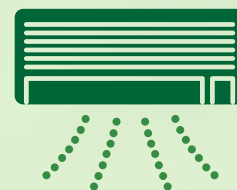


Case Study

AC REPLACEMENT PROGRAM FOR DOMESTIC CONSUMERS



Problem Statement

- A. Rapid urbanization and infrastructure expansion has led to continual increase in Peak load of Tata Power DDL on annual basis. During summer, system experiences sharp peak load from 11pm 1am which is majorly contributed by Domestic Air Conditioning Load.
- B. Load Research activity was conducted for Domestic category and findings have revealed that around 70% of the installed ACs are Non Star rated or Less than BEE 3 star rated ones. Subsequently, around 44% of the models are more than three years old.

Severity (On the scale of 10, 10 being most severe): 10

Frequency of problem occurrence: Daily

Objective

- Reduction in Summer Peak load of the system
- Optimization of Power purchase cost
- Accelerate the market transformation towards Energy Efficient Appliances and initiate phasing out of existing non star rated ones

Estimated or actual cost of implementing the solution:

The savings to be accrued under the scheme has been monetized over lifecycle and passed on to the consumers in the form of rebate thus resulting into tariff neutral impact. Rebate has been approved by regulatory commission as a pass through Average Revenue Requirement (ARR)

Expected or actual benefits from implementing the solution (annual):

- Total AC replaced under the program: 17,123
- Deemed Total Load Reduction: 15.3 MW
- Annual cumulative Energy Savings: 10.5 MUs
- Average cost of supply (ACoS): Rs. 7.63 per unit
- Average Billing Rate (ABR) for domestic category: Rs. 5.75 per unit
- Net benefit per unit: Rs. 1.88 per unit (Rs. 7.63 - Rs. 5.75)
- Annual Savings for 10.5 MUs: Rs. 1.97 Crs. ($10.5 \times 10^6 \times 1.88$)

Repeatability of the solution

The proposed solution can be implemented by other Discoms across the country

Net present value (NPV) of net benefits to be realized in next ten years from the implementation of this solution (10% discount rate)

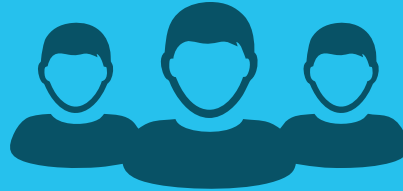
12.10 Cr.

Life/sustainability of the solution

Average Lifespan of an Air conditioner: 5 years

Manpower required for implementing the solution

Solution was implemented by in-house employees



Time taken for implementing the solution

2 years

Start Date: 2015

End Date: 2017



Ease of implementing the solution (i.e. sufficient availability of time, skills, material, etc.):

*Rate on a scale of 10 (10 being easiest to implement)

Rating: 7

Accolades received/awards won for excellence:

- 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 for the project: Replacement of Non Star Air conditioners with BEE 5 star air conditioners.

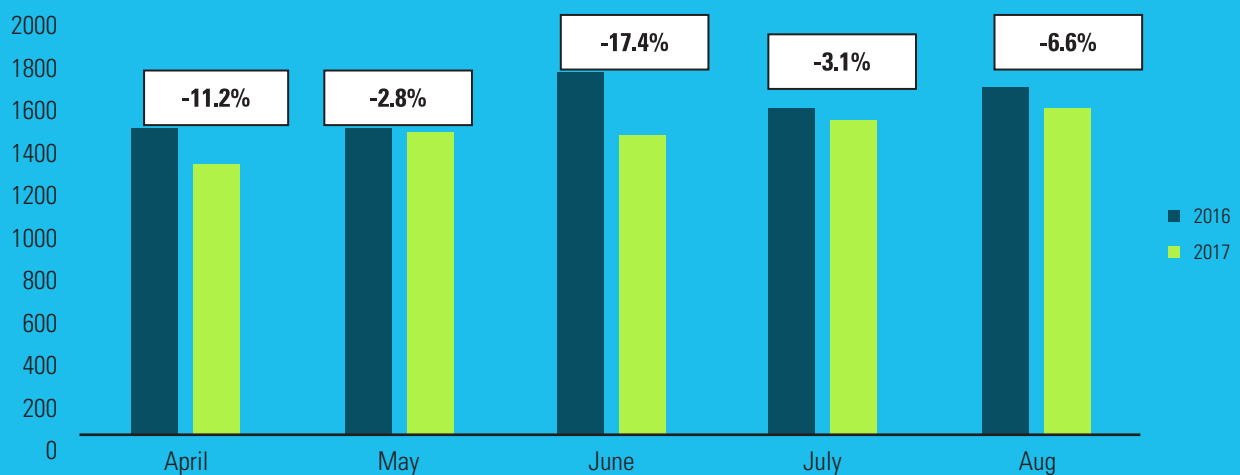


Solution proposed / implemented

- Tata Power-DDL has developed a unique energy efficiency program "Replacement of Non Star-Rated AC with BEE 5 Star-Rated/Inverter Technology AC".
- Under this exchange program, BEE 5 Star-rated and Inverter ACs are offered with rebate of Rs. 4800 to Rs. 7400/unit over and above the discounted (upto 50%) price of ACs. The rebate finalized against each unit of AC has been derived under DSM cost effectiveness framework.
- The savings to be accrued under the scheme is monetized and passed on to the customers in the form of rebate thus resulting into tariff neutral impact.
- In order to refrain the old ACs from returning into the system through grey product market, all the old ACs collected under the scheme are disposed-off in an environment friendly manner.
- Total 17,123 number of Non-Star-rated ACs has been replaced under the scheme which led to the load reduction of 15.33 MW and deemed savings of 10.5 MUs annually. This would have environmental impact of reducing 3,494 MT of CO₂ annually.
- DERC has approved the extension of the scheme and it has been re-launched (with revised model and rebate) in April 2018.

Key benefits/ improvements

1. System Peak load reduction during summer months
2. Flattened load curve helps to optimize power procurements costs
3. Contributed in reducing cross subsidy
4. Increased network reliability
5. Sample database of customers having ACs installed during the period July'16 to August'16 show reduction in aggregated monthly power demand MDI (Maximum demand indicator) for the months April'17 to August'17 within range of 3% to 17% (based on 30% sample cases)



Supporting Evidence

SHIFT TO 5 STAR AC.
Exchange your old AC with a new BEE 5 Star Rated AC or Inverter AC @ a discount of up to 50% on MRP. Also save approx. ₹ 5500/- on your Electricity Bill annually due to lower power consumption. ACs available from leading manufacturers.

Type of AC	BEE 5 Star 1 Ton	BEE 5 Star 1.5 Ton	Inverter 1 Ton	Inverter 1.5 Ton
Package Proposed (ITAC)	₹4600	₹5600	₹5000	₹6100

Special Rebate

Type of AC	BEE 5 Star 1 Ton	BEE 5 Star 1.5 Ton	Inverter 1 Ton	Inverter 1.5 Ton
Star Rating	2400	2700	1200	1350
Power consumption (Watt)	2400	2700	1200	1350
Annual Electricity cost (₹)	12000	13500	6000	6750
Electricity Cost savings per year compared to Non-Star AC	-	-	6000	6750

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 and New AC + Latest electricity bill + Photo ID proof + Address proof
Interested Customers may call 011-66464646 or contact TPDDL Customer Care Centers or log on to www.tatapower-dol.com for Scheme Details.

PRESENTING AN EXCLUSIVE EXCHANGE OFFER.
EXCHANGE YOUR OLD AC FOR A VOLTAS 5 STAR RATED AC OR INVERTER AC, AND SAVE UP TO 50%.

Up to 50% Discount
Up to 63% Power Savings

Type of AC	Model No.	Tonnage	MRP	Special Price with 1 yr Warranty	Discount %	Special Price with 2 yr Warranty	Discount %
Window AC	1202P	1	27,200	17,700	49%	19,200	41%
Split AC	1802P/1802P/1802P/1802P	1.5	37,000	27,000	49%	29,000	44%
	1802P/1802P/1802P/1802P	1.5	42,000	31,500	47%	34,000	44%
Inverter AC	1212P/1204	1	45,000	30,000	62%	32,000	47%
	1812P/1802P/1802P	1.5	55,000	38,000	62%	40,000	45%

Presenting the "Voltas Green Exchange Offer" exclusively for TPDDL Consumers. Exchange your old AC with a Voltas 5 star rated AC or Inverter AC and avail attractive discounts up to 50%. Hurry! It's a limited period offer.

VOLTAS all weather smart AC

For Inquiry, contact your nearest TPDDL Customer Care Center.
Voltas Contact - Nishit Arora - 991180340 / 011-66005700 / 5500 / 1800 425 4555 (Toll Free)

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