POST GO LIVE REQUIREMENTS (to be performed by States/utilities)

RAPDRP vision

Background

Section-A: commercial

Section-B: regulatory treatment of grant

Section-C: operational

- **Manpower planning**

- **Annual Maintenance Contract/Annual Technical Support**

- **Maintenance of Network Connectivity by Utility**

- **Maintenance and updation of GIS repository**

- **Town, Feeder and DT wise Energy Audit, AT&C Loss reduction**

- **Administrative/Technical Measures to improve Billing/Collection and reduce AT&C Losses**

- **Network planning tools to assist decision support system towards Technical improvement in distribution system**

- **Facilitation in Preventive and Predictive maintenance**

- **Customer satisfaction**

- **Exception Reporting and Dashboard for monitoring at various levels (Utility, Nodal Agency, MoP)**

- **Information Security Policy and Audit**

- **Training requirement /Gap analysis of State utilities in Post Go-live period**

- **Incentive Scheme**

White Paper on Post Go live Requirements (to be performed by State/Utilities)

RAPDRP VISION:

R-APDRP was launched by GoI as a Central Sector Scheme with following Vision and Objective:

- ➤ Reduction of AT&C losses and improvement in Consumer services on sustainable basis though adoption of Information Technology (IT) and communication
- ➤ Energy accounting and auditing without any human intervention to identify key areas requiring administrative/technical measures
- ➤ Enforcement of Transparency in business operations and internal accountability
- ➤ Objective evaluation of demonstrable performance of utilities due to implementation of RAPDRP

BACKGROUND:

The Part-A (IT) scheme envisages preparation of Base-line data for the project area covering GIS based Consumer Indexing and Asset Mapping of the entire distribution network and Automatic meter reading of Distribution Transformers, HT Consumers, Feeders and Boundary meters. It will include adoption of IT applications for meter reading, billing & collection; energy accounting and auditing; MIS; redressal of consumer grievances through establishment of IT enabled consumer service centers etc. The scheme is being implemented with establishment of Data Center (DC), Customer Care Center (CCC), Disaster Recovery Center (DR) and thereafter integrating various utility offices in the eligible towns with Central data center in each state, so that all business applications hosted at data center are accessed by town users through a secured and reliable connectivity in the form of MPLS link as well as GPRS/CDMA connectivity at metering nodes for undertaking proper Energy Audit and *taking corrective actions thereafter*.

After declaration of Go-live of the town, all the commercial business operations in the town are processed through IT system and Energy audit reports and other MIS/exception reports are also generated through IT system without any human intervention.

It is absolutely essential that after declaration of Go-live of the town, utilities take utmost care for maintenance and updation of IT system along with database to derive benefits from huge investment made under R-APDRP, Part-A (IT) system. The areas which merit attention of utilities post Go-live of towns, are described below along with recommended actions to be initiated by States/Utilities-

SECTION-A: COMMERCIAL

Since, after declaration of Go-live of the town by utility, all the commercial business operations in the town are processed through IT system and thus the expenditure for operational activities, which are described below post Go-live, such as communication bandwidth charges, replacement of Meter/modems, regular updates of GIS database, facility management charges, Annual maintenance and Technical support cost etc. being revenue expenditure and required to be borne by Utilities.

However, Network bandwidth and FMS charges for a maximum of 1 year under R-APDRP to be funded by PFC/MoP within 5 yrs completion of Part-A IT project from date of sanction.

Utilities should train /induct manpower to handle these activities at Data Center, Disaster Recovery Center and Customer Care Center and at field level (GIS/ MDAS/ communication) after Go live of each town. It is advised to invest in skilled manpower now so that such personnel will get exposure/ expertise during implementation phase and will be ready to take over operation of the assets on completion of towns / IT project.

SECTION-B: REGULATORY TREATMENT OF GRANT

Utility should ensure that they explicitly indicate in their ARR filing, the investment received under R-APDRP (Loan/Grant) so that the benefit, if any, is passed on to the consumers through ARR / Tariff Orders by the respective regulatory commissions.

Grant being part of the actual capital expenditure has impact on calculation of Interest on loan (IOL), Depreciation and O&M expenses in the Annual Revenue Requirement (ARR) and determination of retail tariff of consumers. The treatment of grant under these heads (namely IOL, Depreciation and O&M Expenses) is governed by the relevant Regulations/Orders of the appropriate Commissions. The benefit, if any, is passed on to the consumers through ARR/Tariff Orders for distribution companies.

For maintaining uniformity of approach, the Forum of Regulators (FOR) should evolve a guideline to make a clear provision in their respective Regulations for treatment of grant received by licensee, which should be adopted by all State Commissions in their respective Tariff Regulations.

Regarding moratorium period of loan serviced under R-APDRP, regulators take a notional value for interest calculation to avoid any regulatory shock, which may arise due to non conversion of loan / interest into grant.

The loan shall be converted into grant as per the prevailing R-APDRP guidelines. When the loan / interest on loan sanctioned under R-APDRP schemes (Part-A as well as Part-B) gets converted into grant as per the laid down conditionality, the utility shall inform the appropriate State Electricity Regulatory Commissions the quantum of loan/interest on loan converted into grant, so that the benefit of grant to utility is passed on to the consumer.

SECTION-C: OPERATIONAL

C1) Manpower planning:

Post Go-Live of the R-APDRP system, Data Center/Disaster Recovery Center/Customer Care Center should be under control of O&M Head of Utility and the associated IT teams should work as support function and should be accountable to O&M Head.

The system hardware, software, database and network management and operation services of DC/DR, CCC and SDO, as well as field management of modems and GIS update operation (over and

above through business processes, if required) has to be done in a structured way to run the critical IT enabled business operations in a smooth and continuous manner.

C1.1 DC-DR Operation Management

FMS for a period of 5 years is under scope of ITIA for the purpose of managing the IT system created under RAPDRP and handholding the utility. However, operation of IT system is beyond the scope of FMS activities and is to be done by utility staff itself. ITIA shall train the utility staff as per provisions in the contract.

Further, GIS updation, MDAS monitoring for initiating timely action for replacement of faulty meters and modems, Network BW service monitoring and provisioning, Database retention and ownership, DC/DR operation management etc. are to be done by Utility for stable upkeep and operation of the R-APDRP systems. The manpower required for such activities related to DC/DR center are divided in two basic categories-

PRIORITY-I:
After attaining Go-live of towns, day to day operation of Data center is to be performed by Utility. Also, Utility has to manage System and Database administration due to data ownership and security issues of the Utility data. A typical structure is described below:

a) Data Centre Manager- Responsible for overall management of the Data Centre, SLA commitments, performance, availability, response time, problem resolution etc. He/She should also be responsible for effective Resource management; System & Resource planning based on business forecast and would be the single point contact for managerial responsibilities and direct accountable to Utility O&M head.

   Data Centre Manager with capabilities in team management, capacity planning and process documentation should have at least three to four IT executives to formulate and look after activities of Data Centre operation services.

b) Database Administrator- Responsible for Data Base Administration, Database configuration, Web Administration and other related services. He/She should also be responsible for database and application change management procedure and shall work with close cooperation with FMS vendor to keep database ownership to safeguard against database changes beyond system processes, performance tuning, database security etc. both for Application and GIS databases.

c) System Administrator- Responsible for OS administration/management, Assigning User Roles/responsibility in the system, scalability, performance, load-balancing, troubleshooting & debugging and monitoring of servers & other hardware. He/She should implement the back-up plan for storing and retrieving of data, maintain servers, machines, printers and also responsible in resolving the real time requests raised by users. He/She shall look after and supervise FMS of hardware, system software through FMS vendor including system security, performance tuning, enhancement requirement forecasting and IT support service management such as Fire, DG, UPS, BMS, Disaster Management Plan etc. both for DC

and DR and performing DR Drill once in a year. He/She shall also look after all change request from Application users and get it done through ITIA considering impacts like requirement severity, system security, performance, etc

d) Administration/HR - Should be responsible for entire Data Centre administration, Logistic support, procurement, Stationery, administrative co-ordination etc.

PRIORITY-II:
FMS for a period of 5 years is under scope of ITIA for the purpose of managing the IT system created under RAPDRP and handholding the utility. Accordingly, Hardware, Software and Network support along with Help Desk will be managed by FMS vendor for 5 years. However, Utility should plan to take over this work after 5 years and it is recommended that utility should also make following structure with minimum 1-2 persons initially to co-ordinate with FMS vendor and subsequent take over from FMS vendor for smooth transition.

e) Network Support Staff- Responsible for network uptime, security, performance, monitoring and other related services. He/She should be well versed with Routing and Switching devices and technologies and must have skills in Information Security technologies like Anti-virus, Firewalls, 2 factor Authentication, IDS, Content Filtering, Encryption, VPN, Threat Management etc. and also familiar with Information Security Audit parameters. He/She shall look after and supervise FMS of computer and communication network infrastructure through FMS vendor, Network BW service provisioning management (as per Tripartite Agreement between ITIA, NBSP and Utility), monitoring health of primary/secondary/GPRS connectivity (QoS), Network Security Management etc. both for DC and DR.

f) Technical Support Services - Responsible for H/W & S/W support and would provide help to the Data Centre Operations & Management Core Team in quick resolution of problems. The technical support team would work on shift basis and ensure uptime of services. He/She should be responsible for escalating the call to the specialized domain and closely work with the domain experts and do the first level of analysis once call is logged by the help desk support team and ensure uptime of services through NMS and generate reports to meet the SLAs signed by the Utility with different stakeholders.

g) Help Desk Services - Should be capable of complete call management process with standard call logging and escalation tool. The requirement of manpower for Help Desk Services may increase as demand grows. He/She shall look after Help Desk Facility is functioning as per Help Desk Support System and the activities include Help Desk Management, Trouble Ticket Logging, Resolution of Problem as per the Severity Definition and Help Desk FMS Support staff manning, Generation of MIS Reports from Ticket Logging system etc.

C1.2 Field Operation Management

Utility may designate at least 1 officer in each sub-division/Town (as per requirement of utility), who will be responsible for monitoring of GIS/MDAS/SDO equipments operations on regular basis and carry out operation management service in the field. Their key responsibility areas may include-

a) **Meter Data Acquisition System Management:** Responsible to monitor accessibility of Data from all the Modems connected with the DT/HT consumer, Feeder and Boundary meters in the field, reporting defects to FMS vendor, getting fault root analysis report for the defective Modem, Meter or GPRS and getting the rectification done. Generating MIS report for In-service/faulty/OK Modems for the town from time to time to measure maintenance effectiveness.

b) **GIS Updation Management** to look after all delta change requirements and populate GIS database to keep all the Assets and consumers updated in the System.

c) **Field Office Equipment Management**: CO/SDO/OO office equipments such PC, UPS, Printer, Router , Modem, etc are to be monitored and for any fault in any of these, a IT service request to be lodged with System Administrator/Technical Support staff at Central level for rectification/replacements.

Utility may designate a Nodal officer, who will be responsible at the central point for monitoring the implementation and operation of GIS/MDAS/Hardware equipments on regular basis and raise alarms in case of exceptions.

C1.3 CCC Operation Management

A centralized Customer care center has been established under RAPDRP in each Utility; however Utility has to deploy CSRs (Customer Service Representatives) to handle the Calls landing at CCC after assessing the number of agents required, which will require regular reassessment as the circumstances of a call center will change regularly.

We suggest performing this calculation after every six months after start of successful operation of CCC. The incoming traffic levels must be established from call statistics and No. of agents should be estimated based upon Number of calls received and Average duration of these calls.

C2 Annual Maintenance Contract/Annual Technical Support

The period of validity of the warranty has been defined in the Model RFP as 36 (Thirty Six) months from the date of commissioning or 42 (forty two) months from date of delivery at Purchaser's stores, whichever is earlier.

Similarly, Annual Technical Support of all the software solutions supplied by ITIA has been covered under Model RFP for a period of three year from the date of installation of the relevant licenses of the software at Utility end, which covers provision of free patches/ hot fixes/ updates/

upgrades/notes etc. for Operating Systems, Databases or any security upgrade of the supplied products as and when released by OEM.

Though FMS (Facility Management Services) for a period of 5 years is under scope of ITIA for the purpose of managing the IT system created under RAPDRP and handholding the utility. But, Warranty for all the Hardware and Annual Technical Support for all the Software solutions supplied under RAPDRP shall expire after a period of three years (or as defined in the LOA by Utility). Therefore, Utility needs to enter into separate Annual Maintenance Contract for all the hardware supplied and Annual Technical Support for all Software solutions supplied under RAPDRP for smooth and continuous operation of the RAPDRP, IT system.

C3 Maintenance of Network Connectivity by Utility

Meter data from DT, Feeders and Sub Station DCUs under RAPDRP should communicate to DC / MDAS server continuously as scheduled. Similarly commercial data from Sub Division Offices (SDO) and Other Offices should be transacted to and from DC. After each town is declared Go live, utility needs to maintain these towns live by maintaining MPLS bandwidth and GPRS connectivity through Network Bandwidth Service Provider (NBSP).

Further, the required Service Level Agreement (SLA) will be maintained by ITIA for the balance period of Facility Maintenance Services (FMS) as per contract. In addition to Primary connectivity, utility should get the Secondary connectivity ready and keep on testing to ensure quality of service (QS) agreed by NBSP.

It is pertinent to note that the modem and meters are the weak link in the data communication system and adequate spares of the same should be kept at field level for replacement in case of failure. Simultaneously, the utility should deploy trained personnel to maintain the modem / AMR as well as connectivity at field level.

C4 Maintenance and updation of GIS repository-

After completion of Network and Consumer survey by ITIA and data validation by utility, it is digitized and used in GIS application. In order to ensure that post Go-live also GIS repository of Assets and Consumers remain updated, a mechanism need to be put in place by Utility to incorporate the regular changes in system. This may be done either through in-house or outsourced basis as per convenience of utility.

The incremental changes (addition/deletion/modification) in the GIS database are due to the regular day to day changes in the Electrical network and consumers in field after the date of declaration of Go-live of respective town. To perform the correct Energy Audit and Accounting for a town utilizing MDAS and MBC data, it is absolutely essential that the town should have up-to-date GIS asset and consumer information in the GIS repository at the time of go-live and also during subsequent operation. A guideline in this regard to take care of GIS delta changes pre-Go live has already been provided by PFC/MoP.

Also huge asset base is created in the R-APDRP towns due to implementation of Part-B schemes / any other scheme opted by utility. Additions of all such assets are essentially required to be captured in the GIS database.

Utility is required to update asset/consumer data in the GIS database through the Business Process Applications only and will have to gear up their team and make suitable arrangement to collect GIS co-ordinates using DGPS instrument. They are requested to initiate action to this effect immediately. A brief of actions required is mentioned below-

1. Utility will capture the incremental changes in Assets and Consumer data/ information through IT system for each of the town separately. They will have to capture the latitude and longitude values for these incremental changes in Electrical assets.

2. The above data collected for each of the town will be forwarded by each town in-charge to the officer authorized (may be 1 person in each sub-division/Town/division/Circle as per requirement of Utility) for editing and uploading of GIS database after due verification. Utility may designate a Nodal officer, who will be responsible as the central point for monitoring the regular updation of GIS database for Assets and Consumers.

3. ITIA need to conduct training for the end-users so as to effectively collect the various data (spatial/non-spatial) and update the GIS repository.

4. After approval of the application form for new connection / temporary connection etc, the system should generate a unique Service Connection Number ("SCN") for the customer. Utility should make it mandatory that new Service Connection No.(SCN) and entire customer detail is first updated in GIS database before issue of service order for new connection / temporary connection. Similar updation of GIS database shall be done for other cases like load extension/reduction, name change etc. No connection should be released without updation in GIS system.

5. Before allowing a new connection, network capability should be checked for adding additional load and necessity for capacity augmentation on upstream side of electrical network, if any to be ensured through use of GIS database and GIS based network analysis module.

6. Similarly, Utility should make it mandatory that any new electrical asset created in the town should be energized only after entire details (spatial/non-spatial) of the assets are updated in GIS system.

C5 Town, Feeder and DT wise Energy Audit, AT&C Loss reduction -

DT wise Energy audit is important for identifying the loss pockets and taking corrective actions for reduction of AT&C losses. The Energy Audit module captures hierarchical view of energy accounting and audit for identifying revenue leakage in high loss pockets. It will collect data from MBC and MDAS module and use Consumer Indexing and Asset mapping database for deriving Energy consumption of consumers connected on any node. Losses at various level may be monitored by utility for taking corrective actions as described below:

Type of loss	Description	Integration of EA module with
Bus bar & transformation losses in the substation	Shall check energy balance between HV and LV side of substation to calculate this loss.	MDAS
HT losses	Shall check energy balance of 11 KV feeder flow against consumption of HT consumers and connected DTs in feeder	MDAS, Asset mapping
DT wise Energy audit & AT&C losses	Shall add consumptions of all the consumers connected to a particular DT and compare with energy sent by DT (meter on LT side)	MDAS, Customer indexing, Asset mapping and MBC data base
Segregation of Technical and Commercial losses	Through interface with Network Analysis module, shall calculate allowable as well as actual technical losses in each of network elements	MDAS, Asset mapping database, Network Analysis module

Utility should ensure that these reports are generated regularly trough the IT system and measures are taken according to exceptions generated.

C6 Administrative/Technical Measures to improve Billing/Collection and reduce AT&C Losses-

IT system shall assist utilities in identifying the revenue leakage points by pinpointing the loss pockets associated with each DT and further deficiency in system operation if any, the strict administrative measures in day to day operation of distribution system is to be initiated by utility to improve billing & collection leading to reduction in AT&C losses in the project areas. A few of typical action points are highlighted below:-

Administrative actions:

- Regular analysis of exceptions from Energy Audit and accounting reports
- Metering of unmetered consumers
- Identification and rectification/replacement of faulty meters
- Identification and rectification/replacement of faulty CTs/PTs of High end consumers
- Cycle time for reading, billing and collection to be reduced after process automation under RAPDRP (all consumers should have monthly billing cycle)
- Utility should enable a large no. of payment channels to improve customer convenience for payments and enable a shorter metering-billing-collections cycle

- Utility to organize awareness drives for consumers and also impose strict vigilance/raids in theft prone area as per exception reports of Energy Audit and accounting, etc.

Technical actions:

- Phase wise Load Balancing
- De-augmentation of DTR having less than 30% utilization
- Diverting part of load from DTR having more than 80-90% loading.
- Capacitor placement
- Feeder bifurcation for overloaded feeder
- Feeder reconfiguration/reconductoring for overloaded feeders
- LT Aerial Bunched cable in place of bare conductor in Theft prone area etc.

C7 Network planning tools to assist decision support system towards Technical improvement in distribution system

Utility can utilize the capability of GIS based Network Analysis Module in conjunction with other applications in RAPDRP to perform various actions required on the electrical network for network optimization, loss reduction and network operation with greater efficiency.

It has the capability to perform the following broad functions related to distribution system design, analysis and optimization:

a. Creation and editing of network,
b. Load flow and voltage drop analysis,
c. Optimization studies like capacitor placement, network reconfiguration, conductor up-gradation, express feeder, load balancing and load allocation etc.
d. Creating extensive "what-if" studies.
e. Fault analysis and protection coordination,
f. Network design reports, cost estimates, financial analysis,
g. Integration with New connection module for checking the network capability, augmentation requirement on upstream side, if any

Through Modeling of an 'Electric Distribution Network', the following functions can be performed by Utility to assist in their decision support system:

A) Determine the number, location and size of primary substations required to meet the growing demand at minimum total cost.
B) Generate optimum distribution transformer proposal, new or augmentation over a selected regions or nodes.
C) Determine the optimum network configuration for formation of new links to nodes on an existing feeder, tie points for changing feed area from one substation to another to balance load among substations.
D) Determine the economic and break-even loading limits of conductors and cables.

E) Propose a new conductor over the overloaded regions on a feeder to remove/minimize the overloaded region by suggesting better conductor.

F) Propose optimum reactive compensation along with sizing, location and switching time of capacitor to be installed for improvement of voltage profile, minimizing losses and maximizing the net economic benefits.

G) Provide load-balancing analysis to minimize losses.

H) Optimal solution for any given network and provisions for minimization of losses so as to maximize the net benefit i.e., the present worth of loss reduction is more than the annual cost of capital investment.

C8 Facilitation in Preventive and Predictive maintenance

RAPDRP, IT system has two optional Application modules (i.e. Asset and Maintenance management system), which can be utilized by distribution utility in facilitation of preventive and predictive management on their electrical assets.

The Maintenance Management System helps utility in better planning and co-ordination of various maintenance activities; reduce breakdowns through preventive and predictive maintenance, to maintain maintenance history, to review and control maintenance costs and providing a feedback to management for timely decision making.

The Asset Management system will facilitate in resource planning efficiently to enable utility to take quick and correct decision making in day to day operation.

➢ **Basic functionalities, which should be used by Utility in MM system are-**

- Forecasting of planned maintenance jobs
- Automatic creation of Work Order (Time or usage based)
- Automatic generation of schedule, priority etc.
- Identification of opportunity maintenance jobs
- Creation of short/medium term planning
- Creation of Inspection work parcels
- Forecasting and Resource planning and review
- Analysis and report on MTBF and MTTR

➢ **Basic functionalities, which should be used by Utility in AM system are-**

- Compilation of assets and reduction of inventory and down time of equipment
- Predict the completion of useful life of an asset for its timely replacement.
- Coupled with Trouble call management system, it will keep track on maintenance work on each asset along with cost incurred.
- Conduct Statistical analysis on conditions and criticality of assets, Asset age and asset performance, Risk Management (insurance claim etc)

C9 Customer satisfaction

Due to lack of information on the consumers served and network assets, their loading and health status are not monitored properly, leading to inefficient power distribution and frequent breakdown of the system. For empowerment of consumers, the following roadmap can be followed-

a) **Information to consumers -** Customer complaint handling and customer information are the two main areas, which have been addressed under RAPDRP. Customers sometimes suffer from lack of information (e.g. unaware of their rights and duties), which may lead to customer complaints. Information services (like single point of contact) can be the first step in complaint handling and proper information at proper time might help resolving issues in first instance, without need to go through a complaint procedure. The following roadmap has been proposed in RAPDRP for proper sharing of information in electricity distribution area –

- A Centralized Single Window Customer Care Centre (CCC) linking with the automated electricity distribution business processes established in each utility. Consumer can call the Toll Free Number or approach in person at the CCC for getting any consumer related service.
- The CCC shall automatically dial out to the consumers to deliver information like power supply position, payment reminders, payment acknowledgement and other information.
- Website is the main channel of communication in today's environment. A consumer friendly web portal shall assist consumers to communicate with the utility and will act as a source of information for the customers regarding applicable policies, procedures and rules prescribed by the utility, regulator and the law, which is helpful for customers. This in turn will improve customer satisfaction.
- Information about power supply breakdown and / or schedule of maintenance can be broadcasted over the internet.

b) **Delivery of e-Services –**

- A consumer can register on the web portal and securely access his account information, billing details, payment due date, past consumption pattern, payments made during last few months etc. Consumer can View and Pay his bills online through a no of payment options (credit card, debit card, net banking, ECS etc)
- A Consumer can also register through Web self care or calling Toll free Customer care centre for getting his electricity bill in electronic form at his registered email Id.
- A consumer can also lodge request on the web portal for services such as new connection, disconnection, load change, name change, category change, meter shifting etc. and view the status of pending requests.

c) **Handling complaints/Grievance redressal –** Most of the consumers is not satisfied with the existing complaint redressal mechanism as well as the quality of service available to

them. The following roadmap has been proposed in RAPDRP for proper handling of complaints/grievances of consumers in power distribution utility –

- A consumer can lodge the complaint by calling the Toll free Customer care centre (CCC). CCC shall register and resolve customer complaints/queries relating to metering, billing, disconnection, load change, energy theft or any other customer services offered by utility and follow up with respective officer of utility for timely redressal. Once the issue of the consumer is resolved or the fault has been attended, the CCC after getting feedback from utility officer shall automatically intimate the customer of the same and get a feedback.
- By calling the Toll free Customer Care Number, one can get any customer related information or know the status of their complaint anytime on IVR system or through CSR.
- A consumer can lodge his complaint through web self care or mobile internet also related to metering, billing, disconnection, load change, energy theft or any other customer services offered by utility and view the latest status.

d) **e-Mobile services –** The services of mobile phone has expanded rapidly across pan India and therefore following e-Mobile services can be launched in electricity distribution sector also for wider coverage among consumers.

- A Consumer can register his Mobile number through Web self care or calling Toll free Customer care centre for getting SMS in his mobile for information such as date of bill generated, bill dispatch status (electronic/paper bill), bill summary, payment due date, payment due date reminder etc.
- A Consumer can also make payment of his bill through his mobile having GPRS/3G/equiv. connectivity, for which utility may tie up with various service providers.
- A customer can also lodge complaint through his mobile by sending SMS to a Toll free no. provided by utility and can also get his complaint status.
- The CCC shall sent group messages based on location based services to consumers on their Mobile phones, such as power supply failure in case of group faults (DT/Feeder failure etc), advance intimation regarding load shedding/planned maintenance schedule or any other information on power supply situation.
- Utility can plan faster restoration of breakdown in power supply by integrating the centralized customer care centre with Mobile workforce management system by using mobile communication facility.

e) **Customer satisfaction survey** - Utility can undertake consumer satisfaction survey done through any third party to know the improvement in Customer satisfaction. Typical list of parameters to be selected for undertaking Customer survey may include-

- Correctness of bills
- Convenience in payment through a host of channels

- Convenience of lodging complaint through a host of channels
- Fault restoration time in case of local fault
- Fault restoration time in case of group faults
- Time taken in release of new connection, name change, load reduction/enhancement etc.
- Call handling time at CCC
- Resolution time of wrong billing complaint etc.

C10 Exception Reporting and Dashboard for monitoring at various levels (Utility, Nodal Agency, MoP)

MIS Module developed under RAPDRP shall enable to maintain, customize and generate various reports for various level of management, internal offices and external agencies (e.g. Regulator, RAPDRP Nodal Agency, Ministry etc.) at predefined periodicity with capabilities of Information capturing, Information processing, Information management and Information based decision making. It is having Business Intelligence Tools for data mining, analysis, trending, simulation etc. and linked to all business process modules for generating exceptions and MIS reports.

Dashboards for the Utility may typically contain following exceptions reports for monitoring of overall distribution system-

> **Financial:**
  - Revenue Sales, Collection and reconciliation of Arrears etc.
  - Improvement in Metering and collection efficiency
  - Revenue per unit (Rs/Kwh)
  - List of top defaulters
  - No. of disconnections made

> **Operational Efficiency:**
  - AT&C losses and town /Sub division wise
  - AT&C Loss at different Sub-station, Feeder and DTs and order of severity
  - DT failure rate and analysis
  - Reliability indices of power supply, Area wise outages, consumers affected and restoration time
  - Cycle time of M-B-C after IT implementation vis~a~vis past cases
  - Maintenance planning and costing

> **Customer satisfaction:**
  - No. of faults (area wise) reported and restoration time
  - No. of billing errors/complaints (area wise) lodged and resolution time
  - No of pending connections

> **Planning & Investment:**

- Status of new connection and time taken for New connection after IT implementation vis~a~vis past cases
- Future planning of any new requirement

➢ **Vigilance & Theft Detection:**

Energy irregularity:
- DT loading vis~a~vis its Consumers' consumption (theft)
- Sudden changes in Consumers' consumption profile vis~a~vis past history (meter tampering/ bypassing)

Collection irregularity:
- Consumers billed but not paying for long (mounting arrears)
- Consumer mismatch Vs old metering/ billing Database (ghost consumers)

The following templates are typically suggested for monitoring at various levels:

Reporting Level: JE/AE

1)	Feeder Wise / DT wise performance report	Feeder-wise-perform ance JEAE.xlsx
2)	Data Missing Report for System and Consumer Meters	Data-Miising-Report JEAE.xlsx
3)	GPRS/CDMA Down Time Report	GPRS-Down JEAE.xlsx
4)	System meter Instantaneous Electrical Parameter Report	Instantaneous JEAE.xlsx
5)	Meter Not Read Report (due to communication link failure: meter to modem & modem to DC)	Meter-Not-Read JEAE.xlsx
6)	Supply Hours Availability Report	Supply-hours-Report JEAE.xlsx
7)	Tamper Summary Report	Tamper-Summary-Re port JEAE.xlsx

Reporting Level: EE/SE

1)	Bus-Bar & Transformation Loss Report	BusBar-and-Transfor mation-losses EESE.x
2)	Consumer complaint redressal Status	Complaint redressal EESE.xlsx
3)	Consumer Profile Report	Consumer-Profile-EE SE.xlsx
4)	DT Peak Load Report	DT Peak-Load EESE.xlsx
5)	Executive Summary on Town Performance	Executive-Summary- Report EESE.xlsx
6)	Feeder Peak Load Report	Feeder Peak-Load EESE.xlsx
7)	GIS Based Consumer Indexing Updation Report	GIS Update EESE.xls
8)	Consumer New Connection Release Status	New Connection EESE.xlsx
9)	Power Transformer Peak Load Report	PT Peak-Load EESE.xlsx

Reporting Level: CE/MD

1)	AMR Data Availability Status Report	AMR-Availability-Stat us-Report CEMD.xlsx
2)	Consumer complaint redressal Status	Complaint redressal CEMD.xlsx

3)	DT with exceptional profile Status Report	DT status report CEMD.xlsx
4)	Feeder & DT with high AT&C losses	Feeder-DT with high loss CEMD.xlsx
5)	Consumer New Connection Release Status	New Connection CEMD.xlsx
6)	Less Power Supply Availability Report	Supply-hours-Report CEMD.xlsx
7)	System overload Report	System overload CEMD.xlsx

Reporting Level: Nodal Agency, RAPDRP

1)	Town wise AT&C loss report	Utility-Town ATC PFC.xlsx

Reporting Level:MoP

1)	Town wise AT&C loss report	AT&C loss report-MoP.xls

C11   Information Security Policy and Audit:

With the implementation of RAPDRP, sizeable amount of IT infrastructure/ Information/ business intelligence have been created and disseminated across the organization and beyond among its stake-holders. In creating/maintaining such information store-house within an organization, it is absolutely essential that the utility maintains and practice an effective information security policy (ISP) for their organization.

Govt. of India also has already issued instructions to counter vulnerabilities in Computer systems/ Networks based on Intelligence Bureau Communiqué that covers (i) Physical theft of

Hardware containing sensitive data (ii) data compromise (iii) information stealing by remote access (iv) spoofing by intruders (v) defacement of Government websites, etc. Accordingly, Utilities are requested to formulate an Information Security Policy for their organization, which may serve the following purposes-

> ➢ Defining the confidentiality, integrity and availability requirements for information used to support the Utilities objectives,
> ➢ Ensuring that those requirements are effectively communicated to individuals who come in contact with such information, and
> ➢ Using, managing and distributing such information - in any form, electronic or physical- in a manner that is consistent with those requirements.

Further, Utility should get the information security audited by third party expert periodically (once in six months) and as and when there is significant up gradation of systems, which include hardware, software and network resources to ensure and guarantee security of the Data Centre. The audit shall bring out any security lapses in the system and establish that the system is working as desired by the State.

C12   Training requirement /Gap analysis of State utilities in Post Go-live period

Introduction

Training and development refers to the process to obtain or transfer knowledge, skills and abilities required for carrying out a specific activity or task. To meet current and future demands, training and development encompasses a wide range of learning actions, from training for tasks and knowledge sharing to improve customer service thus expanding individual and group and organizational effectiveness. Trained manpower is required at every stage of task in the organization. The technical knowledge acquired in institutions needs to be supplemented with strong sector knowledge, understanding of in-depth functional aspects, managerial skills, high morale and motivation. The brisk pace of advancement of technology is making every sphere of the electricity industry more and more sophisticated, requiring especially trained engineers, supervisors, operators, technicians, managers etc. Therefore it becomes necessary to strategically position "training and development" as *continual process* which is instrumental in achieving organizational goals and objectives.

1) Pre Go-live Gap Analysis

Training needs analysis (TNA) was done for the power distribution utility personnel with respect to the needs for implementation of Part A & Part B of R-APDRP. To take care of these needs, training component for detailed/comprehensive training on 17 modules under Part A is in the scope of respective ITIAs. Following are the training modules covered by the ITIAs.

1.1 Modules under R-APDRP in the scope of ITIAs

Sl. No.	Name of Modules
1	Meter Data Acquisition (AMR) system
2	Metering
3	Billing
4	Collections
5	New Connection
6	Disconnection & Dismantling
7	Development of Commercial Database of Consumers
8	GIS based customer indexing and asset mapping
9	GIS based integrated network analysis module
10	Energy Audit
11	Centralized Customer Care Service
12	Web Self Service
13	Management Information System (MIS)
14	Identity and Access Management system
15	System Security
16	Asset Management (Optional Application)
17	Maintenance Management (Optional Application)

1.2 Themes under R-APDRP Capacity Building:

Apart from the above, a training need analysis was done for all the Power Utility Personnel. Based on the inputs received, a total of eighteen themes were designed and developed and are presently being delivered. The list of 18 themes is as under:

Sl. No.	Name of Themes	Applicability
	A. IT Training Themes Subjects (Part-A)	
1	IT General	Level A&B and Level C&D
2	IT in Distribution	Level A&B and Level C&D
3	GIS Applications	Level A&B and Level C&D
4	SCADA & Smart Grid Application	Level A&B and Level C&D
5	R-APDRP Awareness	Delivered by PFC
	B. Technical Training Themes /Subjects (Part B)	
6	Best Practices in Distribution Operations & Management System	Level A&B and Level C&D
7	Distribution Equipment – Technology and Applications	Level C&D only

8	Disaster Management, Electrical Safety Procedures and accident Prevention	Level A&B and Level C&D
9	Lineman Training – Operation & Maintenance of Sub-stations	Level C&D only
10	Change Management in Power Distribution	Level A&B only
11	Efficiency Improvement Measures in Distribution System	Level A&B and Level C&D
12	Financial Management of Distribution. Business	Level A&B only
13	Revenue Management & Loss Reduction	Level A&B and Level C&D
14	Metering technology & AMR Application	Level A&B and Level C&D
C.	**Support Themes**	
15	Communication &Customer Relations	Level A&B and Level C&D
16	Performance benchmarking and quality of supply and service	Level A&B and Level C&D
17	Material Management & Quality Assurance	Level A&B and Level C&D
18	Regulatory	Level A&B and Level C&D

2) Post Go-live Gap Analysis

Post go-live period is a transition phase for states which may observe resistance from utility personnel in the changed scenario. The training requirement in post go-live period is new, specific and more technical in the changed scenario. Further study inputs have been taken from various utilities for the post go live period. Based on the inputs following three major areas are identified for training in post go-live period:

2.1 IT system/SCADA

1. *General IT training for all employees*: This encompasses training from start like use of key-board, mouse etc. to self guided modules through screen shots etc.
2. *Training on basics of SCADA for all employees of utilities*: This is necessary as though power users would already been trained in detail on SCADA system but all the other associated staff would need to be sensitized about the system per se to bring in a level of acceptability of the system.

2.2 Specific business processes

1. Communication and networking
2. Distribution Transformer (preventive and break down maintenance)
3. AMR / Modem technology
4. GIS Mapping / Digitization
5. Billing (Prepaid / Spot Billing M/c)
6. Energy audit

2.3 Behavioural / Organizational Improvement

1. Change Management in the Power Distribution- Pros and Cons of the new system, re-orient the managerial approach
2. Business Process Re-Engineering
3. Communication and the customer relationship

3) <u>Methodology</u>

The training requirement in post go-live period is more technical in the changed scenario. Thus all possible methods may be adopted by utilities.

1. Classroom (Audio / Visual) , Field demo, practical through-
   - Partner Training Institutes (PTI) empanelled under RAPDRP
   - Other reputed institutes carrying out specific training (IITs/ IIMs)
2. Experience sharing with other utilities in India and abroad
3. Induction of experienced manpower from industry

C13	Incentive Scheme

<u>Activities in Pre Go-live Situation</u>

Following is pre-requisite during Pre Go-live Situation for Incentive Scheme implementation:

1. Formation of Incentive Approval Committee (IAC) and an Incentive Approval Sub-Committee (IASC) at appropriate level.
2. Maintain year wise AT&C loss baseline data and achievements against it.
3. Defining number of staff across all levels for each town including common staffs associated with towns that are eligible for incentive.
4. The Utility to draw up a list of staff that is eligible for the Incentive Scheme as per the Staff Eligibility Declaration Format which is to be approved by the IAC.
5. Nominate Authorized Signatory.
6. Creation of Utility Incentive Fund for years in which 15% Loss Reduction has not been achieved, but some amount of Loss Reduction is achieved.

<u>Activities in Post Go-live Situation</u>

When Utility achieves 15% loss reduction (irrespective of which year it is), it will submit the Incentive Scheme Claim to MoP/ PFC. This claim will be approved by MoP/ PFC and released to the State Utility. The State Utility will have to provide the following documentation in order to claim money under this scheme:

i. Signed and approved Incentive Scheme Proposal document

ii.   TPIEA Certificate exhibiting that AT&C loss condition is met

iii.   List of eligible Staff for which the incentive is to be disbursed

iv.   Certification that Utility has disbursed Incentive amounts from the Utility Incentive Fund for previous years (if disbursed), along with list of staff to whom they disbursed it to in each of the said years

v.   Certification that the utility has already deposited the matching grant amount in a bank account designated exclusively for the R-APDRP Incentive Scheme OR commitment that the utility will deposit within 15 days of the submission of this document

xxxxxxxxxxxxxxxxxxxxxxxxxxxxx