



U.S. Department of Energy

Office of Electricity Delivery and Energy Reliability

City of Fulton

Fulton, Missouri

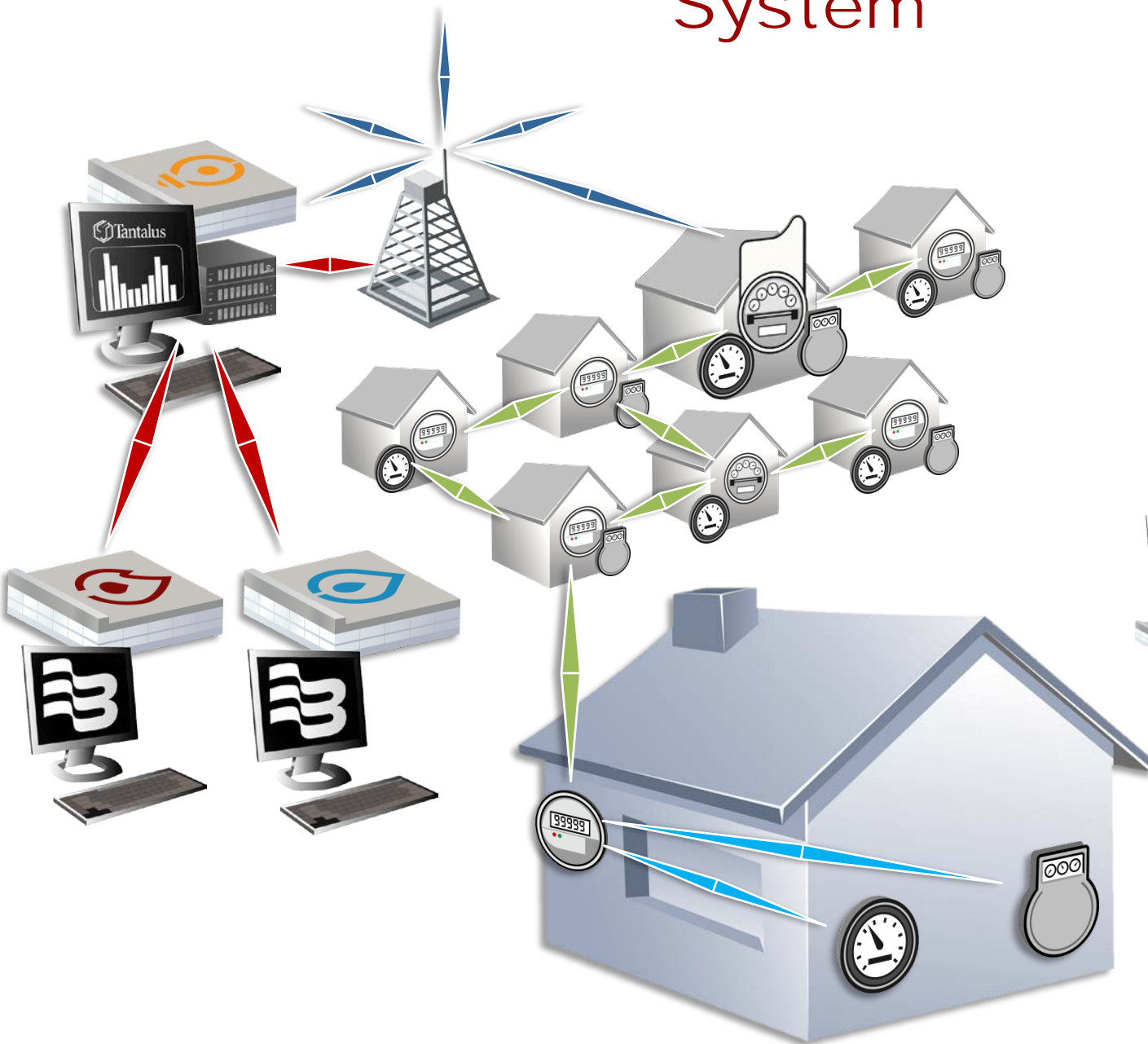
Improving Utility Service Through AMI
Technology

Advanced Metering Infrastructure

Project Basics:

- 5,700 AMI Electric Meters (Residential meters equipped with Remote Disconnects)
- 4000 AMR Natural Gas Meters
- 4500 AMR Water Meters
- 100 Programmable Thermostats

AMI & AMR Radio Communication System



E / W / G



- TUNet serves as backbone network for all E/W/G meter data



- Badger ORION water & gas meters communicate with TUNet electric meters



- Badger ORION water & gas meters transmit via 900 MHz



- TUNet interfaces with Badger CONNECT / READCENTER software



- Operates within multi-commodity utilities or with separate utilities

What are we doing with the Data:

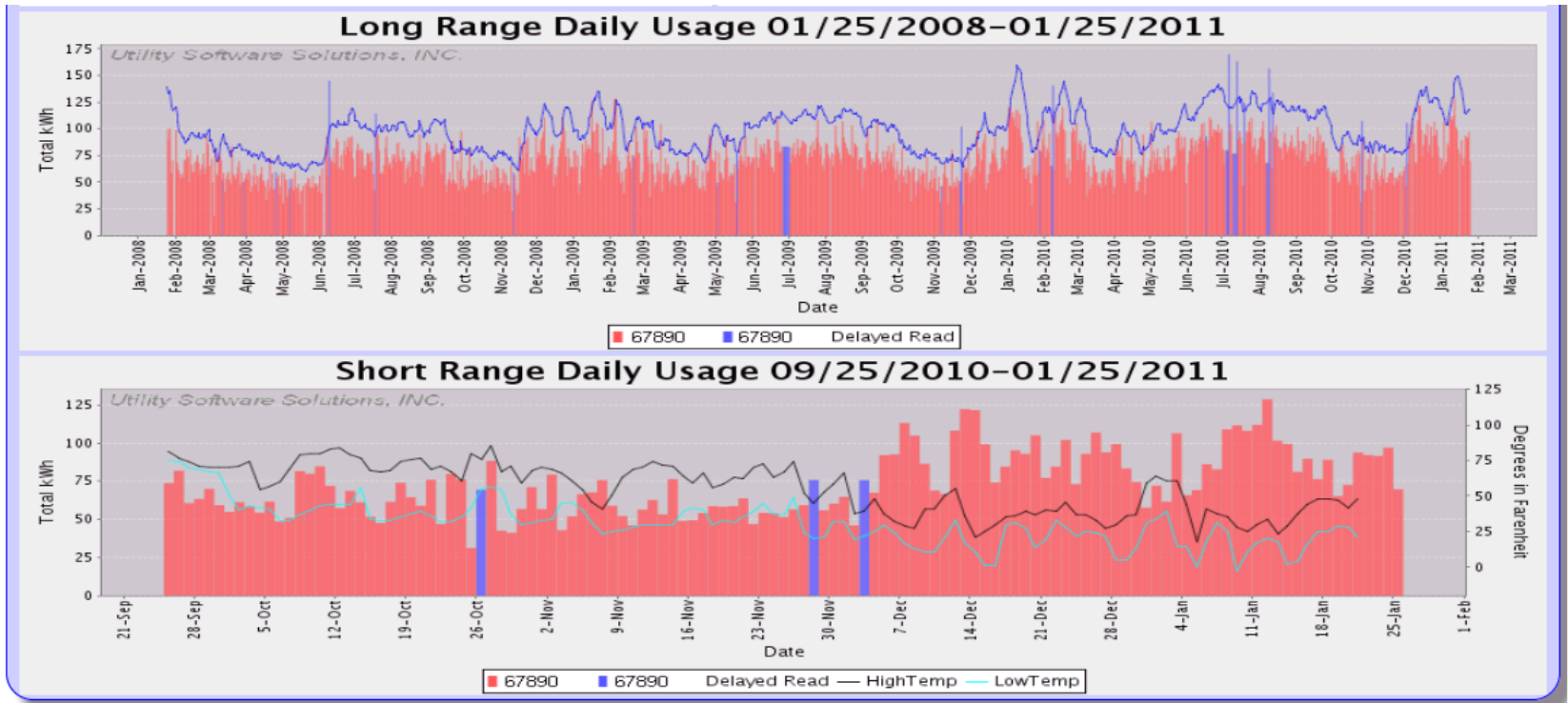
- Validating and Storing
- Customer Web portal
- Time of Use Pricing Program
- Load Management via Programmable Thermostats
- Voltage Monitoring
- Outage Management

How are we doing it?

Vendors/Partners:

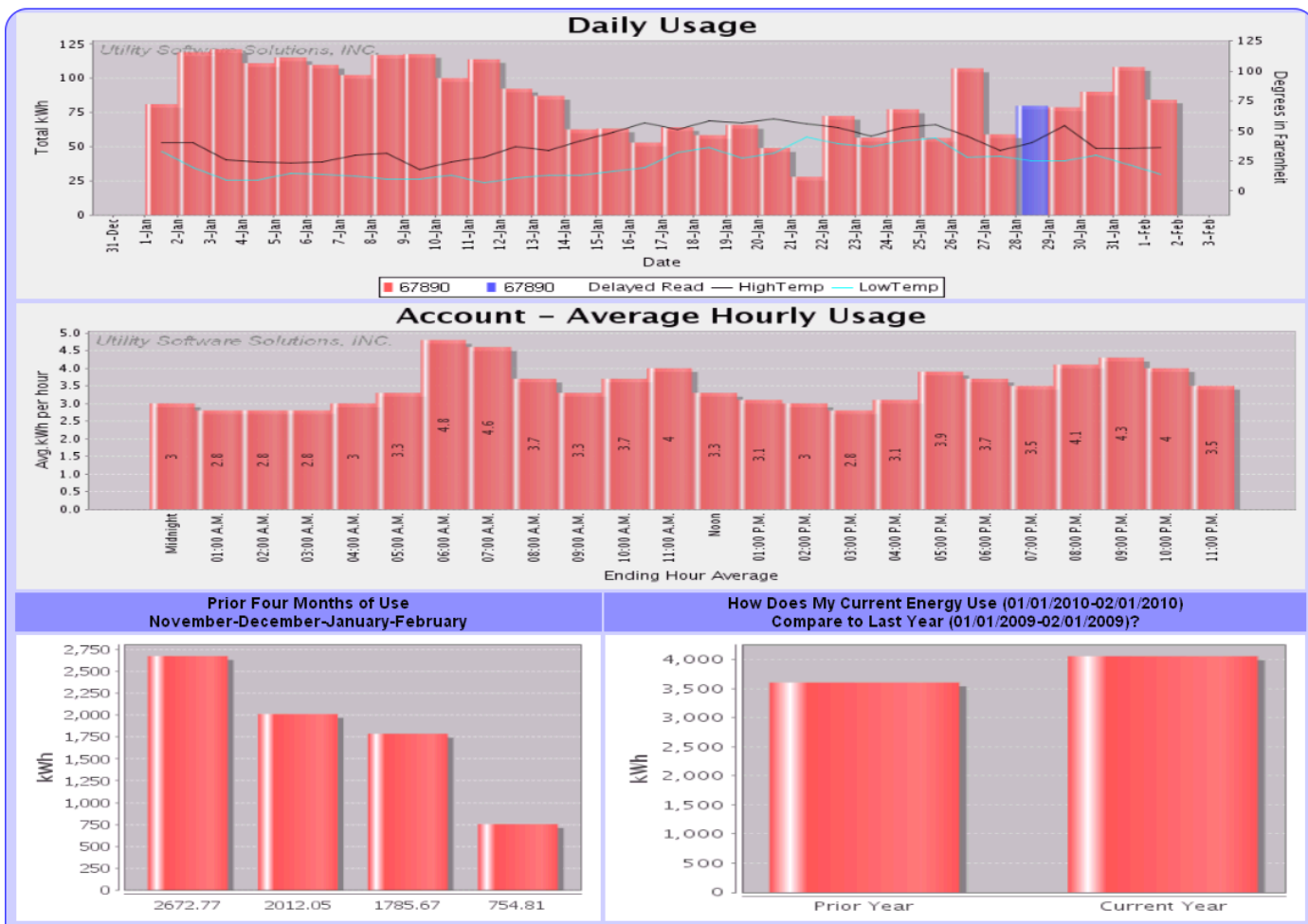
- Springbrook (billing)
- Survalent (SCADA)
- Tantalus (Communication)
- GE & Itron (Meters)
- USSI (MDM)
- Mpower (Outage Mapping and GIS)
- NDimension (Cyber Security)

USSI Meter Data Management





USSI Continued



mPower OMS/GIS

The screenshot displays the mPower OMS/GIS interface within a Windows Internet Explorer browser window. The main map area shows a residential street grid with various utility assets like transformers and poles. Several tool windows are open:

- Auto-Reporting (AUTO REPORT):** A dialog box with a dropdown menu set to "Consumers" and a checked option "Open in new window". Below the text "These reports are available based on your selection and reporting access levels." are "OK" and "Cancel" buttons.
- Tracing Module (TRACING):** A window with a "SHOW DETAILS" button, a "TRACE SAVER" button, and a "TraceDOWN" button. It features a diagram of three green nodes connected by lines.
- MEASURE:** A small window with a "MEASURE" button.
- Outage Report:** A window displaying a table of outage data.

Data Tables:

Last Name	Address	Zipcode	Meter #	Phase	KWH Feeder
EWING, JORDAN L	000305 COLUMBIA	77040	17104687	Phase: B	1021 KWH Feeder: 6
WINGFIELD, JESSICA J	000192 MERRY OAKS	77040	52661136	Phase: B	1150 KWH Feeder: 41
EWING, STACY L	000192 MERRY OAKS	77040	54497411	Phase: C	823 KWH Feeder: 21

TRIP#	TRIP DATE	TRIP TIME	TRIP MILEAGE	TRIP FUEL	TRIP COST	TRIP TYPE	TRIP STATUS	TRIP COMMENTS
240101	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
4401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
5401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
6401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
7401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
8401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
9401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
10401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
11401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
12401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
13401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
14401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
15401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
16401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
17401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
18401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
19401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
20401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
21401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
22401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
23401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
24401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
25401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
26401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
27401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
28401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
29401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
30401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
31401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
32401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
33401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
34401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
35401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
36401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
37401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
38401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
39401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
40401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
41401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
42401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
43401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
44401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
45401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
46401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
47401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
48401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
49401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
50401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
51401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
52401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
53401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
54401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
55401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
56401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
57401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
58401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
59401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
60401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
61401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
62401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
63401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
64401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
65401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
66401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
67401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
68401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
69401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
70401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
71401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
72401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
73401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
74401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
75401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
76401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
77401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
78401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
79401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
80401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
81401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
82401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
83401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
84401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
85401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
86401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
87401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
88401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
89401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
90401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
91401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
92401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
93401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
94401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
95401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
96401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
97401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
98401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
99401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	
100401	11/11/2009	08:00	10.5	1.2	12.00	REGULAR	COMPLETE	

Current State:

- City Staff has deployed 95% of Electric Meters in the field.
- 100 gas and water still in test phase.
- Electric System has been accurately mapped.
- System integration is in the works.
- 5 customers (0.1 % of the Customer base) have expressed concern over health affects of the meters.

What we would Change the Most?

- Wasted Time Writing RFP
- Demand for more onsite presence by vendors

Questions?