



City of Grand Island

Tuesday, April 3, 2012

Study Session

Item -3

Presentation Regarding Automated Meter Reading

Staff Contact: Tim Luchsinger

Council Agenda Memo

From: Timothy Luchsinger, Utilities Director

Meeting: April 3, 2012

Subject: Presentation Regarding Automated Meter Reading

Item #'s: 3

Presenter(s): Tim Luchsinger, Utilities Director

Background

Automated Meter Reading (AMR) has been used by utilities to allow reading of consumption meters for electricity, water and natural gas to be performed by mobile or remote sites. Its successor, Advanced Metering Infrastructure (AMI), allows remote meter reading, but also allows additional communication to the utility and the consumer and is a component of the “Smart Grid” that is being developed to promote energy efficiency.

Discussion

The Utilities Department will provide an overview of AMR/AMI technologies, including some case studies of applications with other municipal utilities, and possible ways for the City to approach its implementation within the Department.

Conclusion

This item is presented to the City Council in a Study Session to allow for any questions to be answered and to create a greater understanding of the issue at hand.

Automatic Meter Reading/ Advanced Metering Infrastructure

City Council Study Session


April 3, 2012

Meter Nomenclature

Automatic Meter Reading (AMR)

-  One way communication – Transmit

Advanced Metering Infrastructure (AMI)







-  Two way communication – Transmit and receive

Automatic Meter Reading (AMR)

- One way communication – Transmit
- 20 year history
- Radio (Walk-by, drive-by)
- Replaces manual meter reading

AMR Installation


Lincoln, NE Water System


-  80,000 meters
-  10 year project (in-house installation), completed 2008
-  \$12,000,000 installed cost
-  Mobile collector
-  Estimated 14 year replacement life
-  In replacement process, estimate 20 year life for new meters

AMR Installation

Fremont, NE Utilities

-  14,500 electric meters

-  11,100 water meters

-  Started in 2007, driven by meter reading wages, workers' compensation costs

-  3 year project

-  \$2,500,000 hardware cost, installed w/in-house staff

-  Mobile collector

Advanced Metering Infrastructure (AMI)

- Two way communication – Transmit and receive
- 4 to 5 year history
- Radio, cable, fiber optics, Internet, cellular phone
- “Smart Grid” functionality
 - Remote meter reading by utility and customer
 - Disconnect and connect from central location
 - Remote outage indication
 - Usage quantities > five minutes
 - Pre-pay billing

AMI Issues

- Data Security

 - Owned network

 - Leased network

- Data Privacy

 - http://www.publicbroadcasting.net/netradio/news.newsmain?action=article&ARTICLE_ID=1905427

- No standard protocol

 - Communication media

 - Operating system electric/water meters

- Electric systems have limited experience, usually funded by DOE grants

Boulder, CO AMI Project

- ☞ Xcel Energy
- ☞ Pilot program to replace one-half of Boulder's electric meters (25,000), included electric system component upgrades, 300 miles of fiber network
- ☞ Estimated cost \$15,000,000
- ☞ Final cost \$45,000,000
- ☞ Eliminated meter readers, added IT, net gain in staff

Naperville, IL AMI Project

- 🌊 City of Naperville
- 🌊 57,000 electric meters
- 🌊 Estimated cost \$22,000,000
- 🌊 DOE matching grant for \$11,000,000
- 🌊 System testing in progress, one year meter installation planned

Grand Island AMR/AMI Installation

- 25,000 electric meters
- 15,000 water meters
- \$8,000,000 - \$10,000,000 capital cost
- \$2,000,000 installation cost
- Three year completion to allow meter reading benefits


Grand Island Meter Program

- Electric meters owned and replaced by GIUD
- Water meters owned and replaced by customer, GIUD would need to assume ownership for AMR/AMI, ~ \$125,000 annual cost for new meters
- \$325,000 annual meter reading budget

Cost/Benefit

Costs

-  \$8,000,000 capital cost




-  Installation cost – contractor/in-house


-  Additional IT staff – network provider/in-house

-  Annual meter replacement

Cost/Benefit

Benefits

-  \$325,000 meter reader staff reduction annual savings
-  Connect/disconnect functionality – reduce account receivables
-  Outage duration reduction – keep customers on

 Cost/Benefit = 25 year payback

AMR/AMI Conclusions

- Conversion to automated metering not solely supported by meter reading cost/benefit
- Other possible cost saving benefits for AMI
- Customer demand for AMI applications could be a primary driver

AMR/AMI Conclusions (cont.)

- AMI standard platform likely in near term, monitor market and evaluate cost/benefit periodically
- Evaluate technology starting with substations and large industrial customers

Merrick County Pilot Program?

- Approximately 180 customers
- Upgrade existing electric meters
- Water meters included with UPRR project
- Communication network to be determined

Questions/Discussion