Session Name: Foundational Blocks for Smart Grids

Topic: Leveraging Data in Power Distribution

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Introduction - Power Distribution

- Current Status:
  - 11 kV feeder metering is ~99.2%, with <70% registered on NPP
  - ~33% DTs metering
  - Consumer indexing is either dated or not available

- Plans:
  - Install 250 mn smart consumer meters along-with system meters in 4 years
  - Smart meters to communicate 96 metering profile and other data points daily
  - Near real-time and end-to-end electricity data to provide a variety of insights

Context

- FRBM relaxation scheme: a number of State Governments have committed progressive take over of State DISCOM yearly losses
- RDSS: Liquidation trajectory for old tariff subsidy and Government Department dues, including current dues
- Few values pertaining to States / DISCOMs (FY 2020-21):
  - States Gross fiscal deficit: ~Rs. 8.32 Lakh Crore (provisional–RBI report)
  - DISCOMs cash losses: ~Rs. 1.13 Lakh Crore *(~14% of fiscal deficit)*
  - Tariff Subsidy to DISCOMs: ~Rs 1.32 Lakh Crore *(~16% of fiscal deficit)*

Relevance

- RDSS supporting DISCOMs:
  - in improvement of operational efficiency
  - areas outside DISCOM control
- For areas under DISCOM control, DISCOMs ought to direct focus on:
  - Consumer Service Quality
  - Load Forecasting and Energy Transition
  - Network Planning
  - Availability of Quality Data

- Unavailability of reliable data except Audited Annual Accounts
- Haphazard adoption or under-utilization of available IT systems

DISCOM Digital Operations: As-Is

- Manual compilation of MIS reports from details available in disparate formats
- No separate IT cadre or lack of primacy in the business operations
- Digitalization driven through third-party agencies, and limited DISCOM capacity to plan for contextual implementation
- Inadequate employee capacity, disparate IT planning, and reliance on parallel applications, limits the end utility of technology applications
- Heavy customization of the World-class products

DISCOM Digital Operations: Planning

- Digitalization started with Part-A of R-APDRP
  - 100% implementation costs borne by GoI
  - Most implementations failed to generate due value
  - Provided technology implementation exposure and maturity to DISCOMs

- Digitalization push under RDSS:
  - DISCOMs to have skin in the investment by bringing counter-part funds
  - Focus on product adoption on SAAS model and on-cloud implementation

Use Cases – Prerequisites

- Availability of raw data from sensors, field equipments, and IT/other systems
- Needed adjustments be made part of automated system, on account of:
  - Need for data cleaning and sanitization
  - Analytical adjustments and to ensure data completeness
- Usage of standardized analytical approaches, which may be improved based on experience
- Ready generation of reports / dashboards, to provide an integrated system view with adequate drill-down capabilities

Use Cases – Actionable Insights

- Descriptive analytics:
  - Category-wise consumption growth planning
  - Curing Energy Accounting anomalies and auto-alerts to consumers
- Predictive analytics
  - Correction of connection type
  - Demand Forecasting and Optimization of power procurement planning
- Prescriptive analytics
  - planning for reactive compensation requirements
  - Auto-targeting of theft pockets
- Diagnostic analytics
  - Identifying the reasons for the failure of network assets
  - Identify the reasons for operational losses

Approach to depend upon type/availability of data, comparable datasets, specific objective

Takeaways: Strategic Digital Plan

- Functional Planning:
  - Setting up a separate IT Cadre, with defined hierarchy to the top positions
  - Having a separate team for management of IT office hardware peripherals/network, etc under office Admin.
  - IT and O&M Dept. to have cross functional postings for better exposure, supporting development of business ready applications
- IT Planning:
  - Adopting systems design approach for development/upgradation of tech applications, so as to have one comprehensive functional system
  - Due reliance on newly adopted IT applications
  - Hybrid system planning by inclusion of SAAS/IAAS/PAAS implementation and cloud adoption
  - Product adoption to be accompanied by change in business processes

Thank You

For discussions/suggestions/queries email: ***isuw@isuw.in***

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Links/References (If any)

Introduction

- Power Distribution Outside India:
  - Adopted data analytics across functional areas e.g., energy forecasting, asset management, customer segmentation, trading, demand response and marketing
- Indian Power Distribution – Current Status:
  - 11 kV feeder metering is ~99.2% (<70% registered on NPP) and ~33% DTs metering *(as per CEA),* while automated communication is a lot lesser
  - Consumer indexing is either dated or not available
- Indian Power Distribution – Current Plans:
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