access, outage information, consumption monitoring, and complaint logging. With features like a 24x7 virtual assistant and real-time alerts, it ensures transparency and proactive engagement—serving over 2 Million customers and recording more than 3 crore annual hits.

Tata Power-DDL is also the first private discom in India to install over 5.90 lakh smart meters till August 2025, enabling real-time two-way data exchange between customers and the utility. Customers can monitor and control their consumption via the app, empowering energy-efficient choices. Adding to its digital service suite, Virtual Connect offers remote, face-to-face interactions, serving over 3,000 customers monthly while reducing carbon emissions.

Going beyond service excellence, the company has pioneered Smart Metering and Behavioral Demand Response (BDR), leveraging in-house analytics to reshape consumption patterns during peak hours. Engaging over 1 lakh customers, the initiative delivers annual savings of 450+ MW, strengthens grid resilience, and contributes to India's climate goals under Mission Life.

AI-ML-powered bots now handle 80,000 annual email queries, cutting turnaround time from three days to one. OCR-based meter reading has reduced errors by 90%, nearly eliminating billing complaints, while image analytics ensures defect-free installations. Additionally, a revenue collection module helps identify potential defaulters early, improving cash flow by 30% through timely follow-ups.

Through these initiatives, Tata Power-DDL has exemplified industry leadership by embedding customer centricity and digital innovation into its core operations.

Q What are the key challenges and opportunities for scaling solar in urban networks, and how does leadership help overcome them?

The scaling of solar in urban networks comes with several challenges. Low awareness and limited trust among certain consumer segments, driven by the price differential of modules and allied equipment, continue to impact adoption. Rooftop constraints and structural limitations at customer premises further

restrict solar potential. Additionally, lengthy regulatory processes—particularly delays in GBI payments—act as deterrents for many customers. At the technical level, maintaining grid stability amid increasing reverse power flows remains a key operational challenge.

On the other hand, several emerging opportunities are driving optimism. Aligning customers' daytime loads with self-generation, implementing community and virtual net metering models to help more customers avail solar power. Leveraging green financing and RESCO-based solar services for customers who are not able to avail solar option due to financial challenges. Long term grid stabilization options by integrating storage systems like BESS and demand response programs can further enhance grid stability and accelerate the transition to a resilient urban energy ecosystem.

The leadership team is addressing these challenges by promoting the financial and environmental benefits of solar power through large-scale customer campaigns. Easy financing options have been arranged for financially constrained customers, while policy advocacy with the regulator has enabled the RESCO model and introduction of group and virtual net metering. Through close regulatory engagement, issues like GBI payment are being resolved. Pilots such as peer-to-peer trading, BESS, and Demand Response are also underway to tackle long-term grid stability challenges.

Q How does Tata Power-DDL foster a culture of innovation and sustainability, and what role does leadership play in this transformation?

In line with the Tata Group's innovation focus, Tata Power-DDL has fostered a strong culture of innovation and sustainability. Tata Power-DDL has been awarded the Deming Prize 2024 for innovation, and excellence in Total Quality Management (TQM) as the first power distribution company in the world,

along with several other global and national recognitions. These achievements stem from focused roadmaps in infrastructure, technology, people, and service — all benefiting end consumers.

A front-runner in power distribution reforms, Tata Power-DDL has reduced AT&C losses to 5.54% (FY 2024-25) from 53% in July 2002. Tata Power-DDL is the first Indian utility to join the Global Intelligent Utility Network Coalition (GIUNC) — a group of 90+ global utilities developing common standards and solutions for intelligent networks. It ranks among the top nine global utilities for customer empowerment and digitalization and holds an A+ Consumer Service Rating from the Ministry of Power in 2024.

On its sustainability journey, the company has created a Net Zero roadmap for 2030, Tata Power-DDL has so far facilitated 6,338 rooftop solar connections across key consumer segments. The Domestic segment accounts for the highest number of rooftop solar connections with 4,680, followed by Commercial & Industrial (C&I) 1,616, and Others 42.

Q What is your vision for the future of solar energy and smart distribution in India, and how will Tata Power-DDL continue leading this change?

Solar energy will be the cornerstone of future energy supply, and Tata Power-DDL envisions a resilient, intelligent, and inclusive electricity distribution network — one where distributed solar, storage, and digital controls seamlessly deliver affordable, clean power to every customer.

The company's future leadership commitments include further reducing AT&C losses to around 5%, enhancing smart metering and digital customer services, responsibly scaling distributed generation in its licensed area to reach 3 lakh customers, integrating storage and demand flexibility to ensure grid stability, and evolving from a power distributor to a comprehensive energy solutions provider.