GIS in R-APDRP

Need for R-APDRP

- Continuing High AT&C losses
- Lack of automated systems for sustained collection of accurate base line data
- Lack of monitoring mechanism to measure effect of investments in terms of performance
- Adoption of IT in the areas of Energy Accounting etc.
- Low Customer Satisfaction
- Inadequate Capacities
- Old and Fragile Sub-Transmission and Distribution System
- Outages & Interruptions

Challenges

R-APDRP

- Part A, B, C

- Government
- Utility
- Consumer

Benefits

Objective of R-APDRP

R-APDRP -- aims at actual demonstrable performance in terms of sustained loss reduction.

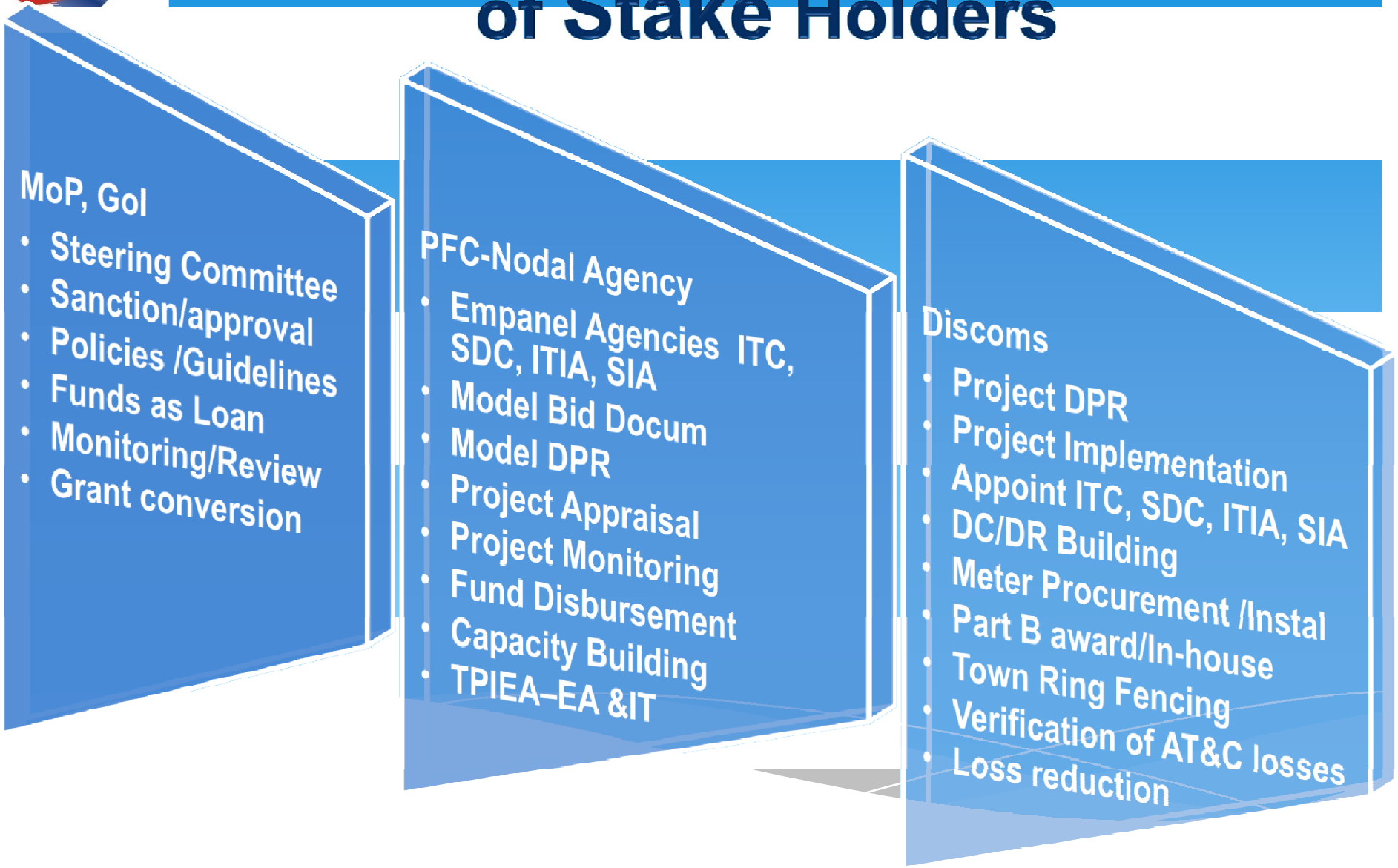
Activities being implemented under R-APDRP-

- Establishment of IT system for-
  - Collection of baseline data & IT enabling of utility's business procedure.
  - IT based energy accounting/auditing
  - IT based distribution network analysis & corrective measures for performance optimization.
  - Set-up of customer care centres for improvement in customer satisfaction
- Establishment of SCADA/DMS system to improve Power supply reliability in major towns.
- Distribution system strengthening and upgradation by way of new installations/augmentation/refurbishment, etc
- Capacity building, Skill & proficiency enhancement of employees.

R-APDRP structure

- **Major initiative launched by GOI in July 2008**
- Objective being demonstrable performance in terms of sustained AT& C loss reduction to below 15%
- **PFC designated as Nodal Agency for the scheme by Ministry of Power**
- **Part-A** focuses on establishment of IT enabled system for achieving reliable & verifiable baseline data system
- **Part A** includes establishment of SCADA/ DMS systems in big towns
- **Part-B** deals with implementation of Sub-transmission & Distribution system strengthening & up-gradation projects
- **Part-C** of the scheme aims at Capacity Building of Utility personnel and development of franchisees

Roles & Responsibility of Stake Holders



4 Tier Monitoring Mechanism

Tier I: Progress review at MoP level

R-APDRP Steering Committee under chairmanship of **Secretary (P)** reviews implementation of R-APDRP and issues directions for taking corrective measures. Regional Review Meetings are taken by S (P)**/** JS, MoP

Tier II: Monthly Focussed Monitoring meetings by JS, MoP & CMD, PFC

Review with Advanced, Focussed and Slow-moving State Utilities and their ITIAs

to discuss Action Plan & resolve critical issues

Tier III: State Distribution Reform Committee (DRC) level

Regular monitoring and review in States under concerned Secretary. Also regular follow up meetings are taken by Heads of respective Power Utilities

Tier IV: Concurrent Monitoring

At level of Coordinators of PFC and States/Utilities to resolve Implementation/technical issues, queries of Utilities w.r.t. model documents in addition to expediting milestone linked progress of project implementation

R-APDRP Progress - a snapshot

ACTIVITIES	CURRENT STATUS
Part A (IT) Project	All 1398 eligible towns sanctioned [Sanction Value – Rs. 5232 Cr]
Appointment of IT Implementing Agencies (ITIA)	Appointed by all States
Part A (SCADA/DMS) Project	70 Schemes sanctioned [Sanction Value-Rs. 1575 Cr]
Appointment of SCADA Implementation Agencies (SIA)	Appointed in 13 States comprising of 59 towns
Part B Project	1229 towns sanctioned [Sanction Value-Rs. 30381 Cr]
Verification of Baseline AT&C loss by TPIEA	1147/1398 towns Baseline AT&C losses established by TPIEA
Part B implementation work	In progress in 939 towns in 18 States
Disbursements	Rs. 7143 cr disbursed to Utilities
Capacity Building of employees	30,000+ personnel of various Utilities under Capacity Building (Part C) of R-APDRP

Achievements

- 16 States Commissioned Data Center, integrated with pilot towns
- Ring fencing completed in over 1300 towns.
- 419 towns in states of AP, Chhattisgarh, Gujarat, HP, Karnataka, Maharashtra, MP, UP ,Uttarakhand and WB - GO-LIVE generating Energy Audit Reports at Town-Feeder-DT level
- Part-B Project completed in over 100 towns
- States of Gujarat, Maharashtra, MP, Karnataka, WB and AP started taking measures to improve
  - DT failure/ over loading (load Balancing)
  - Load shedding / flattening Load curve
  - Identifying loss pockets/ improving collections
- Customer Care Centers operational in 14 States
- Saving in sanctioned cost of Part-A & B schemes

Role of GIS in R-APDRP

Implementation of GIS Solution for efficient management of Power Distribution System shall help in improvement of –

- Metering
- Billing
- Revenue collection
- Network performance optimization, Reducing AT&C losses
- Regular O&M
- Future planning
- Customer satisfaction etc.

Scope of GIS in R-APDRP

- Use of town area latest geographical map as base map (Satellite Imageries of sub-meter resolution of specific towns taken through NRSC, Hyderabad)
- Mapping of all assets (66kV/33KV/11KV, LT) including HT & LT network entities upto poles & major landmarks
- Collection of consumers attributes through door-to-door survey and indexing with network assets
- Overlaying of digitized electrical network & consumers on the base map with area features and attributes using SW for GIS application
- Integration of GIS system with other IT applications

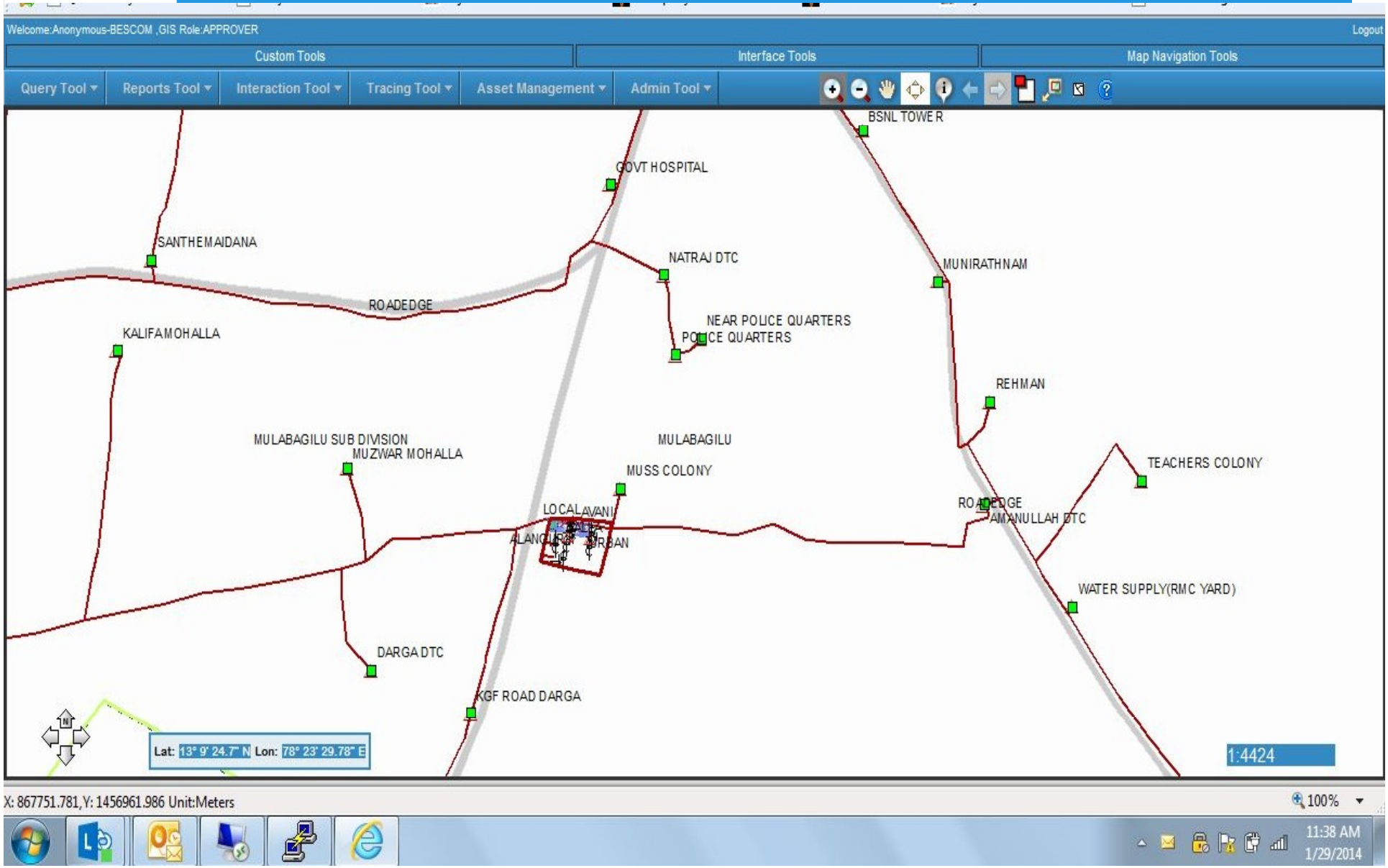
Progress in GIS Implementation - Imageries

STATEs / UTs	Total Towns	Imageries Available
AP	113	113
Bihar	71	71
Chattisgarh	20	20
Gujarat	84	84
HP	14	14
J&K	30	30
Karnataka	98	98
Maharashtra	128	128
MP	83	83
Punjab	47	47
Rajasthan	87	87
Sikkim	2	2
Tamil Nadu	110	110
UP	168	168
Uttrakhand	31	31
West Bengal	61	61
Goa	4	4
Jharkhand	30	30
Poducherry	4	4
Assam	67	67
Arunachal	10	10
Mizoram	9	9
Nagaland	9	9
Tripura	16	16
Manipur	13	13
Meghalaya	9	9
Haryana	36	36
Kerala	43	43
Chandigarh	1	PO to be placed
Total	**1398**	**1397**

Progress in GIS Implementation

STATEs / UTs	Total Towns	Consumer Indexing		Asset Survey	
		Consumers (Lakh)	%	Total SS+ Fdr	%
Gujarat	84	38.0	100%	1173	100%
Himachal Pradesh	14	3.9	100%	178	100%
MP	83	28.1	100%	2133	100%
West Bengal	61	13.1	100%	648	100%
Sikkim	2	0.1	100%	166	100%
Karnataka	98	67.6	99%	2347	100%
Andhra Pradesh	113	72.3	96%	3618	99%
Uttarakhand	31	4.4	95%	374	98%
Tripura	16	1.3	85%	91	56%
Maharashtra	128	64.2	66%	535	62%
Chhattisgarh	20	7.8	58%	988	80%
Puducherry	4	2.2	55%	56	100%
Tamil Nadu	110	77.1	54%	2603	43%
J & K	30	4.8	46%	567	95%
UP	168	46.0	44%	4202	46%
Rajasthan	87	23.5	36%	553	48%
Assam	67	6.2	11%	542	25%
Manipur	13	1.0	10%	75	47%
Meghalaya	9	1.2	8%	134	44%
Punjab	47	20.2	7%	1440	8%
Jharkhand	30	6.2	6%	573	7%
Haryana	36	16.0	3%	1480	21%
Bihar	71	10.0	0%	0	0%
Chandigarh	1	-	0%	0	0%
Goa	4	5.40	0%	389	25%
Kerala	43	30.6	0%	861	2%
Arunachal Pradesh	10	0.8	0%	200	0%
Mizoram	9	1.0	0%	28	0%
Nagaland	9	1.1	0%	124	0%
Total	**1398**	**554**	63%	**26078**	63%

HT Map - Mulbagulu Town, BESCOM



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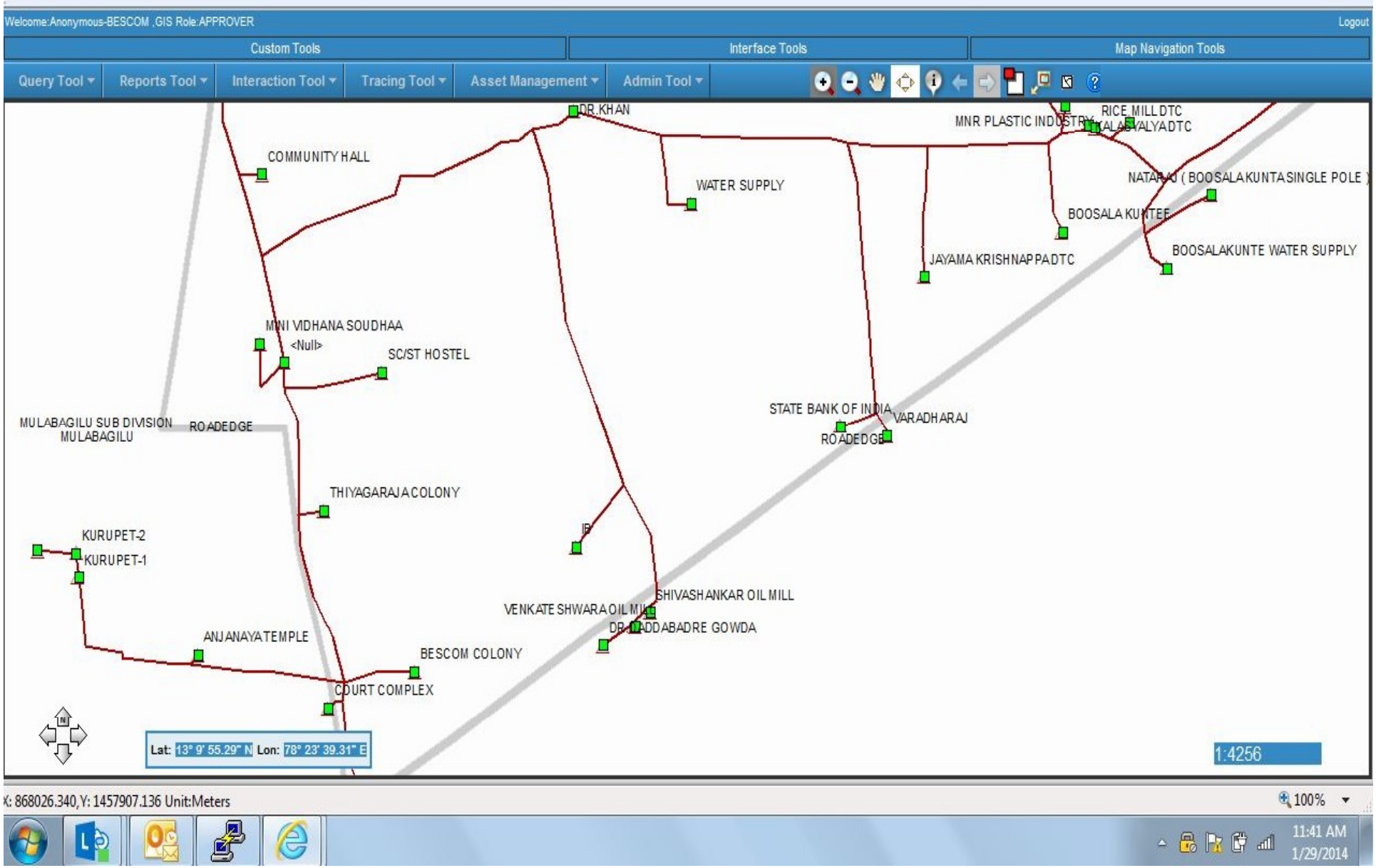
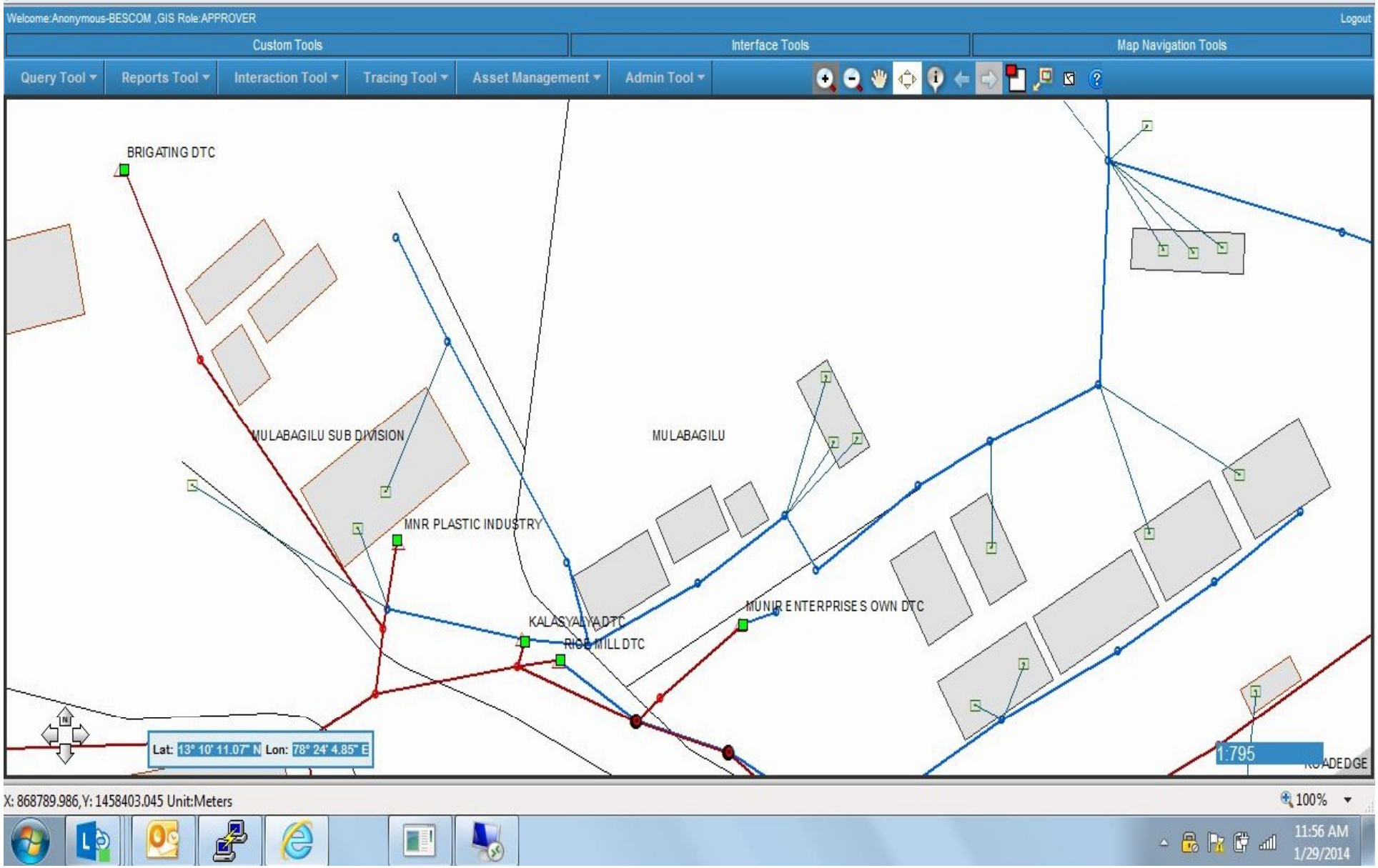
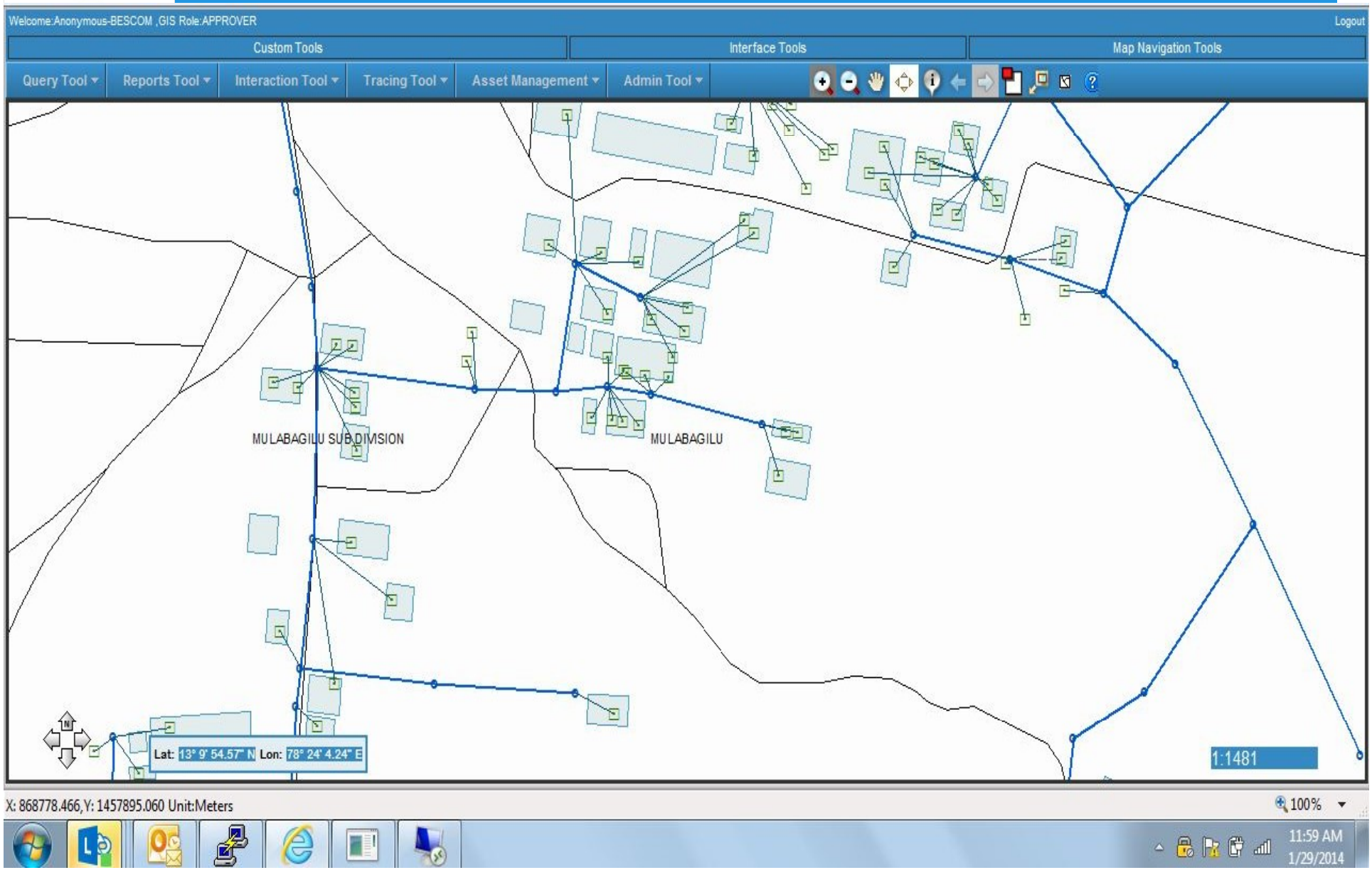


LT Map - Mulbagulu Town, BESCOM



LT Map - Mulbagulu Town, BESCOM



Challenges in GIS Implementation

- Slow progress in assets & consumers survey in fields due to non-availability of skilled manpower with GIS agencies
- Huge errors in linking of assets, between assets & consumers, their attributes collection, etc due to use of unskilled/inexperienced manpower/lack in coordination
- Slow progress in survey data validation by utilities due to manpower shortage
- Delay in updation of incremental changes in assets, networks, consumers database, leading to inaccurate Energy Accounting.
- Lack of expertise with utilities for Post Go Live activities

Measures by MoP/ PFC

In addition to regular & intensive monitoring by PFC/MoP -

- Utilities advised to -
  - Take help of State Governments for hiring of people through State Labor Department/ITIs/Market Survey personnel for Consumer Indexing etc
  - Deploy joint survey team comprising of ITIA and utility staff to address field related issue in survey and quick validation of same.
  - Formulate process for updation of GIS database
- Simplification -
  - Simplification of GIS Map procurement forms of NRSC
  - Simplification of GIS validation/ acceptance process
  - Optimization of survey parameters
- Sharing of Best practices and guidelines with Utilities through workshops & review meetings
- Resolution of issues between States and IT Implementation Agencies

Way Forward

- GIS activities- Network assets mapping & consumers survey to be completed in 21 States/UTs
- GIS Agencies to ensure deployment of Skilled manpower in fields and timely completion of PGDB activities
- GIS Agencies & utilities to ensure timely updation of incremental changes in network assets & consumers database for deriving benefit out of GIS solution
- GIS Agencies/ITIA/utilities to ensure Capacity building, Skill & proficiency enhancement of utility employees for managing Post Go-Live GIS activities
- Development of skilled manpower for carrying out GIS activities in electrical system
- Development of user-friendly Apps for easy updation of networks assets, consumers & Basemaps
- Utilities and NBSPs to ensure reliable network connectivity for optimal use of GIS application

A concerted effort by all stakeholders will further facilitate in making the programme a grand success; thereby helping future generations to reap the benefits

Thank You

Challenges In Implementation

- Long time taken in ITIA appointment by States [*Haryana, Kerala, Goa, J&K, Jhk*]
- Lack of Domain Knowledge in IT by Utilities
- Taking more than 3 Yrs for completion even in advanced State with best agencies like TCS/ Infosys/L&T [*Gujarat, WB, AP, Kar & Maha*]
- First time Development & Testing of software modules:

  [*Karnataka, Rajasthan, TN, Bihar, Goa, Jharkhand & J&K delayed*]
- Delay in Meter Procurement/ installation

  [*Arun. Pradesh, Nagaland, Manipur, J&K and Jharkhand*]
- GIS Consumer indexing & assets mapping - first time in Discoms at large scale.
- Network connectivity in remote location a challenge.

  [*WB, AP, UP, Uttrakhand & NE States facing last mile connectivity issues*]
- Lack of readiness of DC / CCC building infrastructure by Discoms

  [*Delayed in TN, J&K, Jharkhand, Haryana, Kerala & Goa*]

Challenges In Implementation

- Disputes between utilities & ITIA and Court cases (Kerala, NE States and Karnataka)
- Backing out of ITIA (KLG Systel from Chhattisgarh, new ITIA appointed after retendering)
- Non-Performance of ITIA (Spanco in Bihar-Order Cancelled-New ITIA appointed)
- Common DC and DR in NE States, Sikkim with WB, Pondicherry with TN, Chandigarh with Punjab took longer time than envisaged
- **NER & J&K specific challenges**:
  - Some towns are inaccessible
  - Inadequate bidders and high cost for meters leading to rebid/ delay
  - Law & order, insurgency & difficult terrain hampering progress

Other Measures by MoP/ PFC

In addition to regular & intensive monitoring & follow-ups by PFC/MoP –

Resolution of various issues related to IT implementation, GIS, metering, network connectivity, etc between utilities/States, ITIA, GSPs, NBSPs, Meter Mfrs, CPRI etc.

Selective interventions through guidelines, model documents, etc.

Workshops on guidelines, best practices, dedicated R-APDRP web portal, simplification of implementation process etc.

Introduction of AMR based open protocol Meter standard (IS 15959) for interoperability.

Setting up of Meters Testing Lab with CPRI

Way Forward

- RAPDRP projects expected to establish base line IT systems for 1398 towns, SCADA / DMS in 70 towns
  - States have already started reaping benefits of Part A (IT) implementation
  - Improved reliability of Power Supply & reduced interruptions
  - Better Customer Care Facilities & Improved Customer Satisfaction
- Capacity building, Skill & proficiency enhancement of existing employees
- Present & future Job opportunities in IT, SCADA and GIS
- Higher revenue leading to Lower tariff for consumers/ more investment in Distribution sector for expansion

A concerted effort by all stakeholders will further facilitate in making the programme a grand success; thereby helping future generations to reap the benefits