

TATA POWER DELHI DISTRIBUTION LIMITED

New Delhi (Delhi)

Electricity Distribution Company Profile

In its last 14 years of journey for transforming the power distribution system for the North & North Western parts of Delhi, Tata Power Delhi Distribution Ltd (TPDDL) has been one of the front runners in the adoption of Energy Efficiency measures and Operational & Information technologies. The initiatives adopted have helped TPDDL not only achieve the AT&C loss reduction targets from 53% to around 9%, but there has been significant improvement in other key performance indicators like reliability, safety, operational efficiency all which have contributed to the increase customer satisfaction.

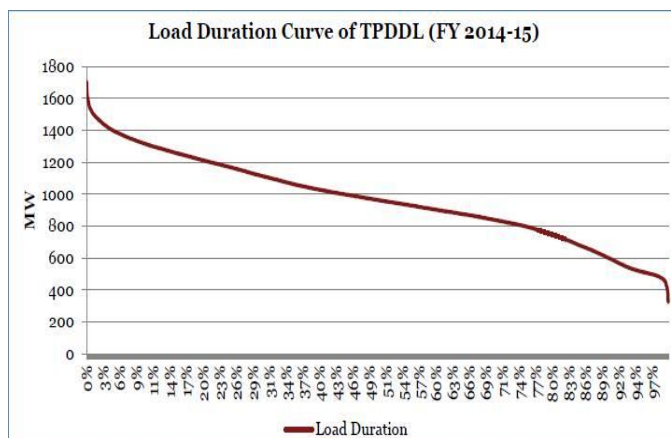
SI No	Particulars	Current completed financial year 2015-16	Previous completed financial year 2014-15
(a)	Peak Load (MW) recorded	1633	1691
(b)	Annual Units utilized within licensed area (million units (kWh)/year)	8610	8423
(c)	Total registered consumers	1515000	1438000
(d)	% of consumers supplied at low voltage level	99.9	99.9
(e)	Per capita consumption (kWh/consumer)	5683	5875
(f)	AT&C losses (%)	8.88%	9.87%
(g)	Percentage reduction in AT&C losses compared to previous year (i.e. in 2015-16 as compared to 2014-15)	10%	

TPDDL has sufficient arrangements of power to meet the demands of consumers in its licensed area, however, the variations in climatic conditions and the variations in consumption pattern result into huge variation in the overall demand pattern for TPDDL. In such a scenario, energy efficiency measures under demand side management increases reliability of power supply. Optimum load management and scaling up of energy efficiency through consumer engagement are challenges for utility.

System Load optimization and effective contingency management:

Significant Variation in Base & Peak Load:

The difference in base load and peak load has been growing every year for Delhi and generally TPDDL in order to ensure reliability has to arrange power through long term power purchase agreement (PPA) on the basis of peak power. The peak conditions happen for few hours in a year, but it results a surplus scenario during rest of the year for which TPDDL has to bear cost on account of fixed charges for these unwanted surplus power during non-peak time, it results in increasing average power purchase cost. Even in summer peak happen for few hours, so it creates surplus during rest of time in a day which results in sale of surplus in loss as sale price in power exchange is lesser than average power purchase cost through PPA. It is observed that the load exceeds 1500 MW only for 100 hours of a year mainly during the summer months. It is also seen that



the load is greater than 950 MW for significantly higher than half of the time. Commercial and industrial segment load is major contributor of TPDDL peak load.

Finding of Load research report of TPDDL is that even though the percentage share of consumers in the commercial and industrial (C&I) category amount to 17% only, the category's share in the total sanctioned load stands at 41%. Out of the total energy billed by TPDDL, 49% were consumed by C&I consumers, 43% were consumed by consumers of domestic category. 9% energy sale was realized from various other categories which include Railway Traction, DMRC, Delhi Jal Board and many others. The C&I consumers are using most of highly energy engulfing machineries/utilities which contributes to TPDDL system peak load also.

Being the pioneer in the field of Demand Side Management and Energy Efficiency, TPDDL is committed to promote energy conservation and its efficient use among its consumers. Working on similar lines, TPDDL has introduced several energy efficiency programs for its consumers over the years. These initiatives include replacement of conventional lighting with efficient lighting (LED applications), appliance replacement program for refrigerators & air conditioners, automated demand response etc. TPDDL has received various public accolades for driving energy efficiency initiatives for its customers.

TATA Power-DDL has won **Asian Utility Innovators Award for "Demand Side Management Project"** at the 17th Annual Asian Utility Week 2016 held in Bangkok from 31st May to 1st June 2016 for TATA Power-DDL's Programme for replacement of Non Star Air conditioners with BEE 5 star air conditioners. TPDDL "Discom driven ESCO model for implementing energy efficiency improvement projects rated as **"innovative energy saving service at the 17th national award for Excellence in energy management 2016"** by CII at Hyderabad. Tata Power-DDL has also been **ranked No. 1 under Green Grid Award 2016** at the '4th Innovation with Impact Awards for Discoms' organised by Indian Chamber of Commerce. The summit was organized on November 10-11, 2016 by ICC in association with the Ministry of Power, Government of India.



Description of the energy efficiency measures

Various energy efficiency improvement projects were undertaken to reduce specific power consumption. The major projects are listed below-

1) Rebate based AC Replacement Program

As per recent load research report of TPDDL, It is observed that the share of the domestic category in the total sanctioned load stands at 55%. Around 60% domestic consumers own Split or Window ACs. 80% of these AC units are either non star or less than 3 stars. Night time system peak load is majorly attributed by domestic AC load. TPDDL has developed a unique energy efficiency program "Replacement of non star rated AC with BEE 5 Star rated/ Inverter Technology AC". The program is implemented to address following trigger points:

- i. Peak Load and contingency management
- ii. Flatten load curve
- iii. Rise in domestic consumer's electricity bill during summer
- iv. Low penetration of BEE star rated ACs among domestic consumers

Type of AC	BEE 2 Star 1 Ton	BEE 3 Star 1.5 Ton	Inverter 1 Ton	Inverter 1.5 Ton
Power Consumed (kWh)	7400	7500	7000	7400

Star Rating	Power consumption (kWh)	Energy consumption per Year in units	Annual electricity cost (₹)	Electricity cost saving per customer to Non-Star AC
Non Star	2605	2165	13751	None
5-Star	1360	1130	6945	13506
Inverter AC	1490	1214	7578	5384

*AC Operating in 8 hours a period of 2 months.

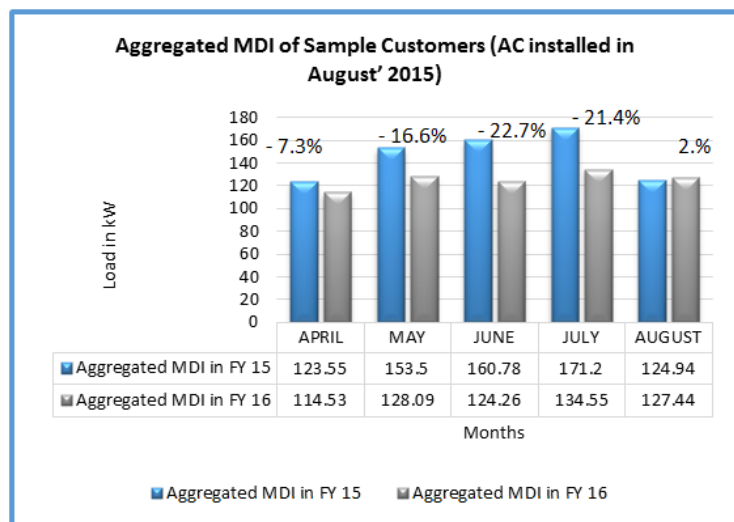
TERMS & CONDITIONS:

- Valid for only 20,000 TPDDL Domestic Customers on first come first serve basis
- Scheme is applicable for the customers having an average monthly consumption of up to 1200 units per month during summer period from April to September 2014
- Scheme applicable for either 1 ton or 1.5 ton Split / Window ACs

Requirement for purchase of AC
 Old Non Star AC + Latest electricity bill + Photo ID proof + Address proof
 Interested Customers may call 011-66454018 or contact TPDDL Customer Care Centers or log in to www.tatapower-dcl.com for Scheme Details.

Total 9089 nos non star rated AC has been replaced under AC replacement scheme till the validity of the scheme which expired on August 31, 2016. This has led deemed load reduction of 5.94 MW and deemed savings of 7 MU annually. This would have environmental impact of reducing 1781.150203 MT of CO2.

Sample data of customers who joined the AC scheme in August'15 shows that their aggregated MDI for the months April'16 to August'16 has been reduced in comparison to period April'15 to August'15. This superimposed comparison of MDI load of sample customers have been drawn from actual meter reading.



2) DSM based energy efficient lighting programme

14 lakh 7 W LED bulbs were distributed at upfront and EMI payment modes to customers which would led to annual deemed savings of 44.1 MUs and 14685.3 M Ton CO2 reduction



3) Discount Based scheme for energy efficient LED lighting Products & Ceiling fans

Tata Power Delhi Distribution (TPDDL) has come up with the first utility based discounted LED Lighting program with Crompton Greaves Consumer Electricals Ltd (CGCEL). Under this scheme, the complete range of LED lighting products with 11 varieties (e.g. LED bulbs, Tube Lights, Panels and Down Lighters etc.) would be offered to the TPDDL customers at attractive prices. Primary objectives of this program are:



- Increase the penetration of LED Lighting Products among TPDDL customers
- Offer range of LED lighting products as per customer requirement for higher utilization of quality LED lighting appliances
- Reduction in customers' electricity bills through energy efficiency
- Provide competitive pricing and warranty to TPDDL customers
- Increase awareness about Energy Efficient Technologies and Lights
- Effective Load management.

TPDDL has achieved annual deemed savings of approximate 3 MUs against 1 lakh LED lighting product distribution under this program.

4) TPDDL ESCO services to Customers

TPDDL being the only utility empanelled as BEE Grade-I Energy Service Company (ESCO) finds itself suitably placed to play a pioneer role to provide value added Energy Efficiency services like comprehensive energy audit and implementation of energy performance improvement projects for its consumers under ESCO Model. To offer a single window solution to customers, TPDDL along with partnered solution providers offer a turnkey package of energy efficiency services like including

energy audit, feasibility study, financing option, performance contracting, project engineering, implementation and measurement & verification. Total paid Energy Audits are conducted for customers with connected load of 14MW which would led to potential energy savings of 4.5Mus.

Annual Energy savings achieved and investment made due to implementation of Energy Efficiency improvement measures

SI No	Measures and Benefit	Financial year 2015-16
(a)	Electrical Energy Savings (Million kWh/ year) a) Rebate based AC Replacement Program b) DSM based energy efficient lighting programme c) Discount Based scheme for energy efficient LED lighting Products & Ceiling fans	d) Deemed annual savings 7 MUs for AC replacement qty of appx 9089 nos e) Annual deemed savings of 44.1 MUs against 14 lakhs LED bulbs distribution f) Annual deemed savings of appx 3 MUs against 1 lakh LED lighting product distribution Total energy savings (a+b+c)- 54.1 MUs
(b)	Electrical Energy Savings (Lakh Rs/ year) @ average Rs. Per unit sold (Rs 6.25 per kWh)	3381 Lakhs
(c)	Investment made on energy conservation measures (Lakhs Rs/ year)	588 Lakhs

Energy Savings achieved through Renewable energy systems

Project description for Financial year 2015-16	Achievement of Annual energy savings in 2015-16		Investment incurred on the project (Rs. Lakhs)
	Electricity, million units	Total savings (Rs. Lakhs)	
Net meter connected Roof top solar(1 MWp)	0.7	38 Lakhs	Nil
TPDDL installed grid connected solar systems (1.77 MWp). Plant commissioned prior to 2015-16	2	110 Lakhs	1700 lakhs

Public information campaign and customer outreach programs

- TPDDL had prepared energy conservation booklets and leaflets for kids, offices, colleges, home and distributed amongst internal and external stakeholders.
- Customer outreach programs are being organized at various Forums- RWAs, Consumer meets. The presentations were given by well-established energy sector professionals from EE & REM, BEE, TERI, OEMs, etc. All consumer meets have climate change/ energy conservation as a part of agenda. Energy conservation tips are circulated & shared with consumers in the RWA meets every month.
- To raise the awareness on Renewable Energy and its efficient use Renewable Energy fair was organized in association with State Designated Agency (SDA) and RWA Members of TPDDL.
- Organized Energy club Urja Mela 2015 covering 1000 students to create awareness about energy efficiency , conservation and renewable energy
- Sessions conducted for IWA members where representatives from OEMs/ Industry experts were invited to educate customers about the concept of energy audit / ESCO and its benefits.
- Media coverage through press release in leading newspapers about DSM scheme
- Frequent media advertisements by OEMs
- Display of Standees/ Posters/ Hoardings at all the TPDDL Bill payment centers and key offices
- Radio jingle programs through FM radio channel about LED bulb & BEE 5 star rated AC Programme
- SMS & E-mailers sent to the registered customer base on regular basis about DSM schemes
- Various workshops on energy efficiency & energy audit have been organized for our Key consumers (with load >100 kW) at our training center in Rohini.
- Arranged energy efficiency competition for Commercial & Industrial customers and rewarded the performers.