CESC Limited
Power Distribution for the Future
August 2016
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In the coming years, Utilities would need to:

- Expand the network to meet growing demand – within available space
- Ensure reliable and quality power
- Enhance Customer Delight
- Adopt Renewables, Microgrids, E-Vehicles, Storage
- Make the Grid Smarter
- Integrate with Smart City services
Smart Cities are the path forward. The Smart Grid is an essential early step.

**Smart Grid**
- Energy Storage
- Smart Meters
- Renewable Energy
- Water & Waste Management
- Sanitation
- Green Transport
- Railways
- ICT
- Security & Surveillance
- Disaster Management

**Smart Cities – Smart Grid**

**Smart Governance**
- Smart Grid
- Energy Storage
- Smart Meters

**Smart Energy**
- Renewable Energy
- Water & Waste Management
- Sanitation

**Smart Environment**
- Green Transport
- Railways

**Smart Transportation**
- ICT
- Security & Surveillance
- Disaster Management

**Smart Buildings**
Integrated Control Centre

RIO control centre integrates 30 Departments

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A Modern Command & Control Centre
Network Expansion with Space constraints

Conversion of Outdoor EHV SS to Indoor GIS SS

Integrated SS at New Cossipore with 220, 132 & 33 kV GIS

India’s tallest Power Transmission Towers across Hoogly River (236m tall)

Underground 132 kV SS at ‘Quest Mall’

Underground GIS at ‘Quest Mall’

Compact Unit Cooled Power Transformers being procured

*Space is scarce in Kolkata which has only 6% Road Surface Area*
Enhancing Reliability – 2-pronged Strategy

1. PREVENTION Initiatives

- SCADA
- Condition Based Monitoring & Mtc
- Modified PBs

Network Reinforcement
Planning Tools
Proactive Maintenance
Enhanced Specifications

2. Rapid RESTORATION Initiatives

- RMU Automation
- Auto LT Changeover
- Power on Wheels

Shift Operations
Vehicle Tracking
Field Force Automation

Result: HT faults down by 60% & LT faults down by 50% in last 5 years

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Outage Management Systems

- Prediction of location
- Prioritizing restoration efforts
- Providing information on extent of outages
- Estimation of restoration times
- Crew management
Focus on LT – CESC LT Control Centre

Oversees Regional Reporting Centres

- **GIS-centric** LT Control Room
- Field Force equipped with Tabs

**LT Fusing Alerts**

- over SMS

**LT Pillar Box with MFM**

- over OFC

**Consumer end Power Fall Indicator**

- over SMS

**Call Centre with LT Outage Details**

**GIS based LT Outage**

**GPS integrated GIS map**

- **Outage Monitoring & Tracking**
- **Supply Quality Monitoring**
- **Energy Audit Operations**
- **Loss Control Measures**
- **Vehicle Tracking**
- **Crew Management**

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Customer – Centricity & Digitization

- Web & Mobile Apps
  - Mobile App
  - SMS Service
    - Meter reading date
    - Bill Delivery SMS
    - Cheque receipt for bill payment
    - Inspection date for New Connection
    - Offer of New Connection
    - Birthday greetings
    - Greetings on festivals and New Year

- Payment Options

- Social Media Connect

- Virtual Office

- Tablet based Meter Reading
  - ✓ Business Intelligence & Analytics
  - ✓ Customer Engagement - OPower

- Real Time Displays

- Online Chat with MD

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Telecommunications

Optical Fibre Backbone

RF Mesh Canopy

Last Mile - Wireless

Data Centres

Internet of Things - Grid of Things - Telecommunications

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Smart Meters

AMI = Advanced Metering Infrastructure

Private FAN/ NAN
- RF Mesh
- PLC
- GPRS etc.

Private WAN
- DCU or AP
- Optical Fibre

To Control Centre

MDMS

Smart Home with Smart Meter, HAN, RES

- 2-way communication
- Remote Connect/Disconnect
- Last Gasp
- HAN

Big Data

Wisdom
Knowledge
Information
Data

Analytics

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1.5 MW Pilot Project going on.

Skewed Load Duration Curve – DR can help!
A simple VPN + Firewall Solution is not enough.

Control Systems Security Program
National Cyber Security Division

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Thank You

THE JOURNEY GOES ON ...