

The Value of AMR Technology

Northeast Utilities Chooses R300 Demand Meters for FlexAMR Project

background

The Background

For years, utilities with mobile AMR programs have been trying to find a way to manage the reading of watt-hours and watts demand for simple demand rates. The challenge has been to manage the meter reading routes so that meter readings were synchronized properly with a meter's self-read dates. In addition, the use of multiple AMR cycle reads would create large inventories of meters to manage as they were distributed and installed in the field.

Finally, the ability to relate multiple ERT IDs with one serial number, read dates, and generate the correct billing determinates has been an obstacle. We, at Northeast Utilities (NU), have found the solution in our Cycle Programmer Reader (CPR) system developed by Advent coupled with the Itron CENTRON® R300CD and SENTINEL® R300SD meters.

Cycle Program Reading (CPR)

The first step in implementing this system was to manage our programming processes such that meters are installed in the correct meter reading route in a timely manner. NU has 20 read cycles per month. It was critical that we maintained our existing read cycles to maintain a steady billing process and, therefore, a consistent revenue stream. Prior to this project, all meters were either factory or centrally programmed. Using our old processes, we would have created a large inventory (20 times more than normal) of time dependent meters on battery. Timeliness is required to minimize the time on battery even though the Itron meters could easily support more than a year on carryover. The CPR system allows NU to distribute programming to the district work center level giving us accurately programmed meters installed on the correct routes.

We order our meters from Itron with a generic (no self-reads) factory program created using PC-PRO+® 98 software. Following incoming sample testing, we send these meters out to the field districts in bulk sorted by service type. When the field is scheduled to install, for example, 96 meters for Cycle 15 reads, they use our CPR program to set those self reads at Cycle 15.

This cycle number is correlated with a pre-determined self-read date. In the case of the SENTINEL meter we program the meter with a custom-billing schedule that contains the self-read dates for 25 years. The district programmers can do the same for other cycles as the installation schedule requires.

At the same time of the cycle programming prior to installation, CPR is also used to ensure meters are installed properly. When the meters are programmed for the cycle, they are also quickly interrogated for critical program parameters, creating a record file. These records are transferred from the laptop to the database from the district on a nightly basis.

Features of the CPR:

- > Creates flexibility in deployment
- > Reduces meter inventory
- > Simplifies programming for all 20 read cycle dates
- > Maintains meter history database

application

Application

NU realized that to manage watt-hour and watt demand reads through two ERTS, we needed our own system to do the conversions outside the billing system. We developed software enhancements to our existing billing system to meter reading system interface that met our requirements.

This software acts as a handshake to marry the reads (watt hours and watts demand) into one going up to the billing system and to separate the two going down to the drive-by data collector. The system is made more flexible by having the handshake manage any conversions; therefore, we do not depend upon the meter for the read dates.

Benefits

Results from changing over to solid-state metering were 1.2% greater accuracy in the CENTRON vs. the J5 and a 0.2% revenue gain. When applied across our customer base, this will result in a net revenue gain of \$4 million dollars per year.

Today, we are reading 80% of our residential and C&I customers at 99.3%.

We are recognizing a 13% rate of return on investment with less than five years payback.



results

FlexAMR: NU's 100% AMR Deployment Strategy

We started doing "surgical" AMR in the early 1990's by implementing mobile technology. In our first pilot, we installed 3,000 meters using Itron ERTs with the J5 meter. As time went by, we were large users of the R100, R200 & R300 series of meter interface radio frequency modules. These proved to be accurate and easy to use. In 1998, when the CENTRON electronic residential meter came out, we became one of their original CENTRON C1SR customers. By year-end 1999, we had installed approximately 450,000 residential AMR meters (about 25% of our system).

In late 1999, NU formed a team to evaluate the latest AMR technologies, benchmark our position, and refine our AMR strategy moving forward. After an extensive effort, NU developed the FlexAMR strategy to reach 100% AMR deployment in Massachusetts and Connecticut by 2004.

This FlexAMR strategy emphasizes delivering NU's and our customers' data needs with the most efficient, cost effective and flexible AMR technologies. The mobile AMR technology we had chosen to date was proven and well suited to meet the requirements of nearly all of our customers. This includes the 113,000 customers in our C&I demand rate. Itron worked closely with us to develop the R300 Demand product that fit our functionality and cost needs. For customers who require more extensive or frequent data, we have employed other AMR technologies. These include inbound telephone (shared line), analog modem (dedicated line) and wireless digital modem.

Results

The project is well underway. From 2000 to early 2003, we have installed over 700,000 new R300 meters with a goal of 1.38 million total. Over 300,000 of these meters have been CENTRON meters. Given the fact that we installed these meters with our own personnel and have not brought in contract installers to help us, we are proud of the progress we are making. We have also been able to work with the local union to minimize the effect of this AMR program on our meter readers. NU has offered them other positions when available to address needs that often bring the benefit to the employee of more training and a higher paying job.

Future Plans

NU is looking at various new technologies for implementation in 2003-2004, working with Itron and their third-party vendors for various applications:

- > Inbound telephone—Using the SENTINEL meter with the Nerotec module.
- > Analog Modem—Using the SENTINEL with Phone Line Sharing on the customer's dedicated line to deliver TOU and load profile data monthly.
- > Wireless Digital—Using the SENTINEL meter with the NERTEC wireless module to deliver TOU, load profile and advanced data daily.

Itron has been there all the way to help us achieve our goals. One of the reasons we have stayed with them over the years is that they listen to us! They are willing to make product enhancements based our needs, and for this we are very happy. One example is that we at Northeast Utilities are very environmental-conscious, so we wanted the mercury removed from the display. Itron did this! In addition to their willingness to listen, our Itron Sales Representative is available to meet with us and assist us in any way he can. It is a comfort to us knowing that we do not have to go through several layers of management to get the attention we need when we need it! It works out to be a very good partnership!

This story, written by Dave Scott and Gordon Belcher of Northeast Utilities, first appeared in the Itron (formerly Schlumberger Electricity, Inc.) customer magazine, Systems Watch Spring 2003.

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