



# Enhancing the Utility System Resiliency- DESCO Outlook

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# What is Resilience?

Resilience is the ability to cope with and recover from incapacitations.

**Resilience = Resist + Recover**

- Ability to proactively respond to potential disrupting events and newly emerging threats like natural threat or man-made misery such as cyber-attacks.
- Ability of power system to withstand disruptions within an acceptable level and recover within acceptable time and cost.

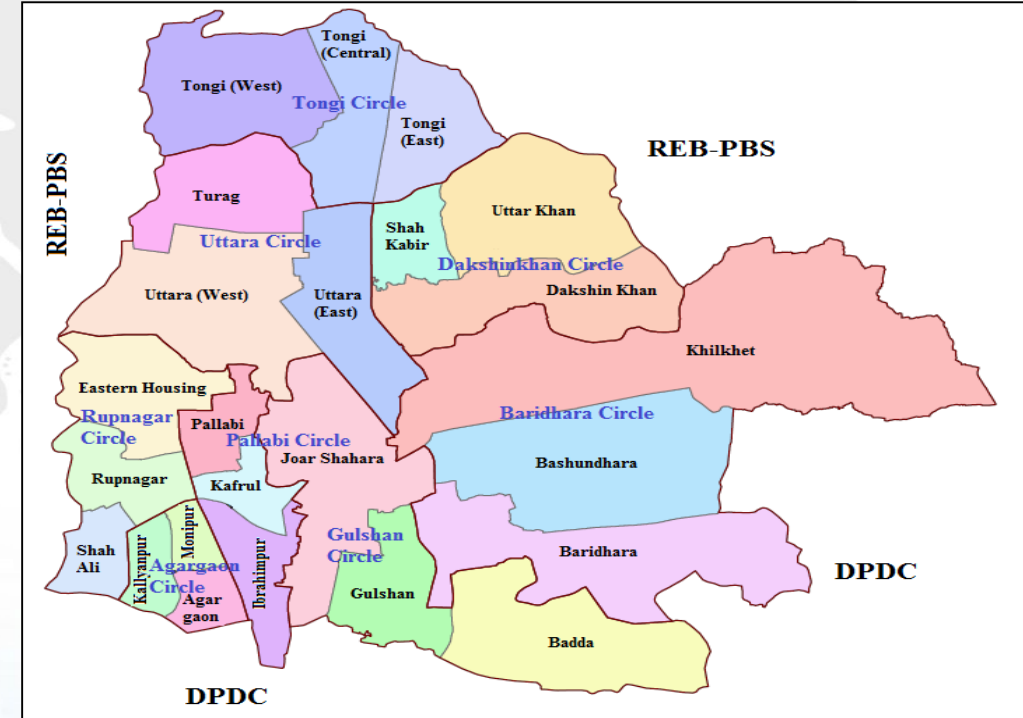


## Background

- Dhaka, the capital of the country and accounts for, up to 35% of Bangladesh's economy.
- Have a increasing electricity demand along with a steady GDP growth(around 6%)
- Achieved ‘VISION 2021’ by government to provide “Electricity for All” by the ‘Golden Jubilee Year of Independence’.
- Government of Bangladesh dreams to become a High-income Country and Plans to increase its power capacity to 60,000 MW by 2041
- Government targets to implement “Smart Bangladesh”.
- Increasing resiliency in Utility system is one of the prerequisite in this perspective.
- DESCO focus on its infrastructure accordingly to enhance the resiliency of distribution system to serve quality power to its customer.

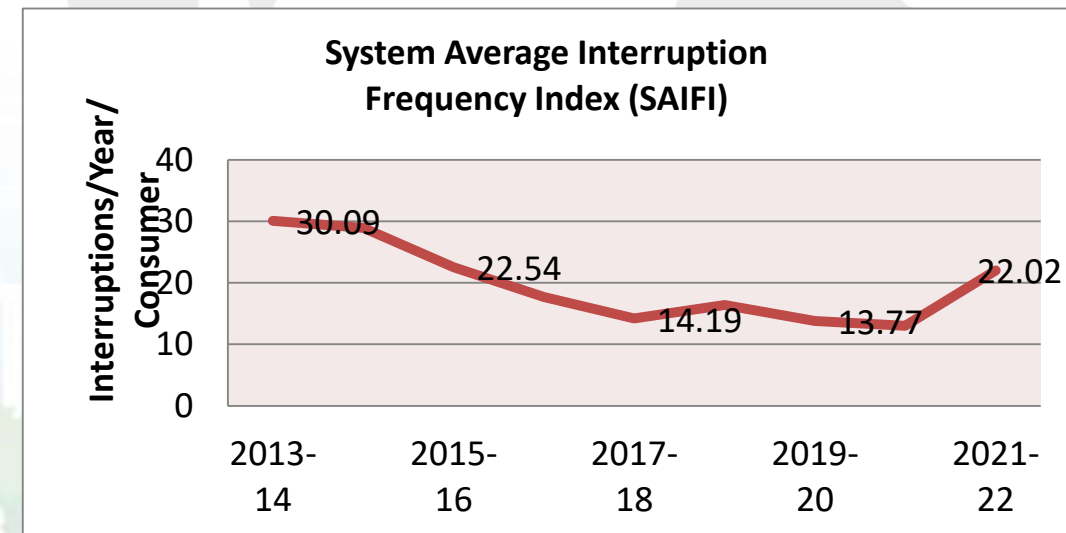
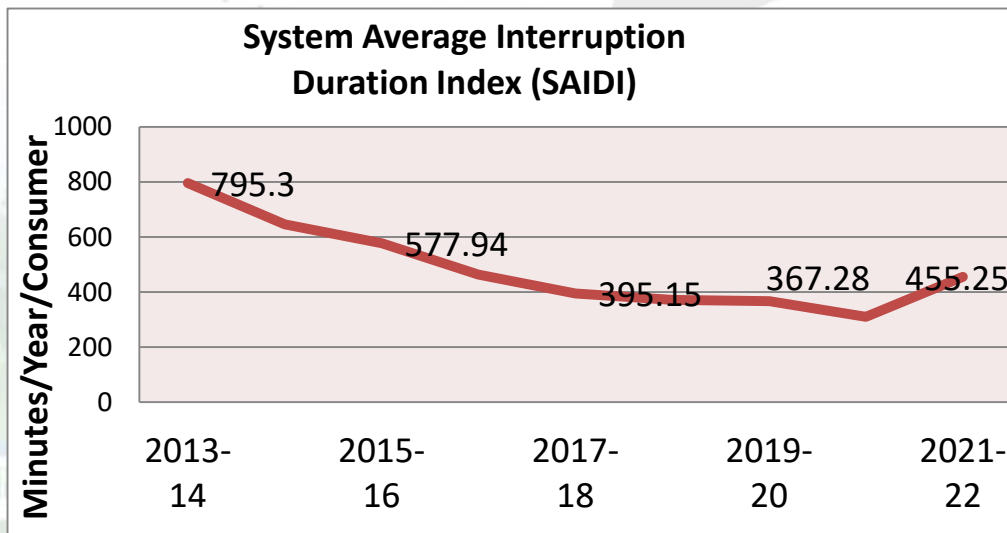
# DESCO at a glance

- Area : 245 Sq. km
- Number of S&D Division : 24
- Consumer : 11,57,490
- Maximum Demand : 1143 MW
- System Loss : 5.62%
- Number of Grid Substation : 07 + 07 (PGCB)
- 33/11 KV Substation : 53
- Installed Capacity : 2900/4060 MVA
- Distribution Line (km) : 5,544 km
  - 132 KV Line : 51.31 Ckt. km (UG)
  - 33 KV Line : 620.14 Ckt. km (UG)
  - 11 and 0.4 KV Line : 4,821.52 (698.95)
- Number of Dist. XFR : 7,713 Nos (Without customer XF)
- Number of Feeder : 527 Nos
- No of Pre paid Meter : 5,83,805 Nos.



# DESCO Focus on the Resilient System

- ❑ To prevent the wide area power outage, DESCO
  - Maintain proper Right of Way (RoW)
  - Continuously upgrading its existing infrastructure
  - Follows the N-1 criteria for system planning and design.
  - SAIDI of DESCO is 455.25 minutes/Year/Consumer
  - SAIFI of DESCO is 22.02 interruption/Year/Consumer



# Supervisory Control and Data Acquisition (SCADA)

- DESCO SCADA system is designed for 69 stations and 2 Control centers.
- Capacity approx. 70,000 DB points with 50% reserved designed capacity.
- Equipments up to 132kV, 33kV and 11kV Level monitored and controlled by SCADA
- A SCADA Main Control Centre (MCC) and a redundant back-up SCADA Centre (BCC) are functional in DESCO.
- SCADA system includes RTUs and SAS Gateway Servers at DESCO substations.
- Features of DESCO SCADA system:
  - Real time Loading data
  - Network optimization & Load flow study
  - Training simulator.
  - Automatic SAIDI & SAIFI calculation.

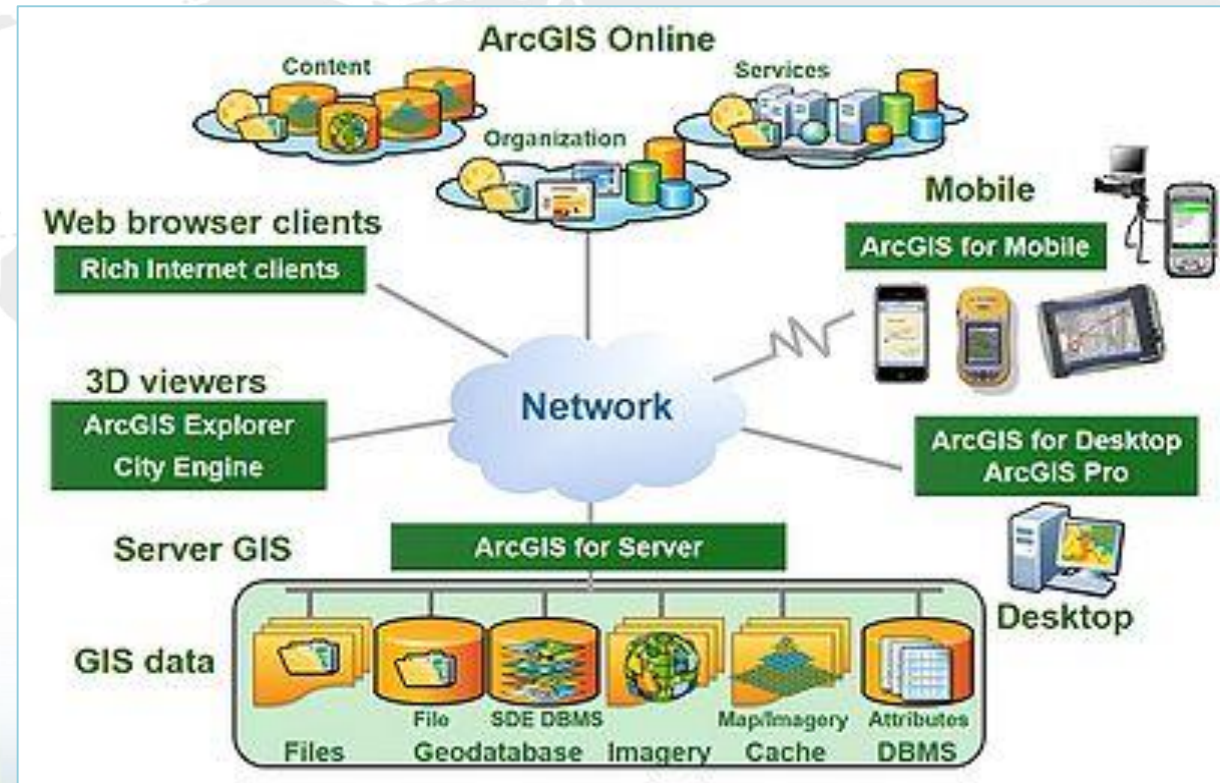


# GIS Project

DESCO is implementing a project on Design, Development & Installation of Multi-Platform GIS based application for the Management of Distribution Network. This project includes:

Expected outcomes of this project are:

- Geo-location of any asset or customer
- Quick restoration of service.
- Online Complaint Management System





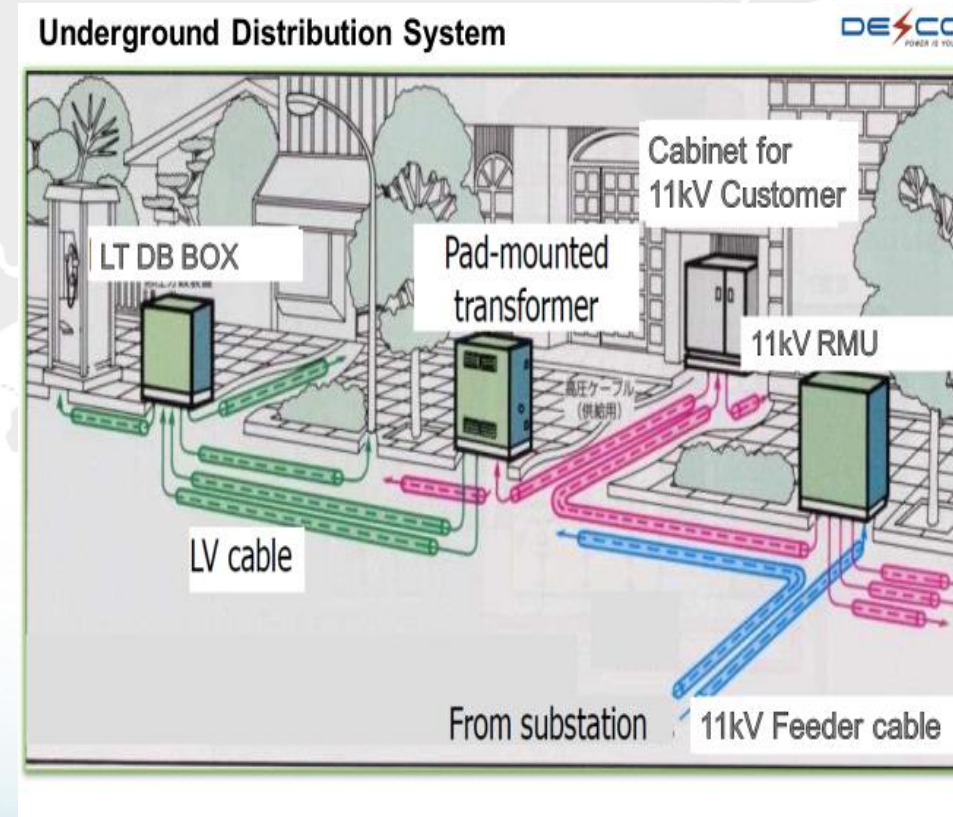
# GIS for Distribution Network Management

- Comprehensive survey of Distribution System Network,
- Asset mapping.
- Short-term, mid-term and long-term plan for Renovation and Expansion of Distribution Network.
- Preparation of key map of DESCO area
- Single Line Diagram (SLD) of existing and proposed infrastructure from 132kV Transmission line to 0.4kV Distribution Line
- ESRI's 'Arc GIS' Software is used for the mapping
- It has the provision to integrate with GIS and SCADA system.



# Undergrounding Distribution System

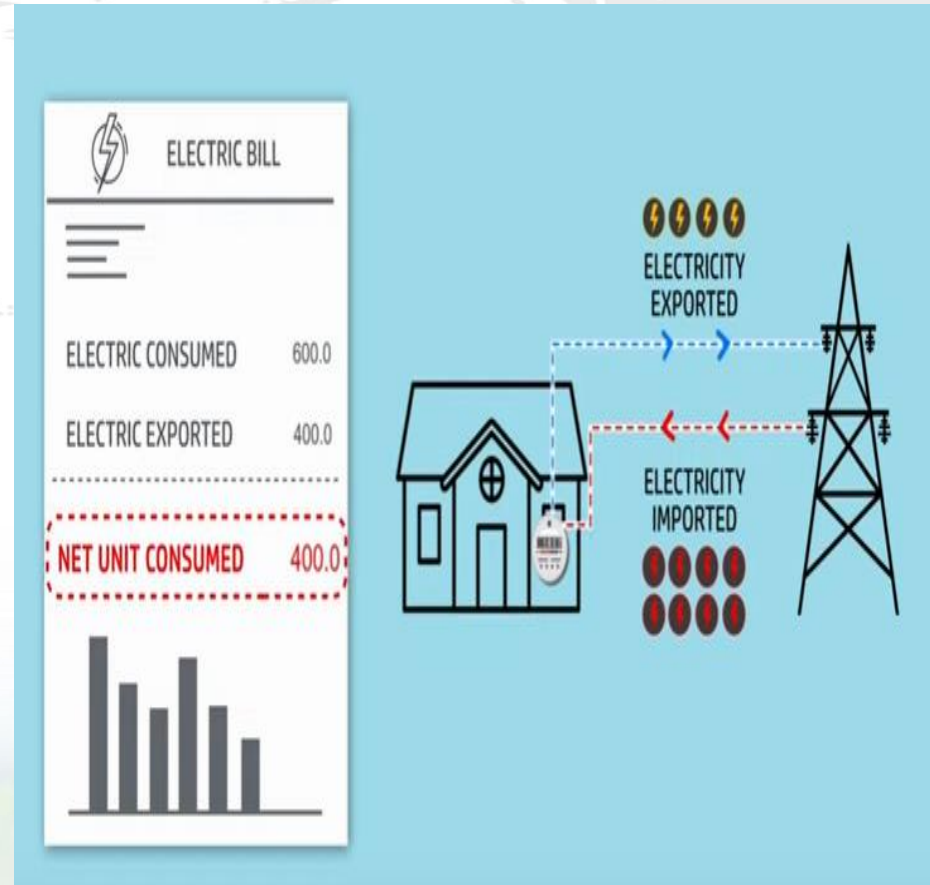
- Underground distribution system is more reliable compared to overhead system.
- At present, 132kV & 33kV lines are 100% undergrounded.
- DESCO has implemented two 'Pilot Project' on Underground Distribution System:
  - RAJUK Uttara 3<sup>rd</sup> phase Apartment Project
  - Rakeen City, Mirpur.
- Already DESCO signed a MoU with the GS, Korea to implement Underground Distribution network in RAJUK Purbachal new Town.
- Project Concept Paper(PCP) has been sent to 'Power Division' to implement UG system in RAJUK-Uttara 3<sup>rd</sup> Phase.
- After successful completion of the Pilot Projects, DESCO is going to implement Underground System in a larger extent.





# RE Integration & Net Meter Installation

- Solar Net metering is a utility billing mechanism that offers a credit to residential and business customers who are making excess electricity with their solar panel systems and sending it back to the grid.
- Net metering can save hundreds of dollars on their utility bills every year.
- So, DESCO encourages its ‘Consumer’ to be a ‘Prosumer’ to save money as well as to reduce the pressure of load demand on the National Grid.
- Almost 42MW SHS in 36 Thousand Household and 410 nos Net Meter have been installed in DESCO jurisdiction.

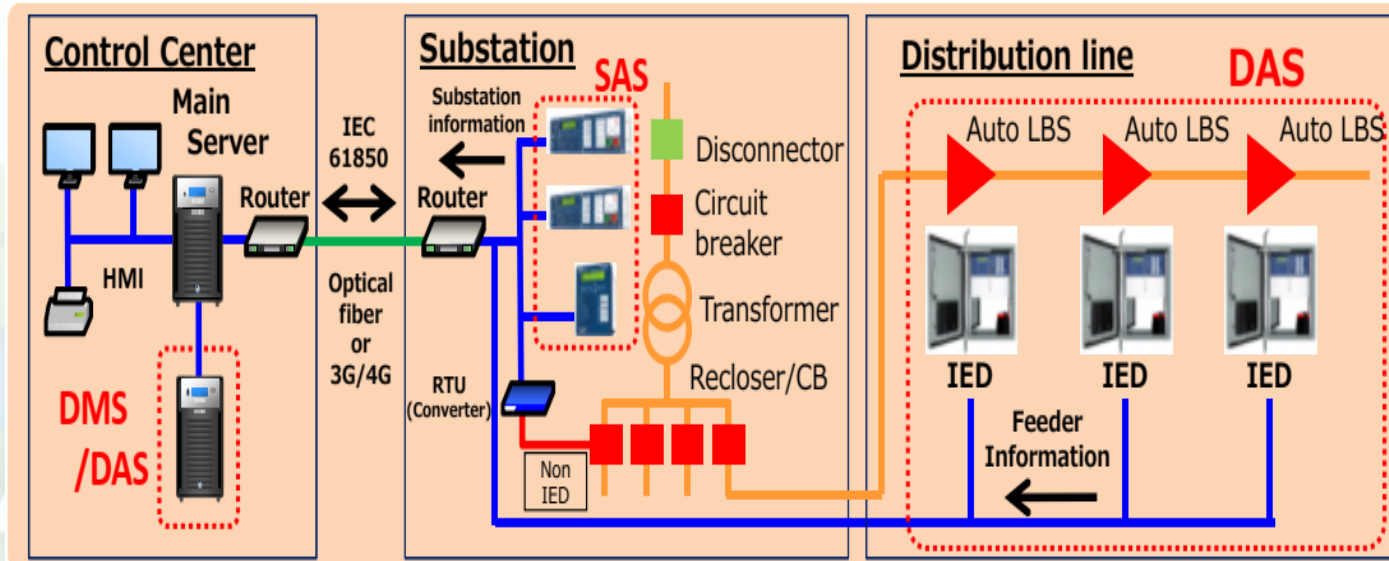


# Distribution Automation System (DAS)

- A Pilot Project is considered to convert the existing System into a Modernized Technology based Automation System in Gulshan and adjacent area.
- Numbers of 11kV Feeders are about 11 Nos. (Approx. length: 32.5kM).
- The project is under the assistance of JICA fund .
- JICA is going to conduct Detail Distribution Master Plan (DDMP) and considered this as a Pilot Project in DESCO area.

## Expected outcome of this project:

After Completion of this project, power supply reliability will be improved at several locations where Distribution Automation System (DAS), Substation Automation System (SAS), Distribution Management System (DMS) have been implemented.



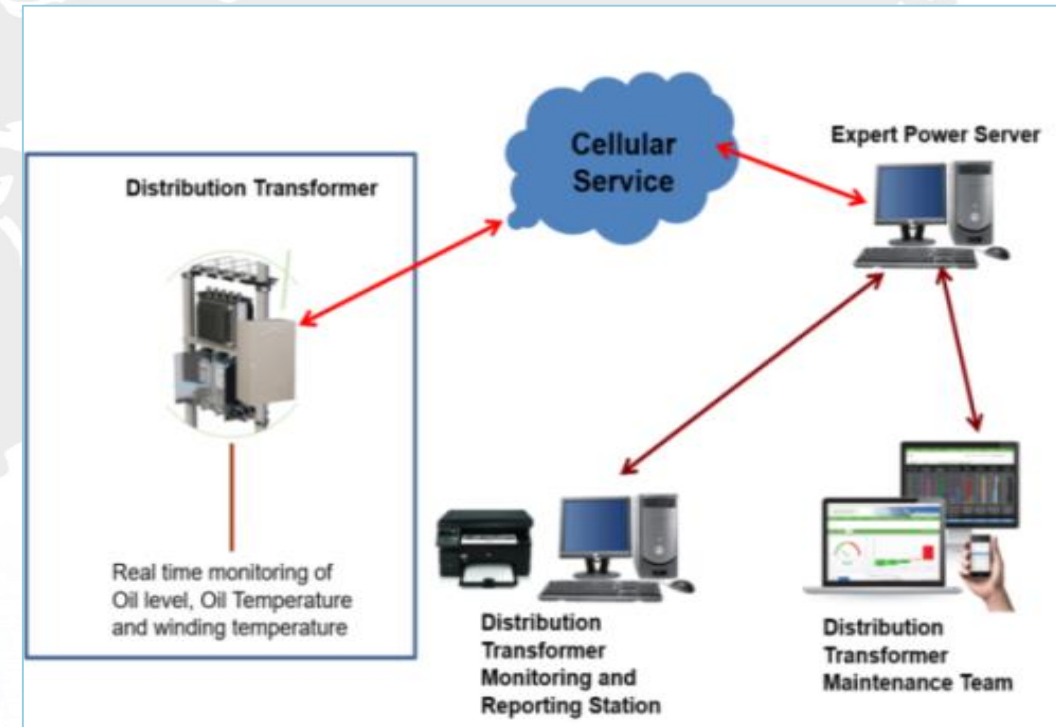
# Master Information Centre (MIC)

- DESCO has implemented a Tier III certified Master Information Centre (MIC)
- MIC centralizes all the shared IT operations and equipment of DESCO for storing, processing, and disseminating data.
- For data interpretability and Information security, DESCO ensures the Master Information Centre offers a secure environment that minimizes the chances of a security breach.



# Distribution Transformer Monitoring (DTM)

- DTM is a specialized hardware device that collects and measures information relative to electricity passing into and through a distribution transformer.
- DTM devices commonly consist of highly accurate sensors, onboard communications modules to transmit information, and a power supply provision.
- DESCO is planning to install a Monitoring System for all of its Distribution Transformers.
- Detail design and Project preparatory work is ongoing for this project.



# Advanced Metering Infrastructure (AMI) & Cyber Security

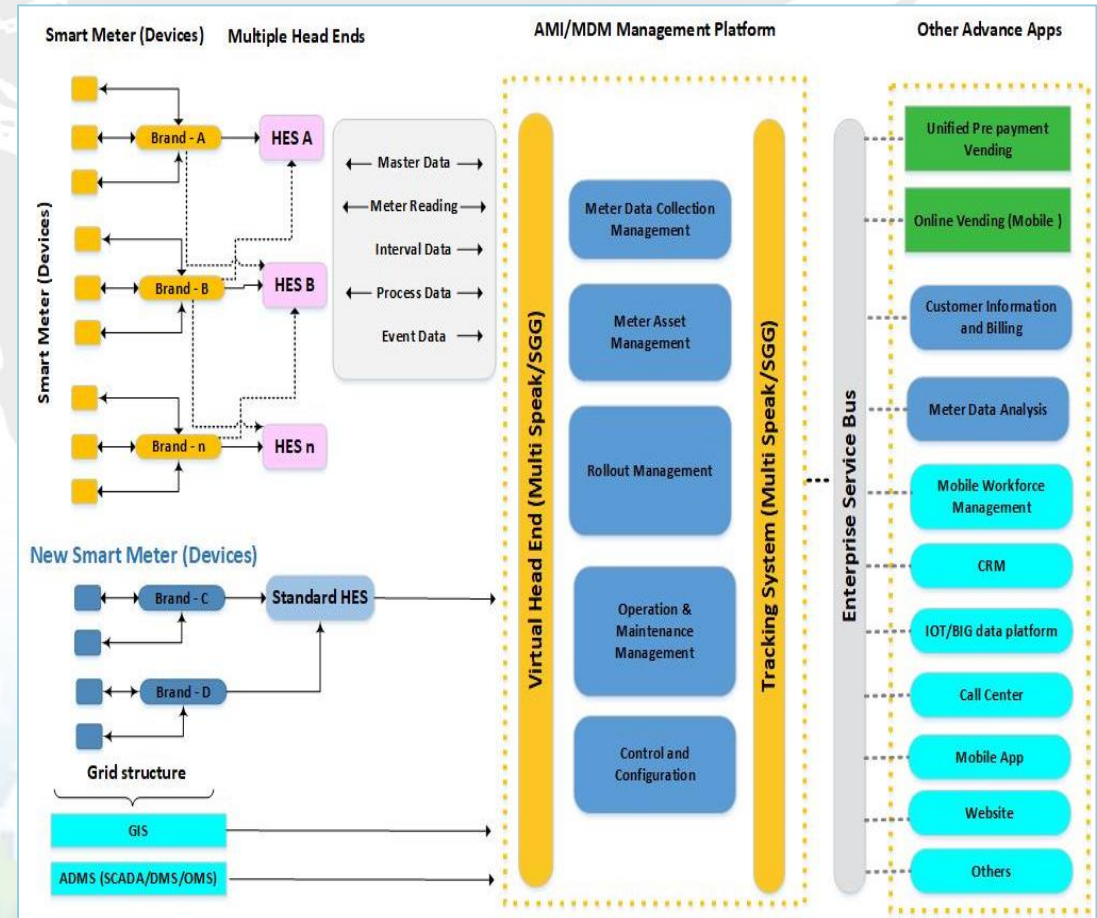
## AMI provides:

- A two-way communication system from control center to the meter.
- The ability to modify customers' different service-level parameters.
- Strong and fault tolerant communication network between components,
- Advanced smart devices for remote monitoring and two-way data communication.
- Real time data and load profile.
- It can be integrated with various billing, collection and reporting software of DESCO.

It is expected that by June, 2024, 100% customer will be connected by SMART Prepaid Meter through AMI (Advanced Metering Infrastructure).

## Cyber Security:

- As AMI systems are connected to the internet and other networks, it can be vulnerable to cyber-attacks.
- Cyber criminals may attempt to gain unauthorized access to the AMI system to steal sensitive customer data, manipulate meter readings, or disrupt the overall operation.
- DESCO is considering cyber security as an important benchmarks during implementing (AMI).



# E-Services & E-Office System in DESCO

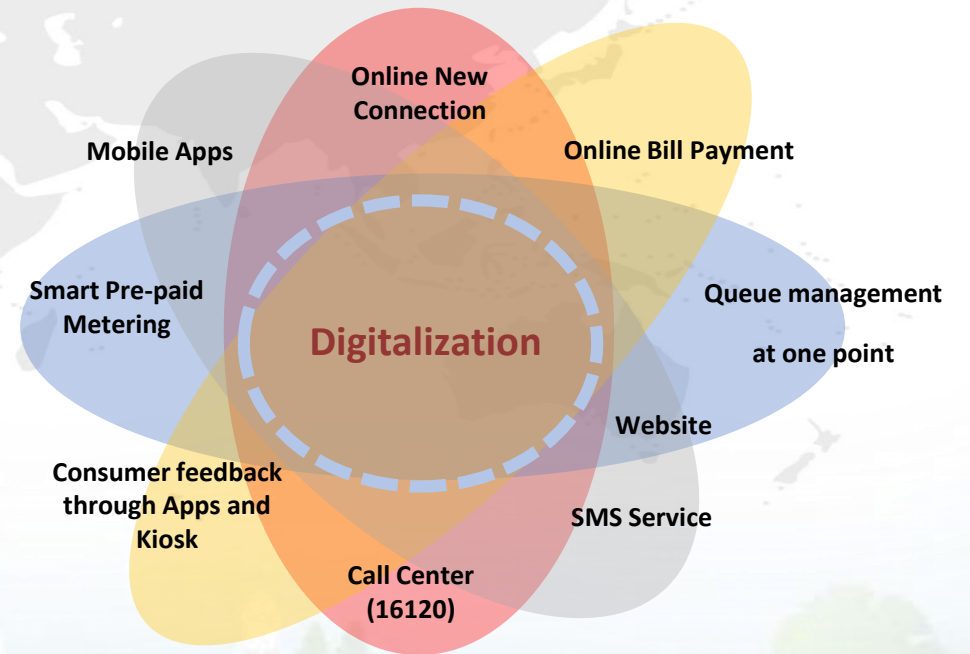
□ DESCO is the pioneer in customer services excellence among all the distribution utilities in the country. DESCO has introduced a lot of innovative services e.g.

- Online New Connection,
- Bill payment
- Mobile Apps
- 24x7 Call Centre(16120)
- SMS services
- Smart Prepaid Metering etc.

□ Similarly, some digital Services e.g.

- e-Tender
- e-filling
- Online recruitment
- web-based inventory management etc.

□ All of this aim to achieve Paperless Office and a low carbon society





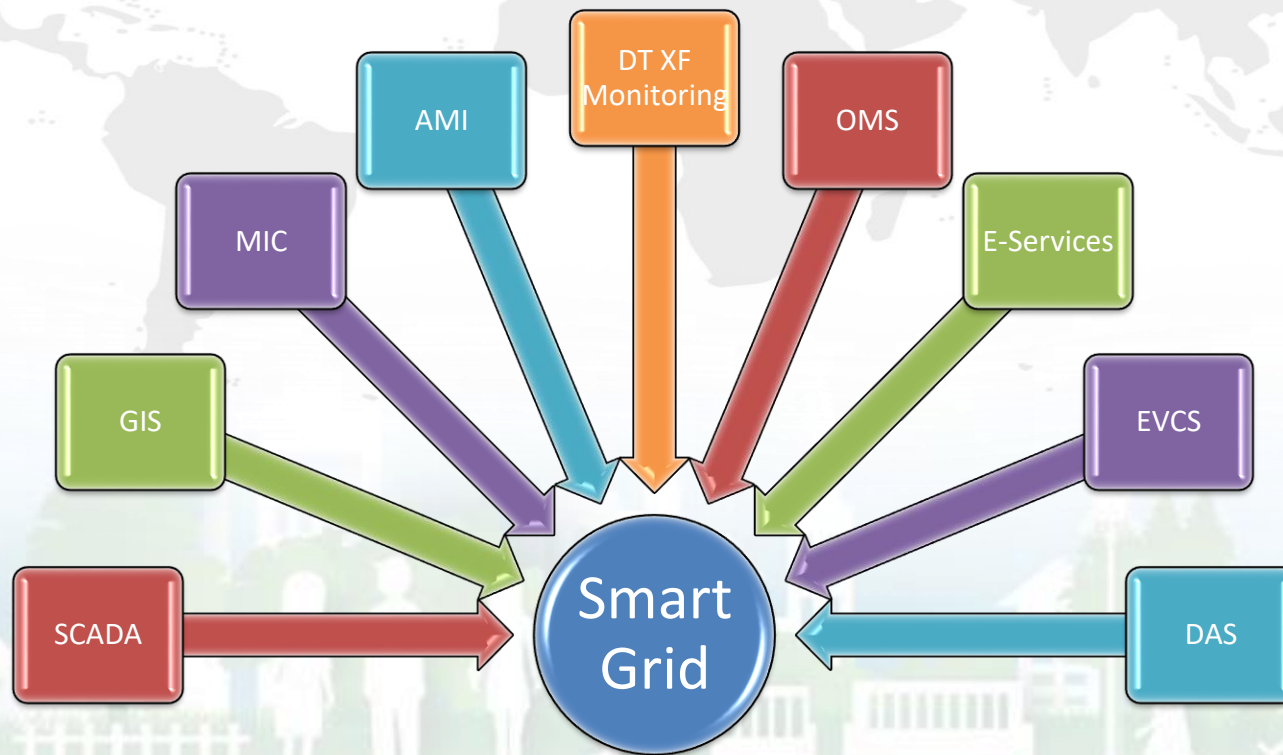
# Electric vehicle (EV) Charging Station



- ❑ As the world is moving to EV's and EVs will jump a lot in the upcoming years, EV charging stations can play a role in enhancing utility system resiliency by:
  - Providing an alternative source of energy to power EVs
  - Reducing the need for fossil fuels.
  - Reducing the stress on their grid during peak periods of energy demand
  - Improving the stability of power systems.
  - DESCO also Planning to install EV charging Station in its jurisdiction to cope up with latest trend.

# DESCO - Road Map to SMART GRID

Finally, enhancing the resiliency of a utility system is a continuous approach. After completion of all the running and upcoming projects, DESCO will go ahead to the road of SMART GRID System.



## Deduction

To ensure that the system is well-maintained and operated to maximize resiliency following steps to be taken

- Implementing Smart Grid technologies
- Establishing Call Centre & Outage management system
- Encouraging the adoption of renewable energy sources
- Reducing energy consumption through energy efficiency measures
- Improving the skills and capabilities of Utility workers and management



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# Thank You

*For discussions/suggestions/queries email:*

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