AUTOMATIC SPOT BILLING THROUGH IR/IRDA ENERGY METERS - A JOURNEY OF TSSPDCL

DISCOM OVERVIEW

Southern Power Distribution Company Of Telangana State Limited(TSSPDCL) is the largest Power distribution company (DISCOM) in the newly formed state of Telangana covering 14 revenue districts including Hyderabad Metro city. The DISCOM is a pioneer in adoption several technological innovations in Distribution sector like

- Companywide ERP for managing key internal process
- Consumer analysis Tool (CAT), Energy Billing System(EBS) & Monitoring & Tracking system (MATS) to analyze consumer data and improve operations
- Online tracking systems for key consumer interface process like – LT & HT applications, Net-metering applications
- GIS based consumer indexing, asset mapping

NEED FOR SPOT BILLING MACHINES

Due to the wide geographical spread & large consumer base, billing is one of the most time consuming and labour intensive activities. Any error in billing impacts billing efficiency which has a direct impact on distribution companies' financials. The manual nature of billing activity leads to several glitches like

- Mistakes in recording meter readings,
- Inability to record bills due to absence of people at home
- Intention under-reporting to avoid slab shocks etc.

With Growing population, increasing energy needs, increasing congestion in urban areas, it is imperative for DISCOMS to look at advancement in Information and Communication technologies and leverage those to streamline existing business process, improve operational efficiency and provide customer friendly services.

SOLUTION DESCRIPTION

A billing system with IR/IRDA Port enabled Meters coupled with Spot billing machines capable of using IR/IRDA mode of communication were chosen for implementation in TSSPDCL Area Since 2007.

Out of the total 61 lakhs metered consumers, IRDA compatible meters have been installed for ~42 lakh consumers and the system has shown tremendous impact in improving the billing efficiency and reducing the time taken for billing activity.

BRIEF OVERVIEW OF THE PROJECT

- TSSPDCL is associated with 61 lakhs of metered consumers covering 14 revenue districts of Telangana.
- Electronic meters have been replaced the old mechanical meters for accurate billing but the billing was done manually giving scope to human errors at times and also under billing.
- Elimination of human intervention by introduction of spot billing machines and static meters with IR/IRDA compatibility.
- The static meters were purchased and the billing parameters are captured in the SBM's without manual intervention and the bill printout is given on the spot to the consumer.
- Out of 61 Lakhs billed consumers IR/IRDA compatible meters were installed to 41.8 Lakh consumers
- Time taken for billing is reduced drastically and billing efficiency is improved.

IMPLEMENTED TECHNOLOGY

The IR/IRDA protocol was implemented by the meter manufactures at a baud rate of 1200/9600 bits/Second and the billing protocol was defined by the utility. The data downloading is available in battery mode as well as power ON mode from Distance of 3 feet

IR/IRDA Port meters installed at Consumer premises

Figure 1 IR/IRDA port Metering

The meter has the following features

- Display / Data down loading in absence of Power
- Large Size LCD Display for Simultaneous display of Billing Parameters :
- (a). kWh/kVAh
- (b). Maximum Demand
- (C). Average pf

- Other than the above, e IR/IRDA meters also captures Voltages and Current (For all the Phases)
- Optional RS 232 Port of Data download and GSM /GPRS Modem communication
- Logging and display of tamper data
- TOD, load survey, tamper information downloadable to CMRI
- Low voltage operation up 96 Volt (Ph-N).
- Compatible for spot billing machine to print bill on site

The spot bill machine while generating bill for each of the consumer downloads all the relevant parameter data(kWh, kVA, kVAh, P.F, CMD, RMD) from IR/IRDA meter.

Spot Billing machine

The spot billing machine communicates wirelessly with the IR/IRDA port meter, reads the relevant data and generates consumer bills on the spot. There is no manual intervention involved.
The Spot billing machine bill is immediately generated and the consumer can verify the details of bill and clarify any doubts with the personnel.

The relevant consumer data points like “last recorded reading, Monthly consumption and bill status is stored in the SPOT billing machine.

After returning from the field the field personnel syncs the data stored in the spot billing machines with the servers and the data is updated in the EBC system.

CHALLENGES FACED DURING IMPLEMENTATION

Consumer resistance

Resistance from consumer in upgrading from old mechanical meters to higher accuracy IR/IRDA, was overcome through focused education programs.

Limited availability of compatible meters

Since the technology was in a nascent stage, there was limited availability of meters & reliable manufactures in the market. The procurement was done in a phased manner to address this.

Up gradation of existing Spot billing machines

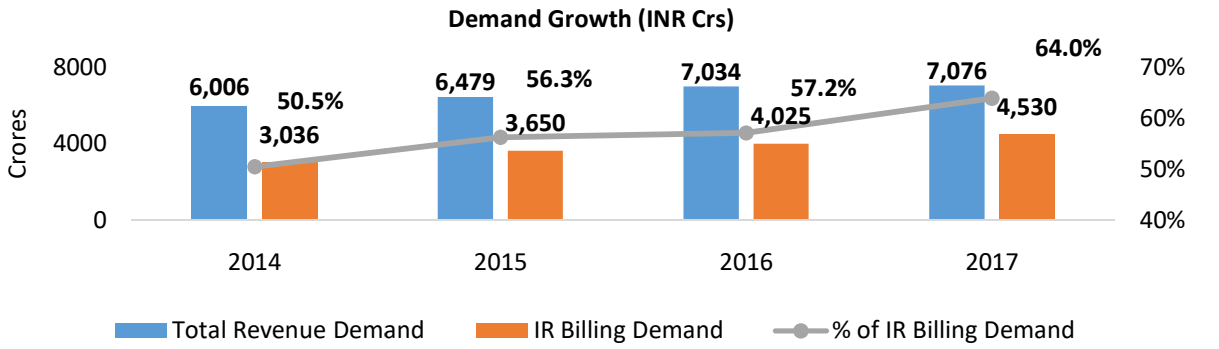
The retrofitting/up gradation of the existing spot billing machines was a big task until the availability of the IR/IRDA compatible spot billing machines. In addition extensive training programs were conducted to familiarize field personnel with the latest spot billing machines

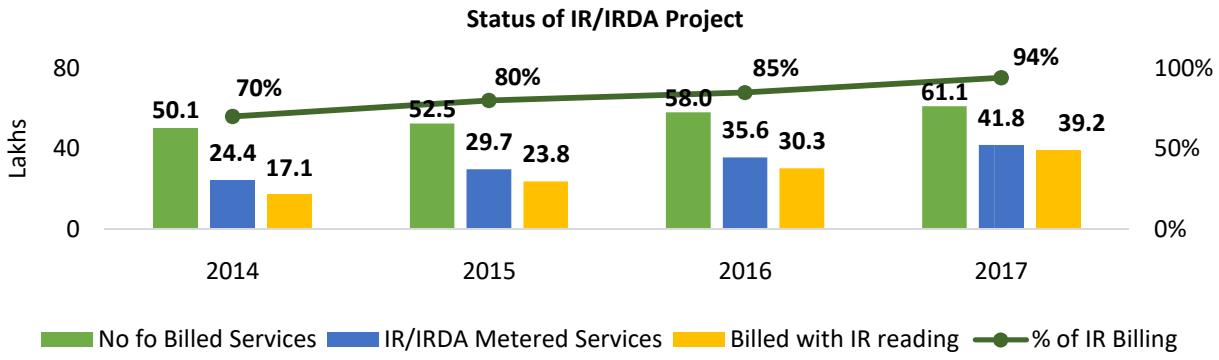
Integration with existing protocols

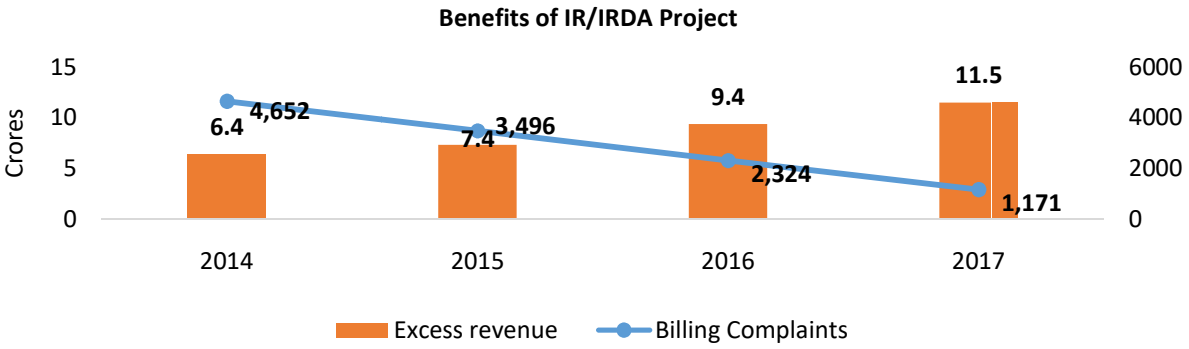
Integration of all the meters protocol into one software in SBMs was also a challenging task

BENEFITS REALIZED FROM THE PROJECT

With the introduction of IR/IRDA billing the billing efficiency improved to 100%. The commercial losses have drastically reduced with accurate billing and also eliminating the defects in the meter. Customer satisfaction levels have increased by leaps and bounds as the process was done in a transparent manner which is invaluable to any utility which is into foray of distribution business.







The cost benefit analysis revealed the payback of the project is about 3 years.

The project has helped the DISCOM achieve

- Increase in revenue (INR Crs) on account of switching to IR/IRDA billing
- Additional revenue on account of consumers exceeding their connected load (excess load via-a-vis contracted load): ~INR 35 Crs(during the last 4 years)
- Additional revenue on account of regularizing the incremental load by collecting the required development charges
- Metering related irregularities were identified through data captured by IR/IRDA meters
- Significant reduction of billing complaints during the last 4 years
- Transparency and on the spot billing by avoiding human intervention.
- To avoid revenue loss to the utility and also to unearth the hidden energy and demand.
- To enhance the consumer trust and satisfaction levels.