

**EASTERN POWER DISTRIBUTION COMPANY
OF A.P LIMITED
Visakhapatnam (Andhra Pradesh)**

Distribution Company Profile

The Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL) was formed on the 31st March, 2000 to serve as a Distribution Company of APTRANSCO, following the advent of power reforms in the country. APEPDCL, Visakhapatnam is one of the leading Indian power utilities serving a consumer base of over **5.52** million spread across five districts in the southern state of Andhra Pradesh. It has always been a pioneer in delivering technology centric customer care services to its customers. APEPDCL has **the lowest AT&C losses** and one of the best in terms of operational efficiency.

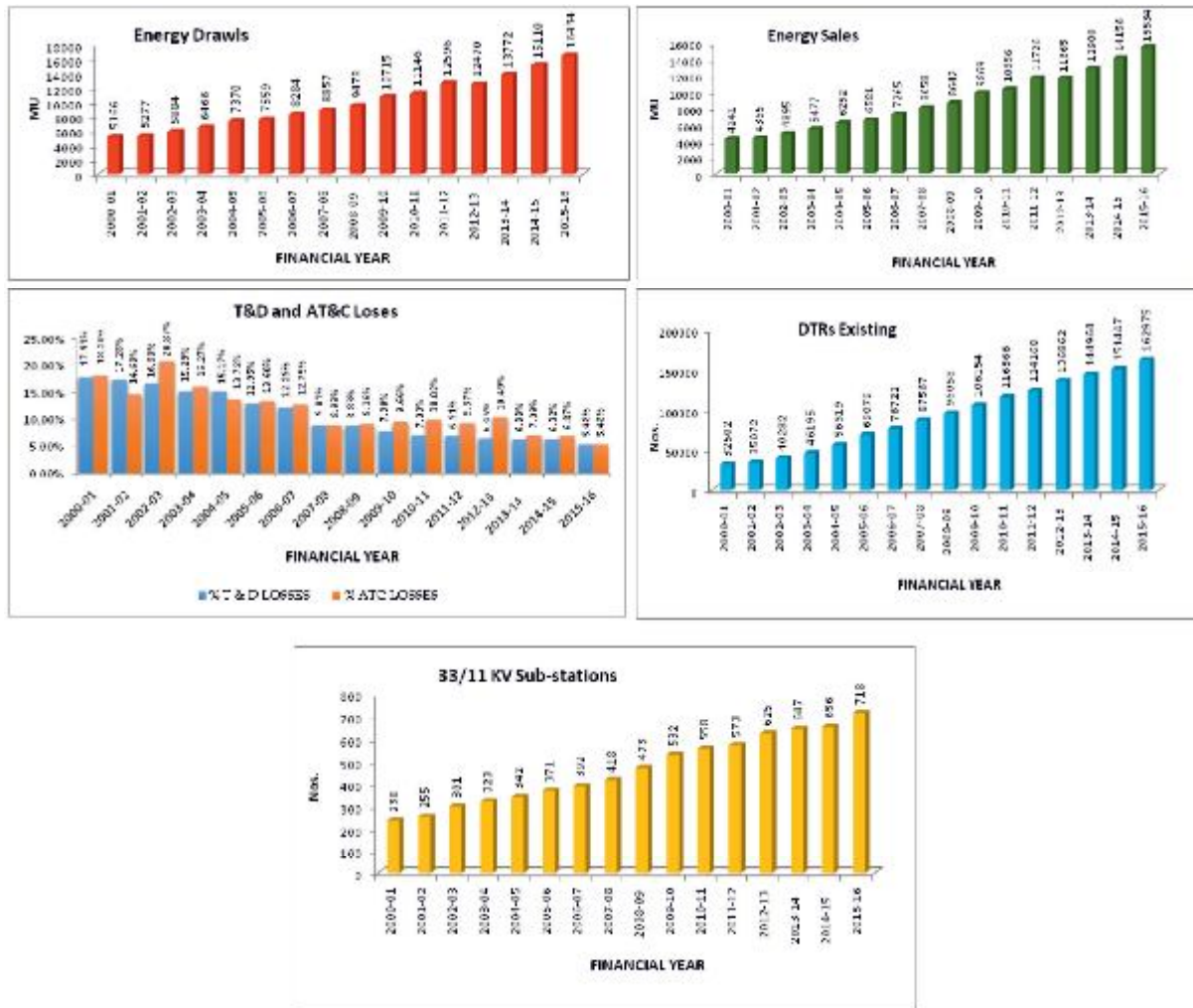
APEPDCL is responsible for undertaking distribution and bulk supply of power in the operation circles of Srikakulam, Visakhapatnam, Vizianagaram, East and West Godavari districts and 20 Divisions of Coastal Andhra Pradesh. APEPDCL supplies power to over 5.52million consumers belonging to different categories through a network consisting of **726 Sub-stations** of 33 KV level, 2932 feeders of 11 KV level and 1,68,140 distribution transformers of different levels. The Corporate Office and Headquarters of APEPDCL is situated at Visakhapatnam.

APEPDCL is certified for ISO 9001:2008 under Quality Management System and ISO 27001:2005 for Information Security Management System.



Energy Distribution and T&D Losses

The pictorial progress of the DISCOM since its inception:



Energy Conservation & Efficiency Measures:

- 1. Distribution of LED Bulbs under "DELP" Scheme:** As a part of energy conservation measures the DELP (DSM Based Efficient Lighting Programme) scheme of M/s EESL is implemented in APEPDCL w.e.f February, 2015. 2 bulbs each were distributed to all domestic consumers. As on 25.11.2016, a total of 75,40,961 Nos LED bulbs were distributed to 37,71,228 Nos consumers. The estimated energy savings are **551 MU (Million kWh)**.
- 2. Domestic Efficient FAN Programme (DEFP):** APEPDCL proposed to implement the Domestic Efficient Fan Programme (DEFP) as a pilot programme in Narasapuram Town and its adjoining areas in West Godavari District, AP with the financial support of M/s Energy Efficiency Services Limited (EESL). The programme was launched by the Hon'ble Chief Minister, Andhra Pradesh on 20.06.2016.

Each fan is offered @ Rs.1100/- on upfront payment and for Rs. 1250/- with 24 instalments (Rs.52/- per instalment will be collected through CC bill).

Under this programme it is proposed to offer 1,00,000 Nos (BEE 5 Star rated) ceiling fans to the willing consumers @ 2 Nos Fans to Domestic Consumers, 10 Nos Fans to Commercial consumers and 50 Nos Fans to Institutional consumers including Industrial consumers.

DEFP Progress achieved as on dt.25.11.2016							
Domestic		Commercial	Industrial/ Institutional	Others	Total Fans Issued		
EMI	UPFRONT	UPFRONT	UPFRONT	UPFRONT	EMI	UPFRONT	Total
27258	6161	779	2488	370	27258	9798	37056

The expected Energy Savings per fan worksout to 90 Units per annum. After distribution of 1 lakh fans, the expected energy savings will be **9.125 MU** and expected cost savings will be **Rs.3.39 Crs. per annum.**

3. Replacement of ordinary Agricultural pumpsets with Energy Efficient pumpsets under Ag. DSM Pilot Project at Rajanagaram Mandal in East Godavari District:

As pilot project, replacement of ordinary pump sets with 4 star or 5 star rated Energy efficient Pump sets for below 20 HP capacity & IS pump set models for above 20 HP capacity, has been taken up in Rajanagaram Mandal, East Godavari Dist, in A.P which covers 2496 pump sets under 29 feeders in 25 villages.

Energy performance Agreement has finalized and signed between EESL and APEPDCL on 5th Mar 2015 and the works commenced from June '15. Due to implementation of this project total estimated Energy savings per annum is about 21.32 MU. Hon'ble APERC has accorded approval for this project vide O.P.No.16 of 2015 Date: 05.06.2015. Cost of each Energy Efficient pump Set is Rs.69,500/-

As on 25.11.2016, 901 Nos pump sets were replaced with energy efficient pump sets.

4. Solar Rooftop net metering:

Out of 621 Nos feasible applications received, 296 units were synchronized with grid as on 25.11.2016 with capacity of 5.3 MW

5. Solar agricultural pump sets:

Out of 4566 Nos eligible applications received so far, payments were made for 3605 Nos. As on 25.11.2016, 2681 Nos solar pump sets were energised. The balance works are under progress.

Some of the key IT Initiatives Implemented:

1. **E-Office:** e-Office was launched in APEPDCL Corporate Office on 14th August, 2015 and was implemented in all other offices of APEPDCL completely by 30-Nov-2015 and emerged as the first utility to become a paperless office.
2. **Mobile App for Consumers:** As part of providing better customer services, APEPDCL has developed (In-house) a mobile app "**Eastern Power App**" for customers on 14-Aug-2015. The app was launched on 03-Nov-2015. As on 31.10.2016 Consumer mobile application performance is as follows:

No., of Registrations	:	1,21,293
SC Nos. Registered	:	2,90,098
No. of Transactions	:	3,15,784
Amount Collected	:	Rs.23 Crores

3. **DTR Replacement using Vehicle Tracking System:** Replacement of sick DTRs with healthy DTRs within time as per standards of performance is one of the important objectives for the DISCOM. In reality several slips are taking place which are leading to Delay in replacement of failed DTRs&Transportation of sick and healthy DTRs by the consumers.

An IT enabled system was developed and implemented on 07.12.2015 to streamline the process of DTR failure replacements which eliminates the above slippages.

4. **Mobile Applications for Department :** Mobile applications for department personnel have been targeted to be developed for increasing ease of operation. As part of this, APEPDCL have developed the following mobile applications for utilization in day-to-day Operations:
 - a. **Operation of Defaulters List:** This app has been developed for operation of the defaulters list by the O&M staff.
 - b. **Statutory Inspection of Sub-stations:** This app enables immediate updation of the inspections made by the field officers for rectification of the defects noticed by the respective wings viz Operations/ MRT.
 - c. **Asset Surveying:** This app enables the field officers to capture the details of the assets viz DTRs, LT network, 11KV and 33KV network. Besides capturing the present status along with the defects, if any,

observed during the inspection and the action taken for rectification will be maintained historically.

- d. **My EP:** As part of building up Transparency and providing important information pertaining to individual employees, APEPDCL has developed a mobile app through which every employee can view their personal department information.
5. **OMS Application:** As a result of various initiatives that were taken, all 11 KV feeders in EPDCL were fixed with DLMS meters along with GPRS Modems. Based on the Modems data, EPDCL has developed the OMS-Dash Board which is a web based Application capable of generating meaningful reports to monitor
- a. 11 KV feeder interruptions with cause-wise analysis.
 - b. Loads and Power factor of all 11 KV feeders.
 - c. DTR Loads in all R-APDRP towns.
 - d. SAIDI-SAIFI Analysis with graphical representation up to section level.
 - e. Load Curve indicating Schedules Vs Actuals.
6. **New Avenues for Collections:** For improving collections and e-Payments, APEPDCL has given the following options for the consumers to pay their CC bills. The different avenues are
- a. Pay U
 - b. Apna CSC
 - c. Andhra Bank ATMs
7. **AP VidyutPravah:** In line with the 'VidyutPravah' application, APEPDCL has developed "**A.P.VidyutPravah**" application for AP DISCOMs to take transparency to the next level and make the power utilities more accountable. This app will work as manifestation of Government's vision of good governance.

This application provides real time power supply position along with the previous day data. Data from the State Load Dispatch Centre and 33/11KV Sub-stations has been made available through a single portal for convenience of all.

A user friendly interface, based on the Geographical map of Andhra Pradesh, facilitates all the consumers /stakeholders to visualize the power availability and power supply position at DISCOM/ District/ Town/ Village level. The information disseminated through the Application will empower the consumer, thereby leading all the stakeholders to be more responsive and efficient, bringing more economy to the State.

Second Prize

Electricity Distribution Companies (DISCOMs)

BANGALORE ELECTRICITY SUPPLY COMPANY LIMITED (BESCOM) Bangalore (Karnataka)

Distribution Company Profile

BESCOM - Bangalore Electricity Supply Company Limited is responsible for power distribution in Eight districts of Karnataka. BESCOM covers an area of 41,092 Sq. Kms. with a population of over 207 lakhs. The company has 3 operating Zones - Bangalore Metropolitan Area Zone, Bangalore Rural Area Zone and Chitradurga Zone, 9 Circles, 28 Divisions, 121 Sub-divisions, 469 Sections, 104.35 lakhs of consumers and 13,600 staff strength.

In the year 1999, Karnataka embarked on a major Reform of the power sector. As a first step, Karnataka Electricity Board (KEB) was dissolved and in its place, the Karnataka Power Transmission Corporation Limited (KPTCL) was incorporated.

This was followed by the constitution of Karnataka Electricity Regulatory Commission (KERC) in November 1999. In the next phase of the Reform Process, the transmission and distribution business managed by KPTCL were unbundled in June 2002. Four new distribution companies were formed to distribute power in Karnataka.

Bangalore Electricity Supply Company Limited (BESCOM) has taken over the responsibility from KPTCL for the distribution of electricity in 8 districts and commenced its operations from 1st June 2002.



Projects/Programmes taken in BESCO during 2015-16

Surya Raitha Solar water pumping system to irrigation pumps sets, a pilot project in BESCO:

In September 2014, the Government of Karnataka (GoK) envisaged a sustainable solution to the problem of agricultural power by way of Surya Raitha scheme. The scheme proposes to provide net metered solar water pump systems of high energy efficient. Farmers who were previously drawing energy from the grid will now be encouraged to export excess energy generated by their solar water pumping system and earn additional revenue for net energy exported thereby completely eliminating drawl of energy from BESCO grid for their agricultural pump sets.

Surya Raitha, pilot project:

BESCO has initiated to arrange power supply to 310 IP sets of Harobele 11kV feeder in Kanakapura sub-division on Solar pumping system as a pilot project. The project promotes energizing the IP sets with solar power by replacing existing inefficient pump sets by variable frequency drive pumpsets with pump controllers and to export excess energy generated to the grid on net-metering concept.

Domestic Efficient Lighting Programme (DELP)

- The KERC has framed Demand Side Management Regulations which makes it mandatory for all distribution licensees to undertake demand side management techniques to control the demand for power.
- BESCO has conducted Load Research Survey through M/s. Energy Efficiency Services Limited (EESL).
- On conducting such survey, it was found that evening peak load of domestic consumers is high and by encouraging the use of LED lights instead of Incandescent Lamps (ICLs) and Compact Fluorescent Lamps (CFLs), there could be a significant reduction in domestic consumption, thereby reduction in evening peak load.

Implementation of the project:

M/s EESL is facilitated in implementation of DELP programme by selling 9W LED bulbs at a cost of Rs.65/- per LED bulb to the domestic consumers in BESCO jurisdiction based on the sanctioned load as follows:

- upto 2kW : 5 no.s
- More than 2kW : 10 no.s

Demand Side Management activities in BESCO

1. Initiatives taken up by BESCO to achieve Energy Efficiency:

a. Promotion of Solar RTPV programme by BESCO:

- The Government of Karnataka has announced the Solar Policy 2014-21 for grid connected solar rooftop system under net-metering basis on 22.05.2014 and set up an SRTPV Target of 100 MWs per year from the year 2014-15 to 2017-18.
- Further, KERC has issued revised tariff vide notification dated: 02.05.2016, 29.09.2016 and introduced Gross Metering/Net metering as a onetime optional for residential, Hospital & Education institutions and Net metering for other tariff consumers and is as follows:

Capacity of Solar Rooftop and small PV power plants	Approved Tariff in Rs/Unit (Without Capital Subsidy)	Approved Tariff in Rs/Unit (With Capital Subsidy of 15%)
1 to 10kW	7.08	6.03
Above 10kW and upto 50kW	6.61	5.63
Above 50kW and upto 100kW	6.14	5.23
Above 100kW and upto 500kW	5.67	4.83
Above 500kW and upto 1MW	5.20	4.43

- The grid connected rooftop solar photovoltaic power generation plants from 1kWp to 1MWp capacity per project/system to generate electricity/ power would be eligible under the programme.
- The programme is being implemented in Urban and Rural Areas as well.
- The programme encourages installation of rooftop solar photovoltaic power generation plant for self-consumption as well as supply/sale of electricity to the grid.
 - For HT consumers; evacuation of SRTPV at LT side system capacity is less than the sanctioned load
 - Guidelines for 500kW and above installations
 - Commissioning of SRTPV by sub-division AEE's upto 5 kW without the assistance of MT staff
 - Technical Feasibility Report shall be provided by the field officers.
 - Timeframe has been introduced for implementation of Solar RTPV
- From 07.11.2014 to 31.03.2016, 406 nos. of Solar rooftop installations are serviced with a total capacity of 7.1741 MW.
- **Progress of implementation of Solar RTPV programme in BESCO as on 30.11.2016:**

Sl. No.	Particulars	No.s	Capacity in MWp
1	No. of applications received	3443	1336.18 MWp
2	No. of installations Commissioned	661	31.7318 MWp

b. Agriculture Demand Side Management, WENEXA-USAID:

Replacing inefficient irrigation pump sets by high energy efficient pump sets on HVDS feeders at Doddaballapur Sub-Division as a pilot project. A total number of 277 inefficient Pump sets at metered locations were replaced by High Energy Efficient Pump Sets.

BESCOM has saved 8.26 MU (38%) from this project between April-2011 to March-2016.

c. Surya Raitha Scheme:

- BESCOM has initiated to arrange power supply to 310 no. of IP sets of Harobele 11kV feeder of Kanakapura sub-division on pilot basis.
- The project promotes energizing the IP sets with solar power by replacing existing inefficient IP sets with efficient pumpsets and feed in excess energy to the grid on net-metering concept.
- The excess energy fed into the grid will be paid back to the farmers as per tariff fixed by KERC resulting in additional income to the farmers apart from the income earned through crops.
- The scheme will be financed by a combination of farmer investment, GoK investment, MNRE subsidy and BESCOM investment through soft loans that will be repaid by the farmer through his net metering tariff revenues in initial years.
- The net metering revenues will be deposited into an escrow account and will be diverted first to service the loan corpus fund as per the tariff of Rs.7.20 fixed by KERC for SRTPV/Small solar projects out of which Rs.1/- will be paid as generation based incentive to farmers through farmer's co-operative society and Rs.0.20 for Co-operative Society for maintenance.
- Payback period is estimated as 10-12 years based on the solar generation and utilization factor of the pump set.
- To enable a self-sufficient system and to recover the loan at the earliest, the PV panel is oversized by 50%, so that the additional power will always feed power to the grid even while the solar water pumps are in use.
- The feeder will be energised from 6am to 6pm during day time for injecting excess energy to the grid. Typically 66% of energy is fed to the pump and 33% to the grid.

d. DSM based LED Programme (DELDP) :-

- Government of Karnataka launched the "DELDP – Domestic Efficient Lighting Programme" in all ESCOMs of Karnataka on 16.12.2015 and renamed as "Hosa Belaku" in Karnataka and the programme is implementing through Energy Efficiency Services Limited (EESL)

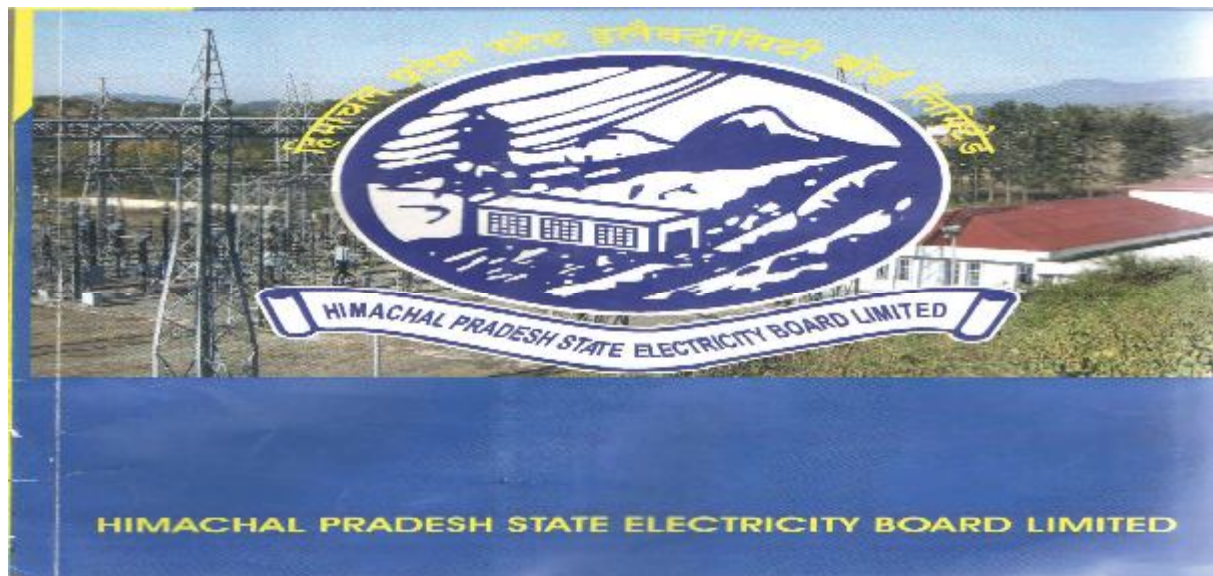
- The scheme proposes to offer to its consumers the option of utilising LED lights to reduce the evening peak load and consumption.
 - Domestic Consumers are eligible to purchase 9W LED bulbs based on their sanctioned load; upto 2kW- 5 no.s and more than 2kW-10 no.s.
 - It is estimated to distribute 2.95 Crores of LED bulbs in BESCO operational area and the total annual saving of energy estimated is around 725 Million kWh which at the average power purchase cost of Rs.3.89 per kWh, will lead to annual cost reduction of Rs.282 crores to BESCO and reduction in evening peak load of 690MW.
 - 59,53,030 no. of LED bulbs are sold from 23.12.2015 to November-2016.
- e. Distribution Energy Efficiency Project (DEEP) by providing Dynamic Reactive Compensation (DRC) for power factor improvement scheme on 11 kV feeders:**
- BESCO has proposed to implement Distribution Energy Efficiency Project (DEEP) by providing Dynamic Reactive Compensation (DRC) for power factor improvement scheme on selected 11 kV feeders on pilot basis. DEEP system consists of Multifunction Measurement and Control unit (MFM), GSM/GPRS modem, capacitors, capacitor-duty contractors, isolation transformers and associated.
 - The DEEP systems address the following functional need:
 - DTR metering towards energy audit and accounting.
 - Dynamic Reactive Compensation to improve power factor to > 0.95 lag & < 1.0 for all normal operating conditions of DT towards line loss reduction.

**Certificate of Merit Electricity Distribution Companies
(DISCOMs)**

**HIMACHAL PRADESH STATE
ELECTRICITY BOARD LTD.
Shimla (Himachal Pradesh)**

Distribution Company Profile

The Himachal Pradesh State Electricity Board was constituted on the first day of September, 1971 in accordance with the Electricity (Supply) Act, 1948, which has been re-organized as Himachal Pradesh State Electricity Board Ltd. w.e.f. 14-06-2010 under Company Act. 1956.



• **Improvement measure for transmission and distribution network:**

HPSEBL has undertaken the various activities for improving sub-transmission and distribution network under R-APDRP Scheme of GOI worth Rs. 339 crore, which includes renovation, modernization & strengthening of 11kV & 22 kV level substations, Transformers/ Transformer centers, Re-conductoring of 11kV and LT lines, load bifurcation, feeder separation, Load Balancing, HVDS (11kV), Arial Bunched Conductoring, replacement of electromagnetic energy meters with tamperproof electronic meters, installation of capacitor banks, mobile service centers and strengthening at 33 kV or 66 kV system. Total expenditure to the tune of Rs. 239 Cr has been incurred in the 14 towns up till 31.10.2016.

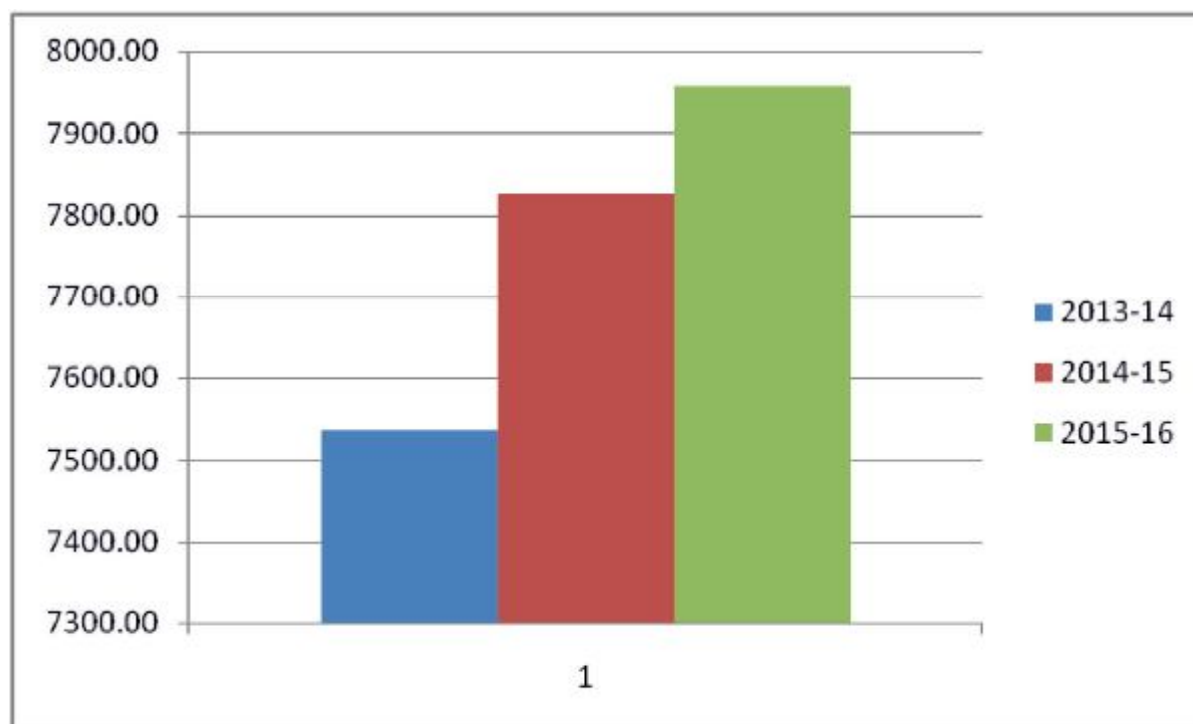
- **Ratio of value added to net domestic energy use by industry.**

In order to ensure reliable, affordable and uninterrupted quality power supply and to cater to the enhanced demand of electricity in the state of HP, HPSEBL is expanding its electrical infrastructure commensurate with growth in electricity demand from time to time. HPERC has approved schemes amounting to Rs. 3622 crore with the investment of Rs. 2220 crore for the year FY 2015 to FY 2019. The pushing of various proposals/schemes for implementation has been done as under:

(in Rs. Crore)						
Year	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Proposed Cost of Schemes	940	785	695	652	550	3622

Energy Consumption Comparison:

Presently HPSEBL is catering to approximately 22 lacs consumers of different categories. The Energy consumption of previous 3 years is appended below:



Performance parameters of HPSEB Ltd. (FY 2014-15 & 2015-16) be summarised as under:-

Sr. No.	Particulars	Current completed financial year 2015-16	Previous completed financial year 2014-15
(a)	Peak Load (MW) recorded	1488	1422 MW
(b)	Annual Units utilized within licensed area (million units (kWh)/year)	8804.378	8915.004 MU
(c)	Total registered consumers	2256966	2199970
(d)	% of consumers supplied at low voltage level	99.84%	99.83%
(e)	Per capita consumption (kWh/ consumer)	1159.640	1147.361
(f)	AT&C losses (%)	12.92%	15.27%
(g)	Percentage reduction in AT&C losses compared to previous year (i.e. in 2015-16 as compared to 2014-15)	2.35%	(-) 0.19%

Annual Energy savings achieved due to implementation of Energy Efficiency improvement measures during FY 2014-15 and 2015-16:

Sr. No.	Particular	Current completed financial year 2015-16	Previous completed financial year 2014-15
(a)	Electrical Energy Savings (Kwh/ year)	64.27 MU	5,39,207kWh
(b)	Electrical Energy Savings (Lacs Rs/ year)@ average Rs. per unit sold (Rs. 5.10/- per Kwh for FY 2014-15 & Rs. 5.17/- per kWh for FY 2015-16)	Rs. 3322.76 Lakh	Rs. 27.5 Lakh

- **Energy intensity measured in terms of primary energy and gross domestic product (GDP).**

HPSEBL is working out electrical energy intensity in terms of per capita consumption (kWh) and for the last 4 years the details are appended below:-

Per Capita	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Electricity Consumption (in Kwh)	969	978	1052	1099	1147	1160

The Cumulative Annual Growth (CAG) works out be 3.7%.

In order to conserve energy HPSEBL besides introducing LED lights, tubes, low loss transformers etc. is intensely taking up the works associated with improvement of transmission and distribution infrastructure to reduce the energy losses.

Under UJALA Scheme, M/S EESL has distributed 56,18,888 Nos. LED bulbs in the state of HP as on 31-03-2016 thus benefiting 7,63,840 No. consumers throughout the state. This programme proposes to benefit about 22 lakh electricity consumers in the state. These measures are being taken with specific focus towards making the consumer energy conscious and adopt energy conservation measures.

Certificate of Merit Electricity Distribution Companies (DISCOMs)

TATA POWER DELHI DISTRIBUTION LIMITED (Delhi)

Distribution Company Profile

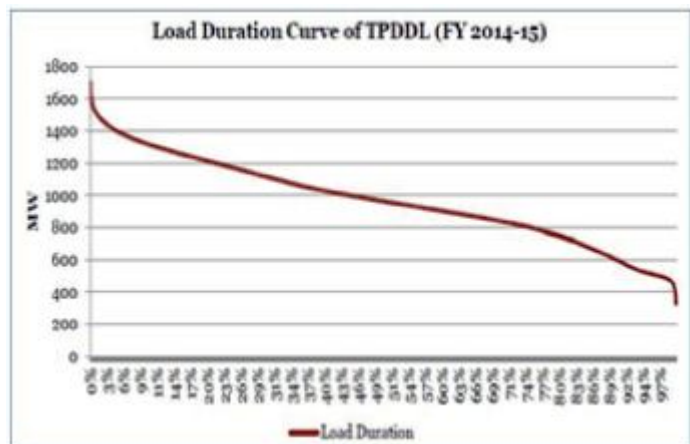
In its last 14 years of journey for transforming the power distribution system for the North & North Western parts of Delhi, Tata Power Delhi Distribution Ltd (TPDDL) has been one of the front runners in the adoption of Energy Efficiency measures and Operational & Information technologies. The initiatives 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:

DOUBLE SAVINGS PROMISE

SHIFT TO 5 star AC. SHIFT TO non-stop savings.

Exchange your old AC with a new BEE 5 Star Rated AC or Inverter AC @ a discount of up to 50% on SRP.

Also save approx. ₹3000/- on your Electricity Bill annually due to lower power consumption.

ACs available from leading manufacturers.

AC Type	Power Rating (Watt)	Annual Electricity Consumption (kWh)	Annual Electricity Cost (₹)
Non Star AC	1.5 kW	1200	1200
1 Star AC	1.5 kW	1000	1000
2 Star AC	1.5 kW	800	800
3 Star AC	1.5 kW	600	600
4 Star AC	1.5 kW	400	400
5 Star AC	1.5 kW	200	200

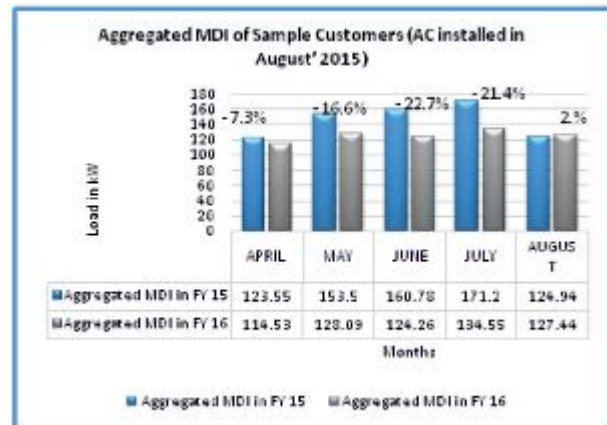
Terms & conditions:

- Valid for only 20,000 TPDDL Domestic Customers on first come first serve basis.
- Discount is applicable for the customers having an average monthly consumption of up to 1000 units per month during summer period from April to September 2016.
- Scheme applicable for either 1 ton or 1.5 ton Split & Window ACs.

Requirement for purchase of AC

- 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

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 to offer LED products at rebates:
Discom Tata Power Delhi on Tuesday launched a scheme under which it will offer a range of LED products to its customers at rebates of up to 60%.

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