



TATA POWER-DDL

TATA POWER DELHI DISTRIBUTION LIMITED

A Tata Power and Delhi Government Joint Venture

Increasing Role of Technology in Power Distribution: Moving towards Smarter Grid

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Tata Power Delhi Distribution Limited

Need for Technology Infusion in Distribution – Existing Challenges

- High AT&C Losses

Region	2011-12	2012-13
Eastern	41.80	42.06
North-Eastern	35.15	37.60
Northern	30.34	28.84
Southern	18.89	17.24
Western	24.81	23.36
National	26.63	25.38

* PFC Report on Performance of State Power Utilities

- Unreliable Power Supply
 - Long breakdown times
 - Inefficient crew management
- Absence of Electricity Access in rural areas
- Wasteful consumption on account of Non Cost Reflective tariif
- Unskilled/ Semi Skilled Workforce
 - Unsafe Practices



Need for Technology Infusion in Distribution

Emerging Trends

- Focus on Renewable Energy
 - 15% share of Renewable by 2020
 - 150 GW of Solar + Wind sources



Wind

Solar

Biomass

Small Hydro

- National Mission on Enhanced Energy Efficiency
 - Promoting use of Smart Appliances
 - Demand Side Management

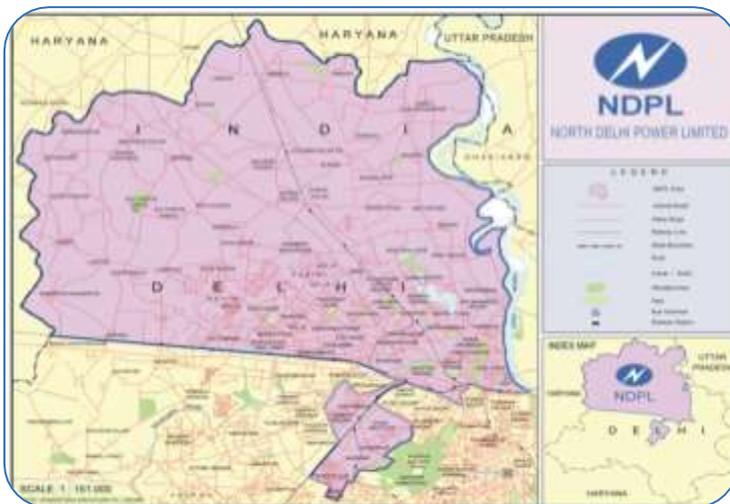


- National Electric Mobility Mission
 - Promoting use of Electric Vehicles



About TATA Power Delhi Distribution Limited

Certifications : ISO 9001, 14001, 27001 ; SA
8000 ; OHSAS 18001
UN Global Compact Reporting



Joint Venture of Tata Power Company and Govt. of NCT of Delhi (51: 49)

Licensed for distribution of power in North and North West Delhi

Parameter	FY '15 (Estimated)
Turnover	INR 6155 Cr
Peak Load	1704 MW
Annual energy requirement	8082 MUs
Total registered consumers	1.5 Million
Number of employees	3527
Area	510 Sq Kms
Population serviced in Network area (approx)	7 Million
Number of consumers per Sq.Km	2726

TPDDL Journey

2013 - 2022

2002 - 2012

2002

July '02

TPDDL was formed with several legacy issues

1. Burgeoning Losses
2. Dilapidated Network
3. Unreliable power situation
4. Zero concept of consumer service in distribution
5. Unskilled Manpower
6. Huge Backlog of Complaints

Organizational Priorities

1. Aggressive Reduction of Losses
2. Establishment of a consumer centric organization
3. Innovative Technology Adoption – 10 yr roadmap
4. Establishment of Accountability

Organizational Vision

1. Single Digit AT&C Losses
2. No. 1 in Consumer Satisfaction
3. Zero Accidents/ Complaints
4. SMARTER DISCOM
5. Energy/Water Neutral
6. Enhance Presence nationally/ Internationally
7. Among Top 10 Companies to Work for



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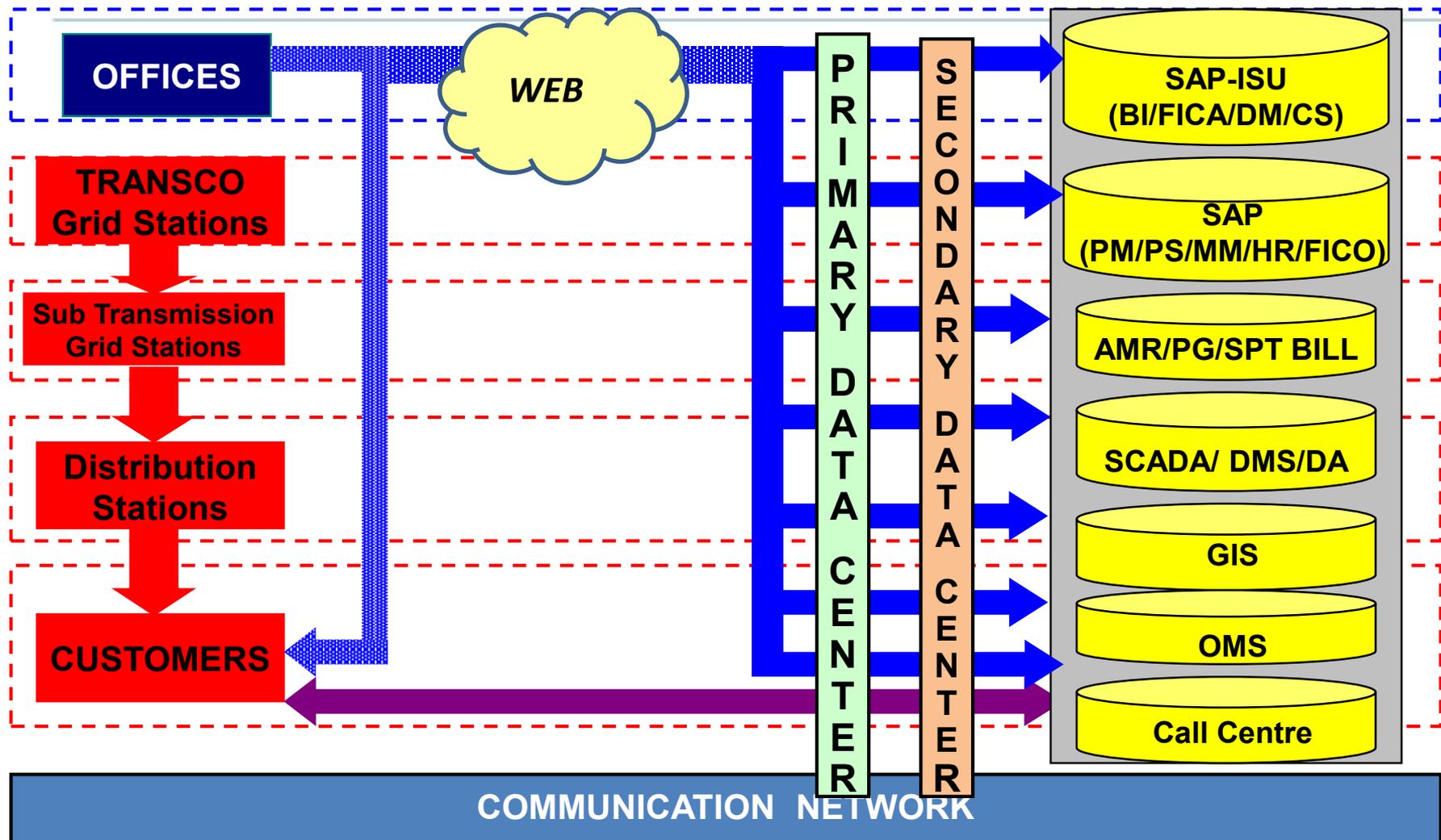
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Addressing the Existing Challenges

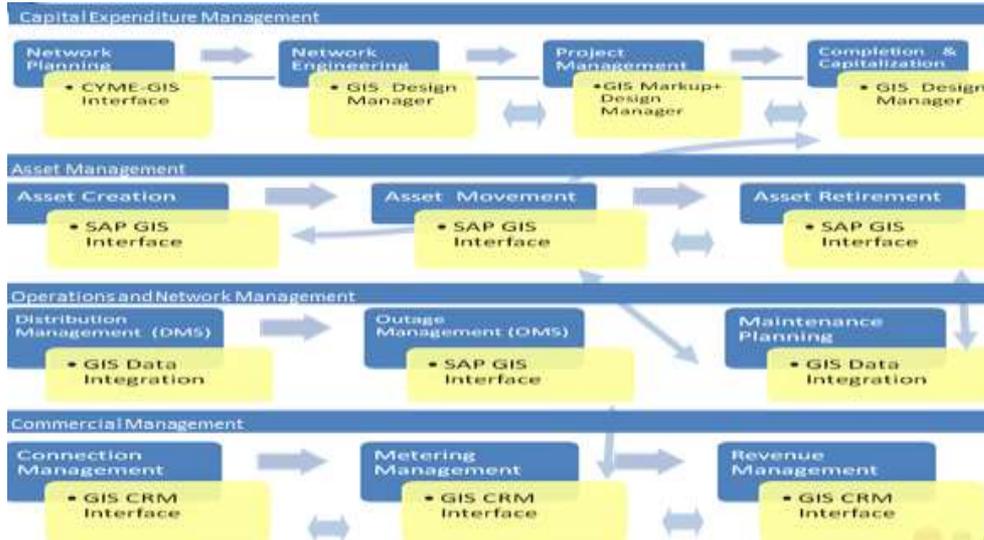
power to the people 

Adoption of Technology – 2004 - 2012



Innovative Use of Technology to address challenges

Geographical Information Systems – revamping Business processes; entire asset base and consumers mapped



Integrated Outage Management System – improving reliability; reducing TAT



Automated Meter Reading – 60% of revenue protected



Enhancing Consumer Service Delivery – Integrated call center with BCM ; SMS Based Fault Management



Innovative Use of Technology to address challenges

Improving Reliability Manifolds



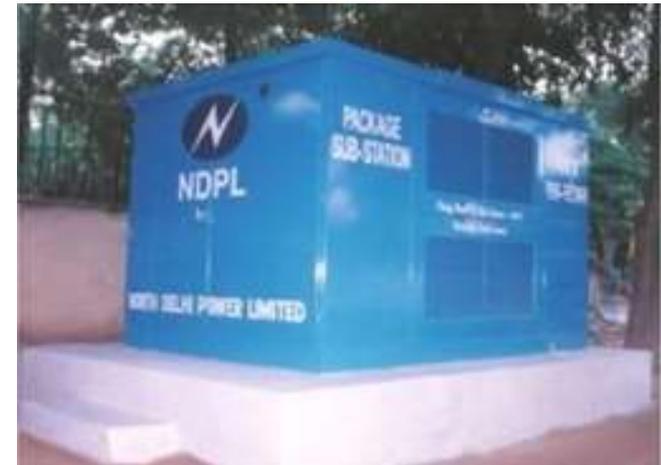
SCADA/DMS/DA implementation



Unmanned Grid Stations



Grid Substation Automation



Package Substations

IT-OT Convergence

Operational Technology Progression

- Manned Grids
- Non communicable control panels

- Substation Automation
- Communication Infrastructure
- GIS readiness for Sub transmission

- SCADA system
- GIS readiness for Distribution Network
- DMS readiness

- SAP-ISU,
- Secondary Data Centre (SDC)
- GIS readiness for LT network & Consumers
- DMS & DA implementation
- Outage Management System

- DEBS - Billing
- Energize – Enterprise System
- E-mail and website
- IT Infrastructure

- SAP-R3 (FICO, PM, MM, PS, HCM)
- Bulk Billing System
- BIRD
- AMR, Sakshat, Sanchay and RMS

- SAMBANDH
- SAP-ESS, PMS
- DEBS Up-gradation
- Payment Gateway



Information Technology Progression

TPDDL Turnaround Snapshot

Parameter	Unit	Jul 02	Mar 14	% change
Operational Performance				
AT&C Losses	%	53.1	10.5	80%
System Reliability – ASAI -Availability Index	%	70	99.5	42%
Transformer Failure Rate	%	11	0.55	95%
Peak Load	MW	930	1508	62%
Length of Network	Ckt. Km	6750	10979	63%
Street Light Functionality	%	40	99.57	149%
Consumer Related Performance				
New Connection Energization Time	Days	51.8	6	88%
Meter Replacement Time	Days	25	6	76%
Provisional Billing	%	15	2	87%
Defective Bills	%	6	0.2	97%
Bill Complaint Resolution	Days	45	6	87%
Mean Time to Repair Faults	Hours	11	1.34	88%
Call Center Performance - Service Level	%	-	91	
Payment Collection Avenues	Nos.	20	5377	26785%
Consumer Satisfaction Index	%	-	88	
Financial Performance				
Capex Incurred (Cumulative)				
Distribution	Rs. Cr.	1210	4843	300%
Generation (Rithala + Solar)	Rs. Cr.	-	332	
Revenue (Annualized for FY 03 and FY14)	Rs. Cr.	1156.3	5979.0	417%
Others				
Consumers	Lacs	7	13.9	98%
Employees	Nos.	5,600	3,527	37%



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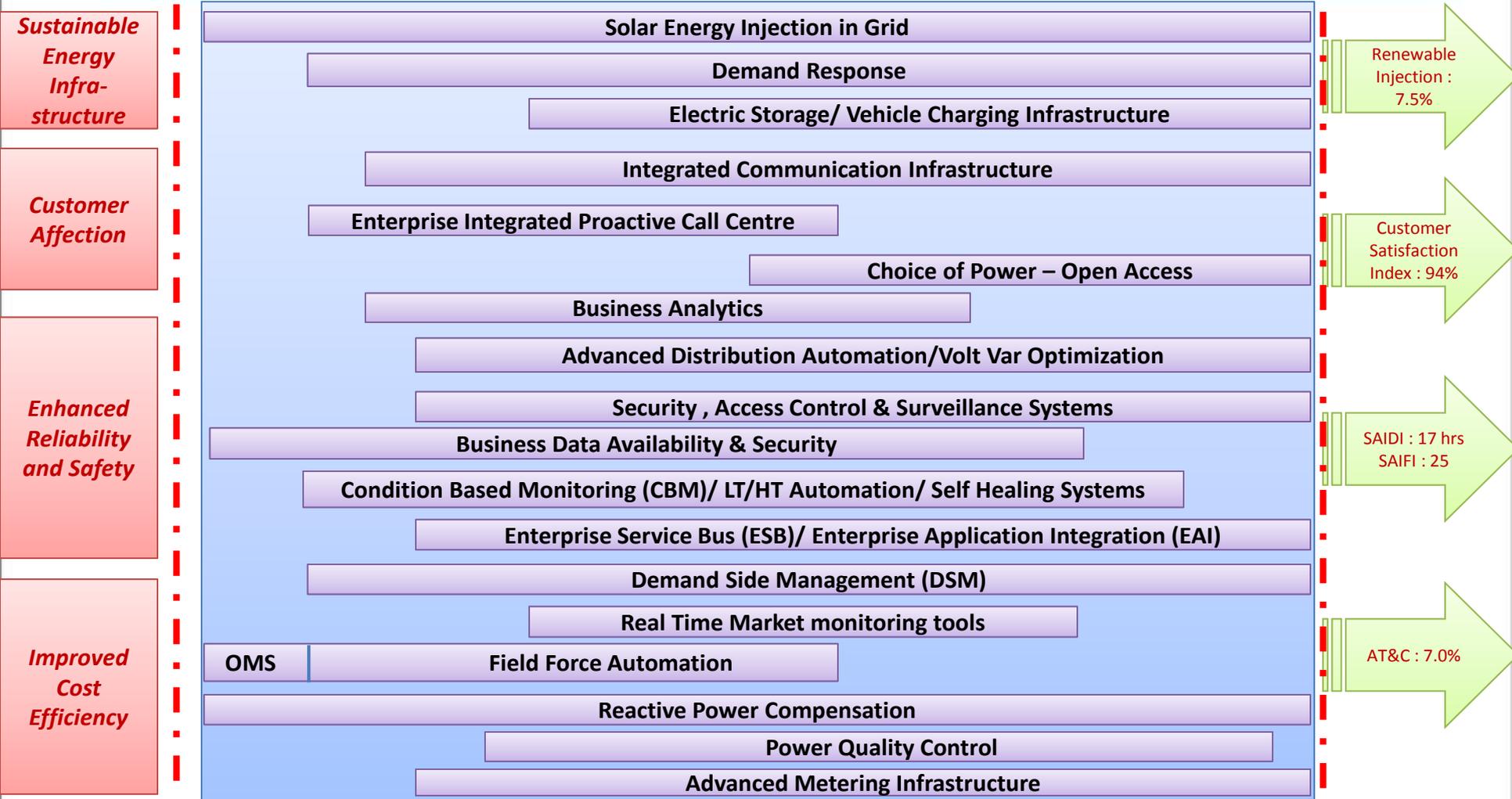
Addressing the Emerging Trends Technology Roadmap – 2013 - 2022

power to the people 

Smart Grid Roadmap – 2012 to 2022

Objectives

Target



Smart Grid Vision for the Future

Demand Side Management & DR projects

Solar Roof Top Project

ESCO Project

FEMS

Power plants

Renewables

Smart Grid Projects
AMI, ESB, MWM, ICT, ABA

BEMS

Microgrid

Intelligent Grid

EV Infra

TOC

ESS

HEMS

Smart homes

Generation plant

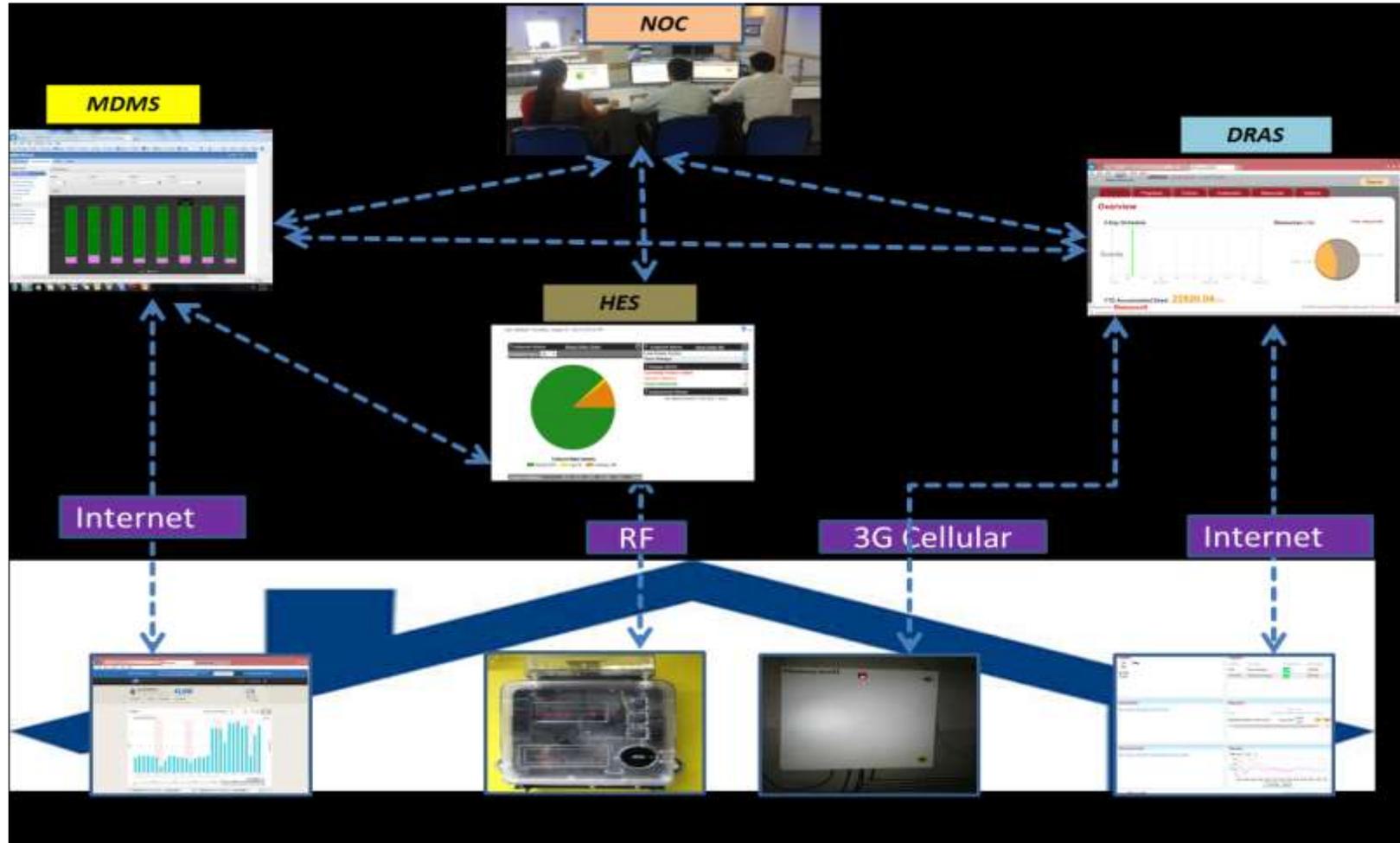
E Vehicle charging & E Auto Project

Joint Project with MIT for Rural empowerment

AMI – Advanced Metering Infrastructure , ICT – Integrated Communication Technology, MWM – Mobile Workforce Management, ESB – Enterprise Bus, ABA – Advanced Business Analytics

Project Update

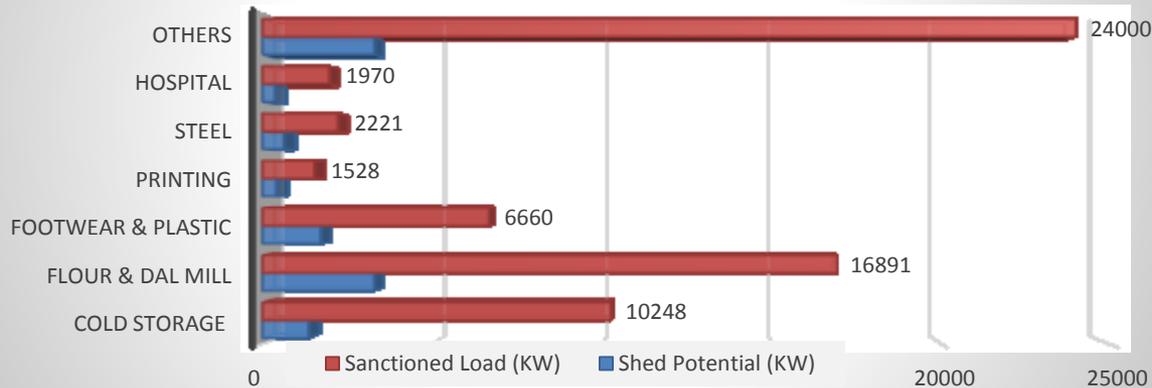
ADR with Smart Meter- Architecture & Data Flow



Shed Potential Analysis

Shed Potential v/s Sanctioned Load

Plans to Scale up to 40 MW in the Future



Major Shed Potential Contributors

- Flour & Dal Mill
- Footwear & Plastic
- Printing
- Steel

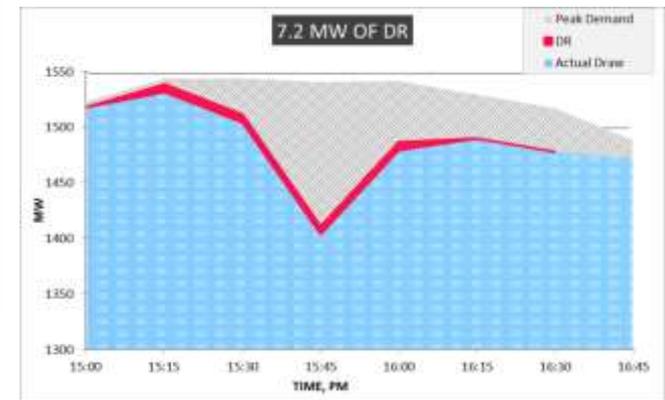
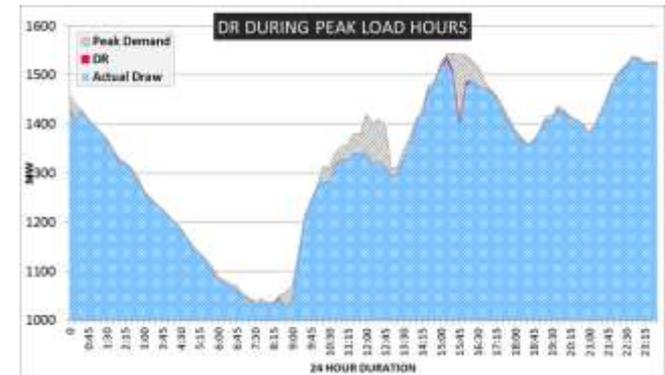
INDUSTRY TYPE	Cold Storage	Flour & Dal Mill	Footwear & Plastic	Printing	steel	Hospital	Others	TOTAL
No of Consumers	8	39	39	7	10	3	56	162
Shed Potential (KW)	1364	3292	1718	423	629	375	3300	11101
Sanctioned Load (KW)	10248	16891	6660	1528	2221	1970	24000	63518

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Automated Demand Response with Smart Metering Results

Current Status Brief:

- 162 Consumer Enrolled
- 12 MW Shed potential
- 17 Events conducted starting May 2014 during peak load conditions
- Max Shed achieved was 7.2 MVA.
- Future Potential:
- Potential to add another 33 MW by enrolling high revenue consumers.



Projects in Pipeline

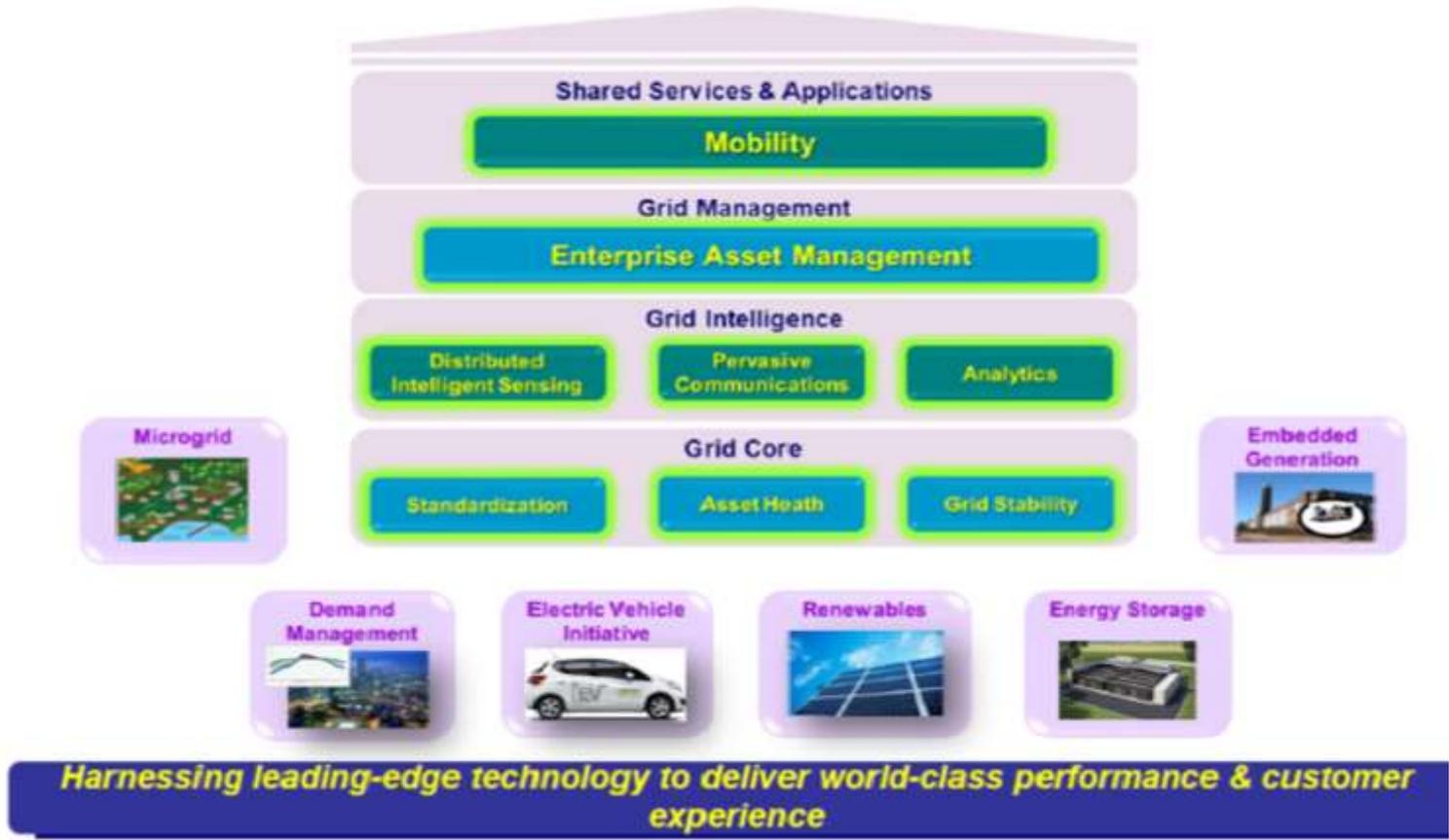
- Advanced Distribution Management System - Unified SCADA, DMS and OMS
- Integrated Communications Technology
- Advanced Metering Infrastructure - Smart Metering for consumers with > 600 units consumption per month
- Mobile Workforce Management
- Enterprise Bus
- Advanced Business Analytics

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Emerging Business Models

- Grid Connected Solar Rooftop – 440 MW rooftop solar by 2025 -
 - *Either Consumer Owned or Third Party Owned*
- Explore Utility level Grid Storage Options
- Development of Micro Grids for Rural Areas – working on a project with MIT
- Energy Services Company (ESCO)
- E Vehicles

Future Roadmap of Technology in Distribution



www.tatapower-ddl.com

THANK YOU