

## Host Utilities



Co - Host Utilities



## ORGANIZER



# India SMART UTILITY Week 2024

## Supporting Ministries



## Session : 3RD INDIA - GERMANY SMART ENERGY WORKSHOP

### Discom's Experience on Demand Response

*Presented By*

**Dr. G Ganesh Das, Chief – Collaboration & Innovation, The Tata Power Company Limited**



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Overview of Tata Power

Introduction to Demand Response

Elements of a BDR Program

Customer Engagement through BDR

BDR Deployment at TPDDL and TPC - Mumbai

# Tata Power – Leading Transition & Powering Transformation



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**Vision** → Empower a billion lives through **Sustainable**, **Affordable** and **Innovative** energy solutions.

## Current Portfolio Capacity ~ 14.3 GW

### Thermal & Hydro



9032.5 MW  
Thermal\*  
(Installed capacity)



880 MW  
Hydro  
(Installed capacity)



443 MW  
Waste Heat / BFG  
(Installed capacity)

### T&D



4194 ckt km  
Transmission  
(Line length)



12.9 million  
Distribution  
(No. of customers)

### Renewables



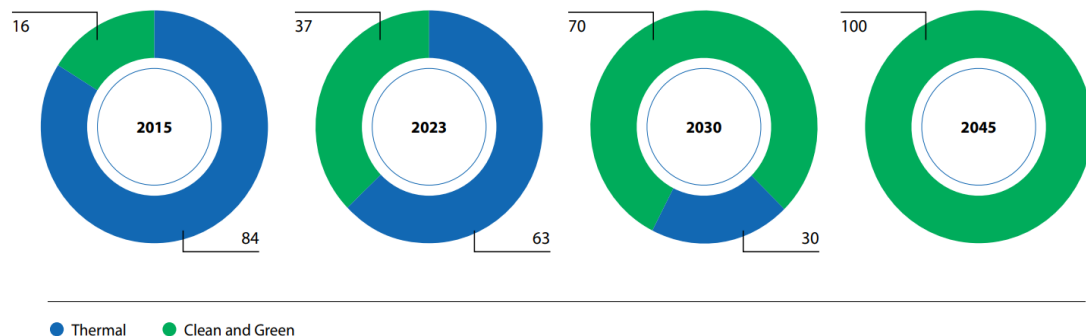
932 MW  
Wind  
(Installed capacity)



3136 MW  
Solar  
(Installed capacity)

1,314 MW  
Solar & Hybrid  
(Capacity under construction)

### Evolving Generation Mix (%)



**EV Charging**  
Over 3700+ points in



**Rooftop Solar**  
1650+ MW, 275+ districts



**Solar Pumps**  
60,000+ pumps

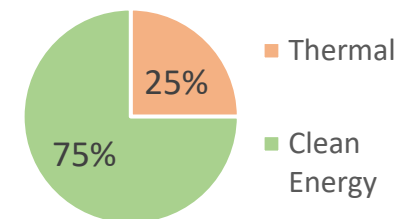


**Microgrids**  
194+ Microgrids



**Home Automation**  
40000+ units sold

## Future Targets



30 GW  
Capacity  
in 2027



Water  
Neutral  
by 2030



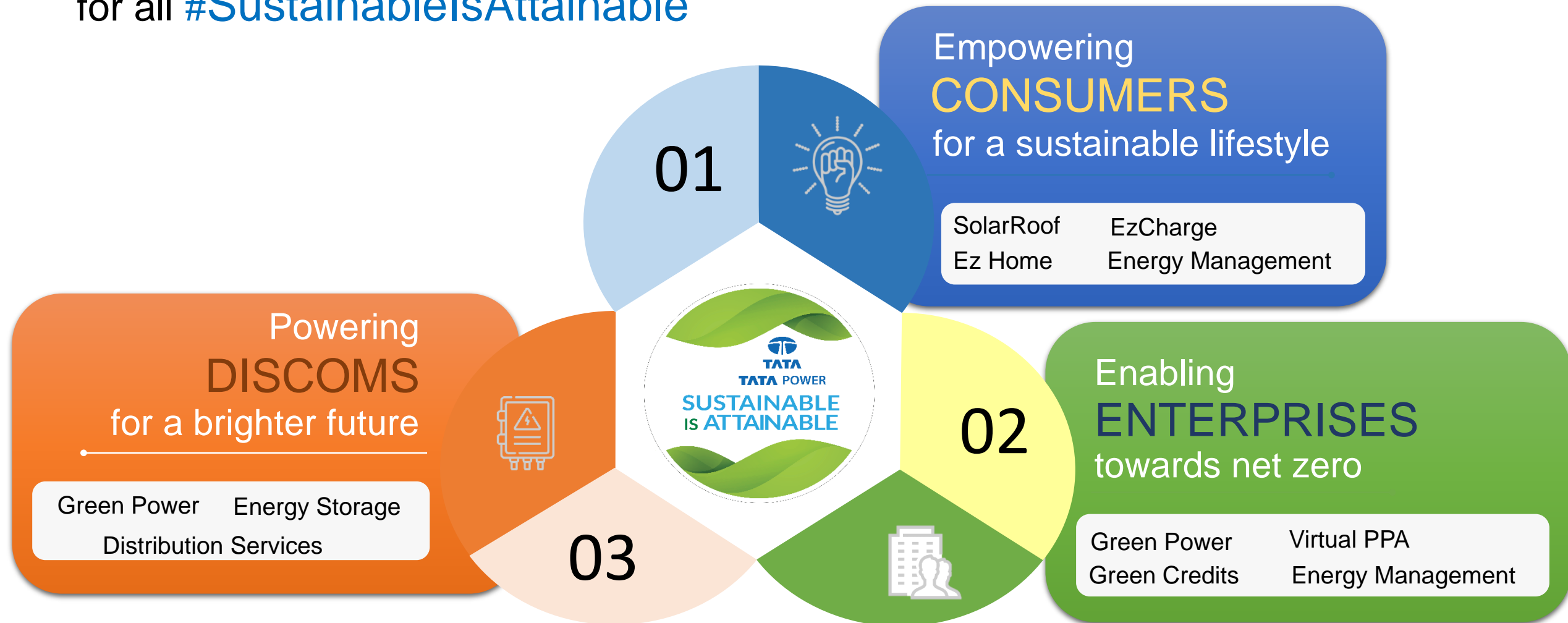
Zero  
Waste to  
Landfill  
by 2030



Carbon Net Zero  
by 2045



for all #SustainableIsAttainable



# Demand Response – An Innovative Utility Solution for Customer Engagement



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***Demand Response (DR)*** is the reduction in a customer's electric load during periods of peak demand or high market prices. It is evolving into a tool for providing price mitigation to customers while improving system reliability for utilities.

## Types of Demand Response

**Automated DR:** Load controlled by Utility through connectivity with customers systems

### Benefits :

- Utility is in control of switching off loads during its requirement

### Challenges :

- Requires high level of technological intervention in terms of switching equipment, smart meters & IT communication platforms
- Not preferred by customers due to external switching off

**Behavioural DR:** Load curtailment is done by customer based on requirement by Utility

### Benefits :

- Most preferred mode of DR by customers as they feel "in control"
- Suitable & cost-effective for all types of customers

### Challenges :

- Extremely high dependency on customer for participation & quantum of load shed



# Behavioral Shift through Demand Response



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## EERE Collaboration under US – India Energy Dialogue

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SERVICES EFFICIENCY RENEWABLES TRANSPORTATION ABOUT US OFFICES

Home » U.S.-India Collaboration Expands Indian Market for U.S. Technologies, Improves Grid Reliability

### U.S.-India Collaboration Expands Indian Market for U.S. Technologies, Improves Grid Reliability

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<http://energy.gov/eere/articles/us-india-collaboration-expands-indian-market-us-technologies-improves-grid-reliability-0>

April 1, 2015 - 10:08am



U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy

**Honeywell**



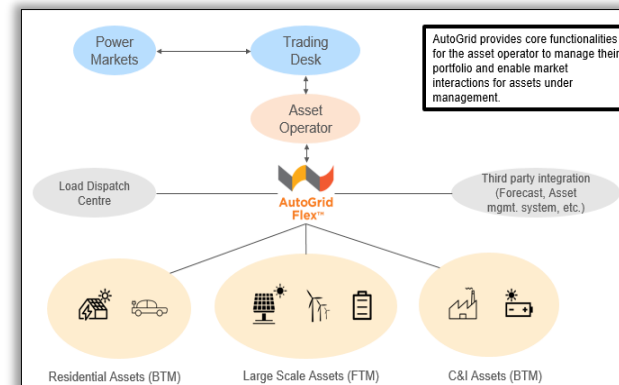
- US – India Collaboration for a pilot DR program in 2015 for greater 25 MW enrolled peak load in North Delhi.
- Results from 144 C & I Consumers indicated an average curtailment of **10% of peak electricity** demand in **TPDDL region** and **8% in overall Delhi region**.

## Tata Power-DDL was “first” in India to initiate BDR

- Contributed to climate change mitigation in Delhi through Demand Side Management
- Extensively engaged with customers for Awareness and Adoption
- Managed peak demand through voluntary contribution by Customers

## Collaboration with Autogrid

Design & deployment of Demand Response program for further integration it with DERMS.



1

## Program Highlights

- Offer rewards to customers on reduction in consumption from normal levels during critical events as called by utility (CPR)
- First in India using smart meters
- **Availability Period :**  
Aprl to Oct (Multiple Events)
- **Response Timing :** Day & Night Peaks
- **Technology used :** Smart meters, Big data platform, Measurement & Verification through DERMS platform by Technology Partner

2

## Goals

- Test effectiveness of Manual DR as an alternative to Auto DR
- Assess the acceptability of DR programs among consumers.
- Assess response of consumers to different variants of programs
- Create a Tariff structure which stimulates consumers to change their load pattern.
- Measure response of consumers to incentives/additional pricing

3

## Methodology

- **Notification to customers :** 24 hrs in advance thru sms, email & calls
- **Measurement :** Drop in consumption compared to last 10 days during same slot
- **Calculation :** Porting of customer profile data, last 10 day's 30-minute interval data & consumption data of day of event
- **Customer Compensation Structure :** rewards & lucky draw scheme for top participants

# Customer Engagement



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Webpage

Dedicated Webpage & Information on Mobile App

SMS

33+ Lacs number of SMS

Whatsapp

5+ lacs number of messages

One to One  
Calling

2.20+ Lacs number of calls

RWAs

Engagement with 10+ Residential Welfare Associations

Felicitation of DR Customers



The screenshot displays the Tata Power-DDL website for the Behavioral Demand Response (BDR) program. The header includes the Tata Power-DDL logo, a toll-free number (19124 / 1800-208-9124), and navigation links for Corporate, Consulting Services, Customers, and Vendor Zone. The main banner features the text "Behavioral Demand Response" and a graphic of a power line and a smart meter. Below the banner, there are two WhatsApp chat messages from TPDDL. The first message, dated Tuesday, 17 May at 13:41, thanks a customer for enrolling and provides details about the program's incentives and participation rules. The second message, dated Saturday, 28 May at 19:00, encourages participation and provides a link for more details. The bottom section shows a WhatsApp chat interface with a message from TPDDL dated 17 May at 13:41, reiterating the program's benefits and providing a link for more details. The right side of the screenshot shows a WhatsApp chat interface with a message from TPDDL dated 17 May at 13:41, reiterating the program's benefits and providing a link for more details.



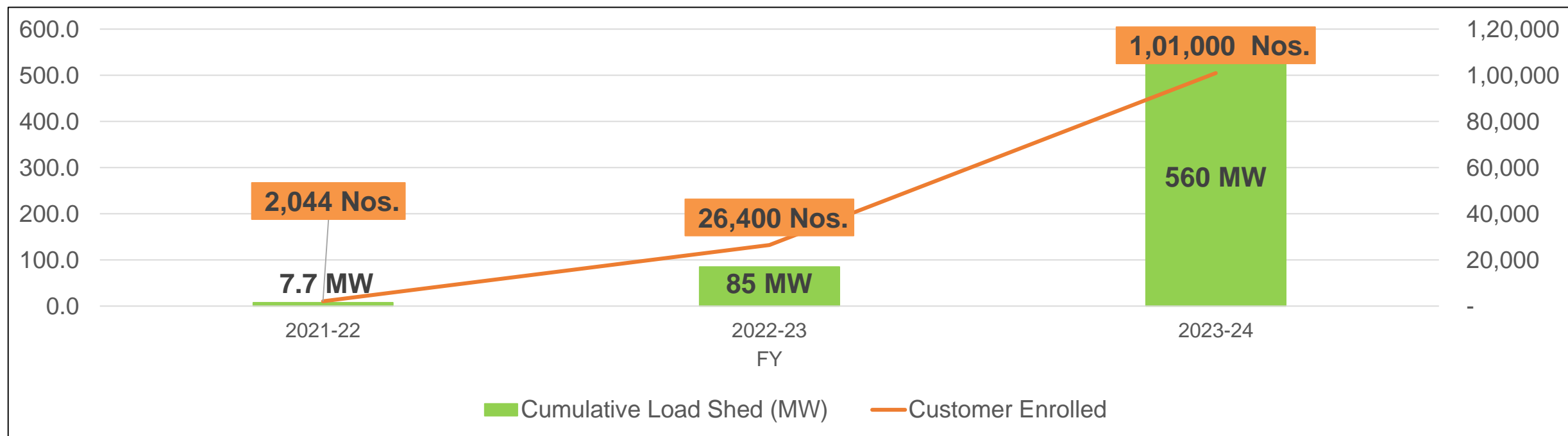
# Y-O-Y Performance @ TPDDL



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Description	UoM	FY22	FY23	FY24
Customers Targeted	Nos	4,417	64,000	1,33,000
Customers Enrolled	Nos	2,044	26,400	1,01,000
Cumulative Load Shed	MW	7.69	85.0	560
Average Participation in an Event	Nos	880	7,300	27,050
Minimum & Maximum Participation in an Event	Nos	630 & 1,300	4,600 & 11,300	12,250 & 44,850
No. of Events Successfully Executed	Nos	16	12	16
Unique Customers Participation	Nos	1,990	19,900	91,300



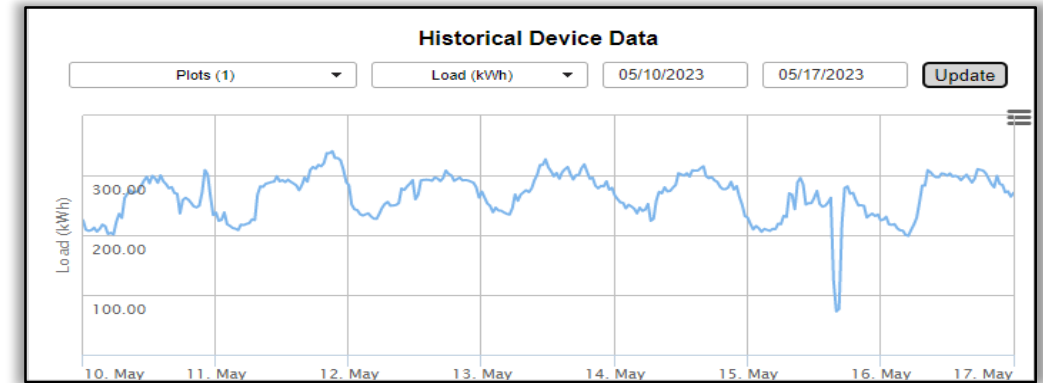
# Expansion of BDR in Mumbai Distribution



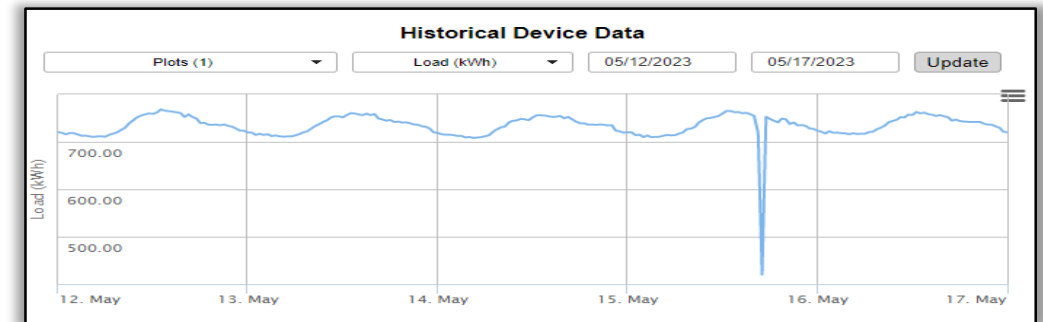
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- **Target Consumer segments:** Auto enrollment of 55,362 nos. Residential and 7814 nos. of commercial and industrial
- **Number of DR events and Duration:** 10 Events with a duration of 1-2 hours
- **DR event Type:** Day Ahead or Intra Day
- **DR event strategy:** High power purchase or UI charges, manage the load or at a low frequency.
- **Incentive to consumers:** **Rs.1 per Unit** of saved energy.
- Additional **ADR program** with **direct load control** assisted by customer participation through our in-house smart plug platform called **EZ Home**.



Melronia Hospitality



Bharti Airtel Ltd



# Thank You



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