City of Fife, Washington

Case Study

Kurt Hospenthal,
Public Works Superintendent

sensus

The Measure of the Future

UNITED PIPE & SUPPLY

Case Study

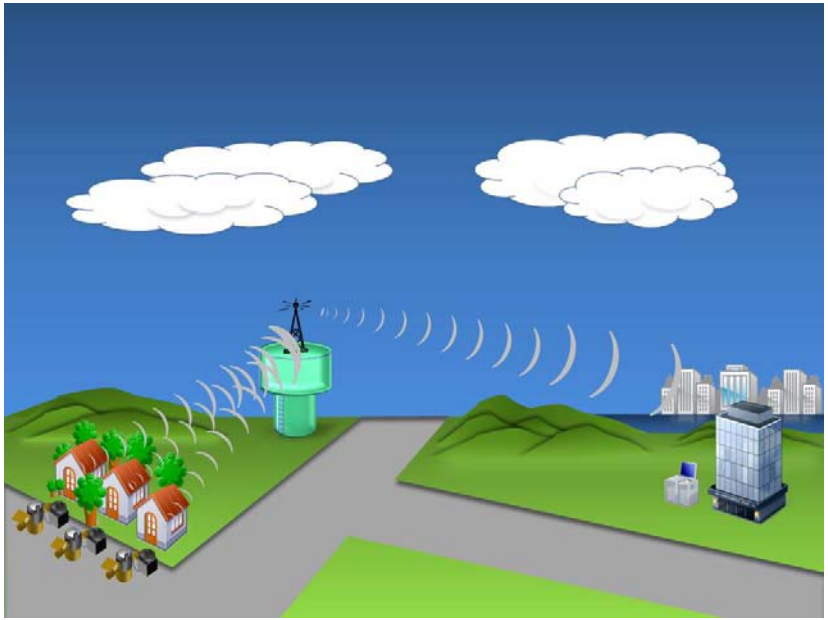
Day 2 Considerations

City of Fife Statistics

- Heavy Industry
- Extremely Noisy RF Environment
- 2,350 TouchRead Meters
- 6 Square Miles of Service Area
- Bi-Monthly Billing (Springbrook)
- 48 Working Hours To Read Meters
  - Did not include the 20-30 Re-Reads Each Month

City of Fife Statistics

- Went out for an RFP
  - Included Installation
  - 5 Responses
- United Pipe & Supply was selected
  - Cannon Construction (Sub-Contractor)
- Key Factors
  - Simple
  - With the Port and metro area RP was a concern
    - Primary Use Licensed Frequency System
  - Hourly Read w/ Leak Detection
  - Water Proof TouchCoupler Connection
  - Fully Functional Dual Port Radio
  - 20 Year Warranty
  - Local Support



Tower Gateway Basestation - TGB

- NEMA-4 Rated – Highly Secure
- Heated and Air Conditioned
- 8 Hour Battery Backup standard

Outdoor TGB

OR

Indoor TGB

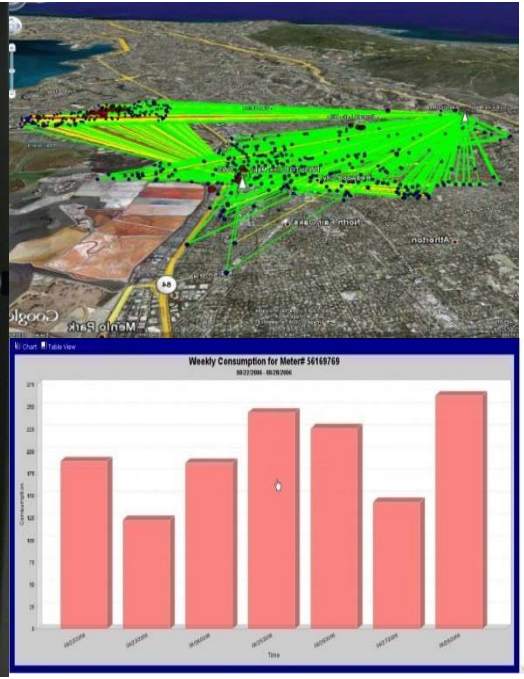
Sensus SmartPoint

- Single and Dual Port Endpoints
  - No Compromise on Dual Port
- TouchCoupler Connection
  - 100% waterproof and modular
- Transmits 2 Watts up to 6 times per day
- Delivers 24 readings per day for 20 years
  - Nationally Published Warranty

FNP – Repeater

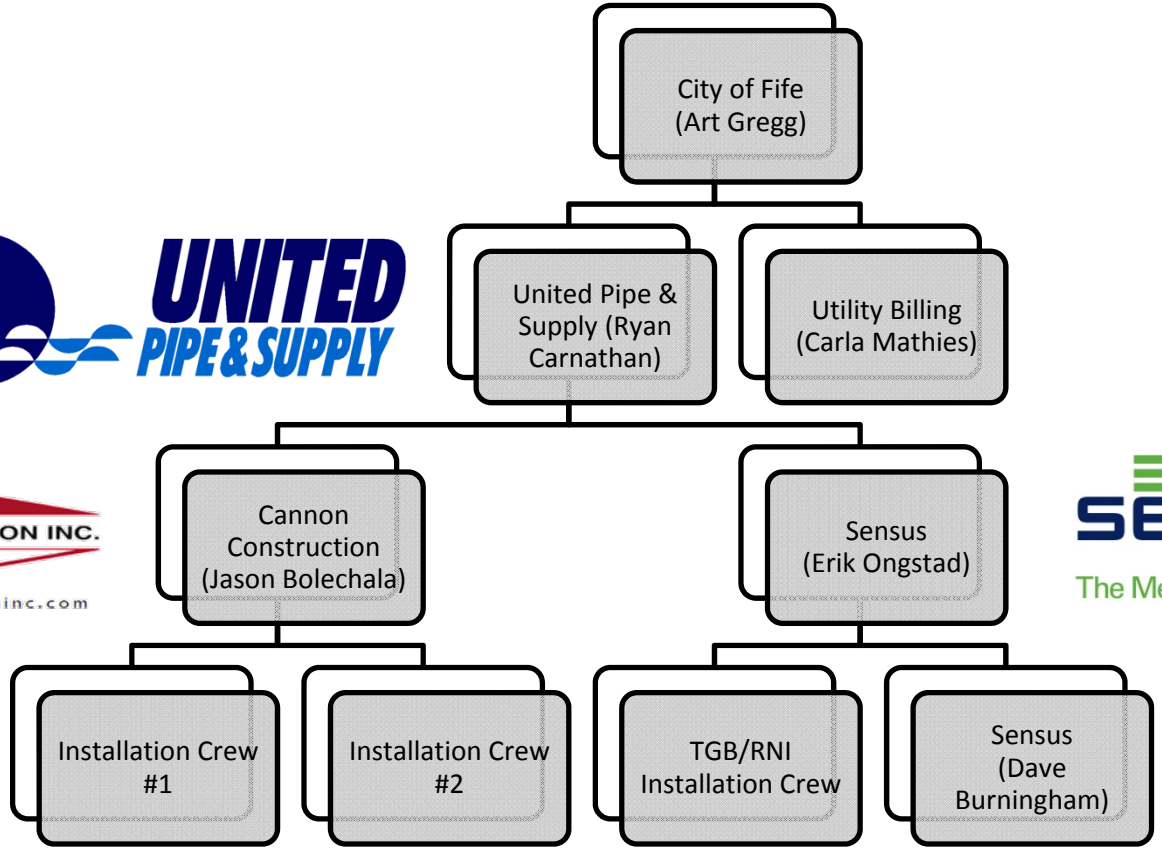
- Repeats meter reads from hard to read locations
- Battery backup supply included
- NEMA 4 Weather Enclosure

Regional Network Interface



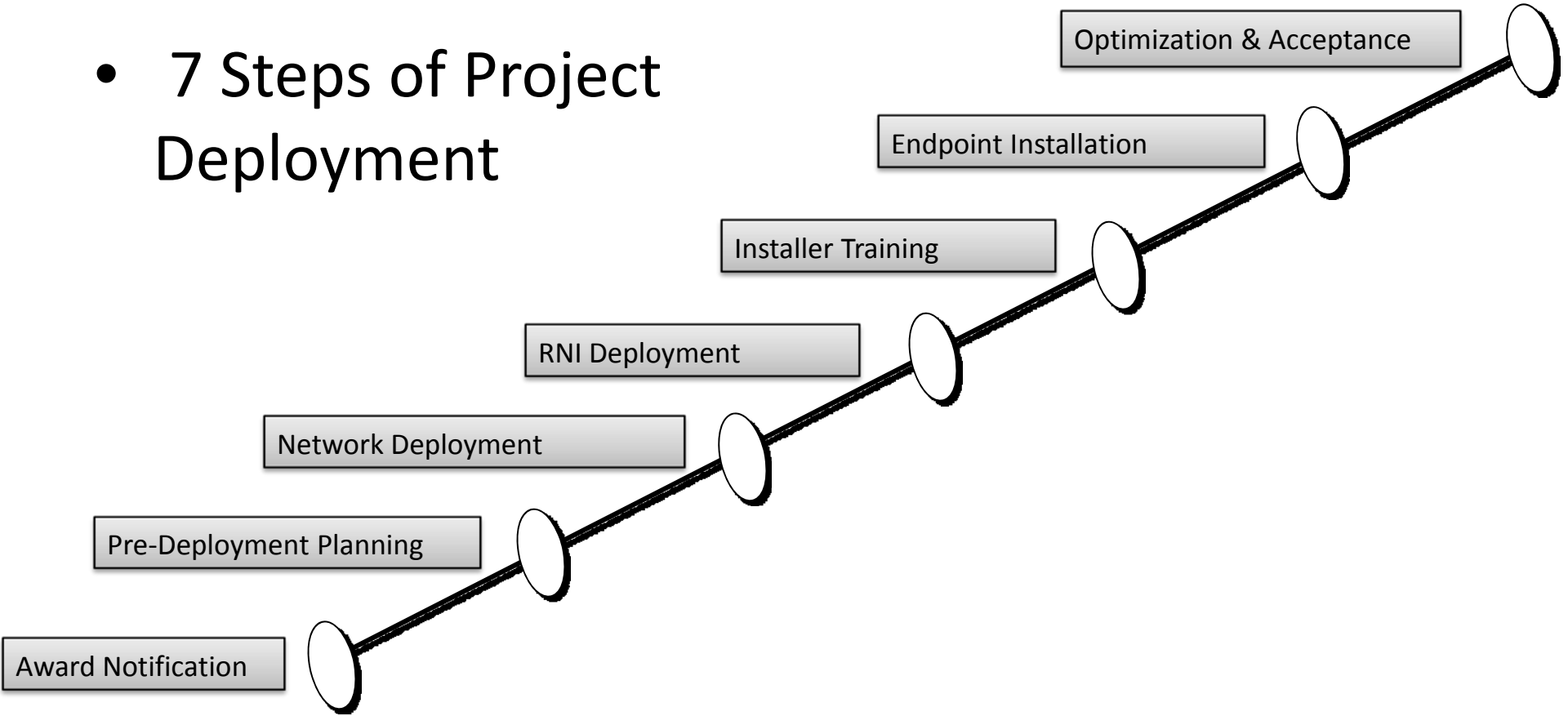
- Software and servers
- Web interface
- Provides reading files, reports, queries System Diagnostics
- At least 13 months hourly reading data warehouse

Project Team



Process Overview

- 7 Steps of Project Deployment



Installation Timeline

- Kick-Off Meeting (September 4, 2008)
- TGB/RNI Equipment Arrive (November 14th)
  - Including SmartPoint Radios
- TGB Installed by Sensus Sub-contractor (Nov. 18th)
- RNI Installed by Sensus Technicians (Nov. 18th)
- City sent notices with utility bill (November Billing)
- Cannon Construction and city staff receives installation training (Nov. 19th)
- Installation Completed in 27 Days (Jan. 23rd)
- Sensus Turns Over Ownership (Jan. 30th)

Light tower at City owned park

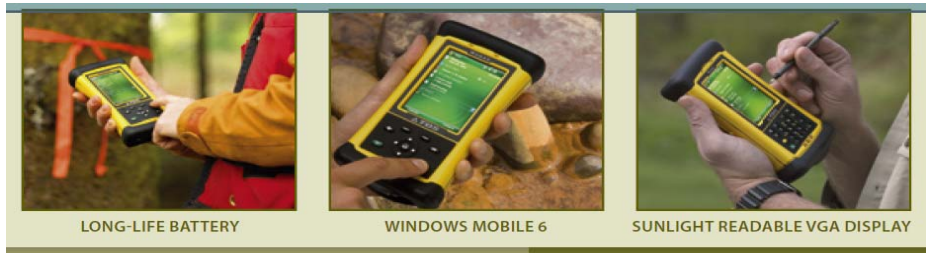
RNI Deployment

- Install RNI in Fife's IT Room
- Establish Network Communications to TGB's
- Setup Remote Access Thru Firewall for Tech Support
- Setup User Accounts
- Setup Data Exchange with Springbrook

Regional Network Interface (RNI)

Installer Training

- Train Installers on:
  - Handheld Operation
  - Proper Endpoint Installation
  - Proper Documentation of Work Orders
  - Verification of Endpoint Activation
  - Safety & Security

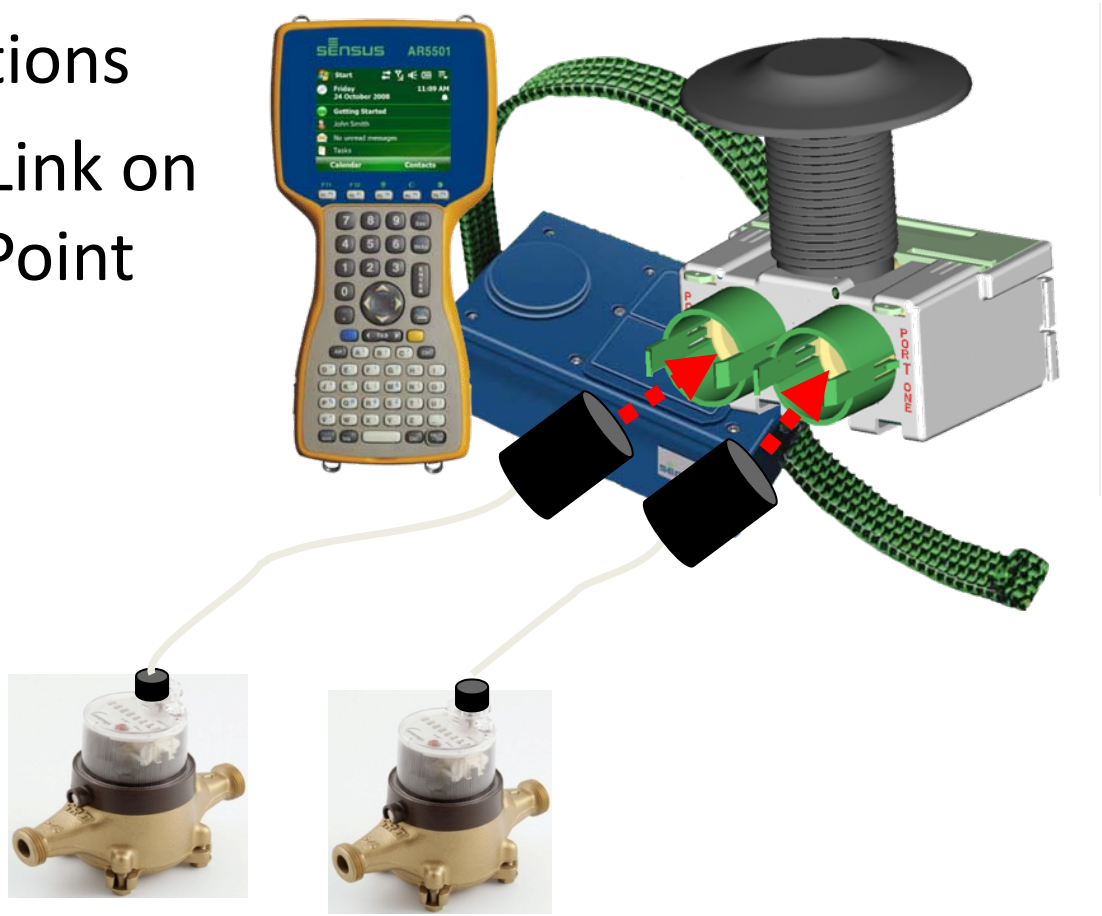


Sequencing of Installation

- Installation started after final billing cycle of the year was complete.
- Followed reading route from Fife billing software
- Started with commercial area of town
  - This allowed for January billing to be quick for Fife meter reading crew, since installation was not complete.
- Reviewed installations weekly to verify performance

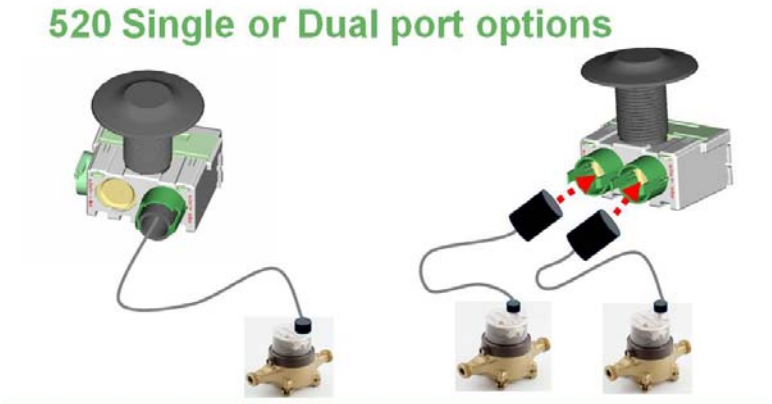
Activation

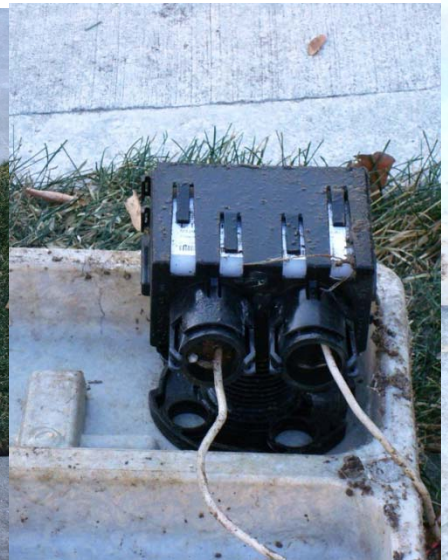
- Make All Connections
- Place Command Link on bottom of SmartPoint
- Activate



Dual Port Benefits

- No loss in functionality (hourly reads) or battery life (20 year warranty)





Meter Reading During Deployment

- Bi-Monthly Billing
  - November, January, March
- January billing was the only cycle affected by timeline.
- Pulled all available readings from the FlexNet System
- Moved any non-FlexNet meters to existing handheld system for city crews to go read.

Challenges

- Weather
  - Sensus TGB/RNI production was impacted by Hurricane “Ike” in September
  - Snow Storm (Dec. 20-26th)
  - Flooding in Fife (Jan. 7-9th)
- Data Entry
  - Installation was going faster than data entry

Budget Performance

- Original Quote: $490,061.51
- Total Project Cost: $506,588.23
  - The City of Fife identified an additional 107 services
- System is performing better than we expected!
  - Budgeted 3 FNP Repeaters
    - Only using 2 of them
    - Considering turning them off
- Installation came in right on schedule

Utility Billing –

Easy drop down menus

Sensus Metering Systems
Meter Data Manager (MDM)

Version 2.41

© Copyri

Options

- FlexNet
  - Defaults
  - Reports
- System
  - General
  - Monitor
  - Error Log
  - Backup/Restore

Command: <none> Sort by: Name

Name	Status	Error	La		
Entire System	Complete		06-09:		
NonRouteCollector	Complete		06-10:		
z Commercial	Complete		06-10:		
z Deduct Meters	Complete		06-10:		
z Government	Complete		06-10:		
z Industrial	Complete		06-10:39:18am		
z Irrigation	Complete		06-03-2009 10:52:19am	220/220	<none>
z Multifamily	Complete		06-03-2009 10:38:57am	141/141	<none>
z Single Family	Complete		06-03-2009 10:51:34am	1523/1523	<none>

Options

<none>

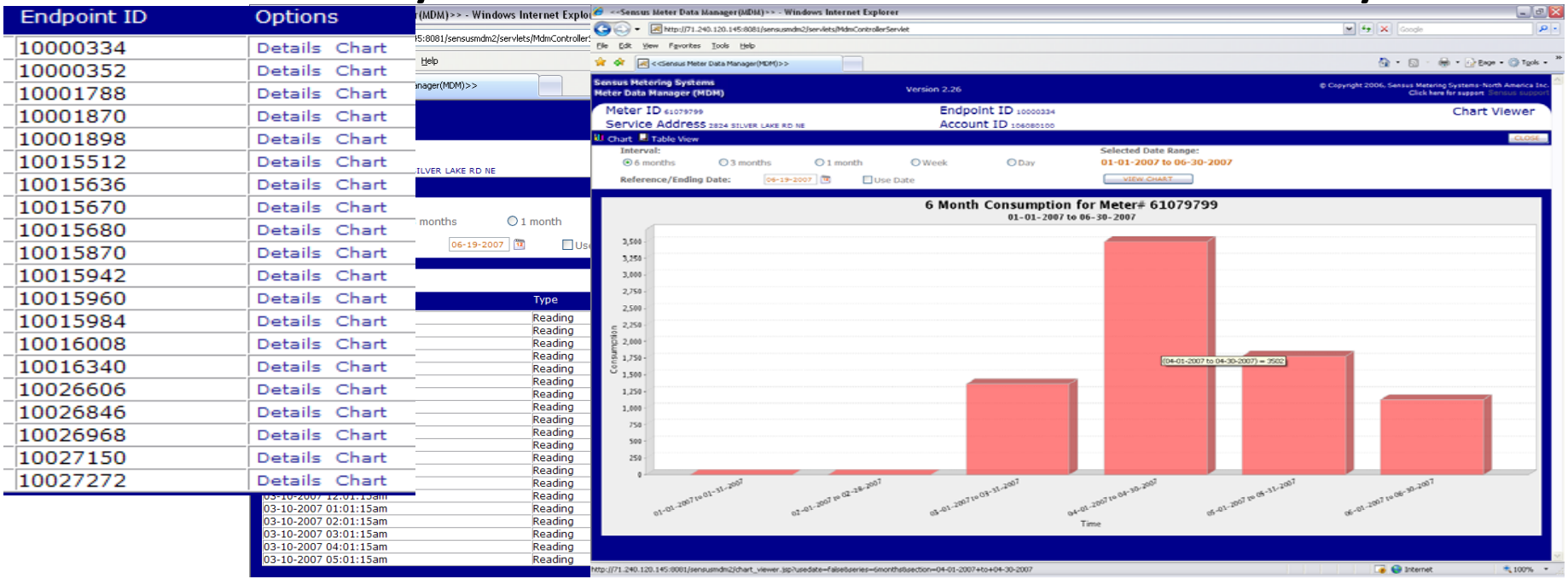
<none>

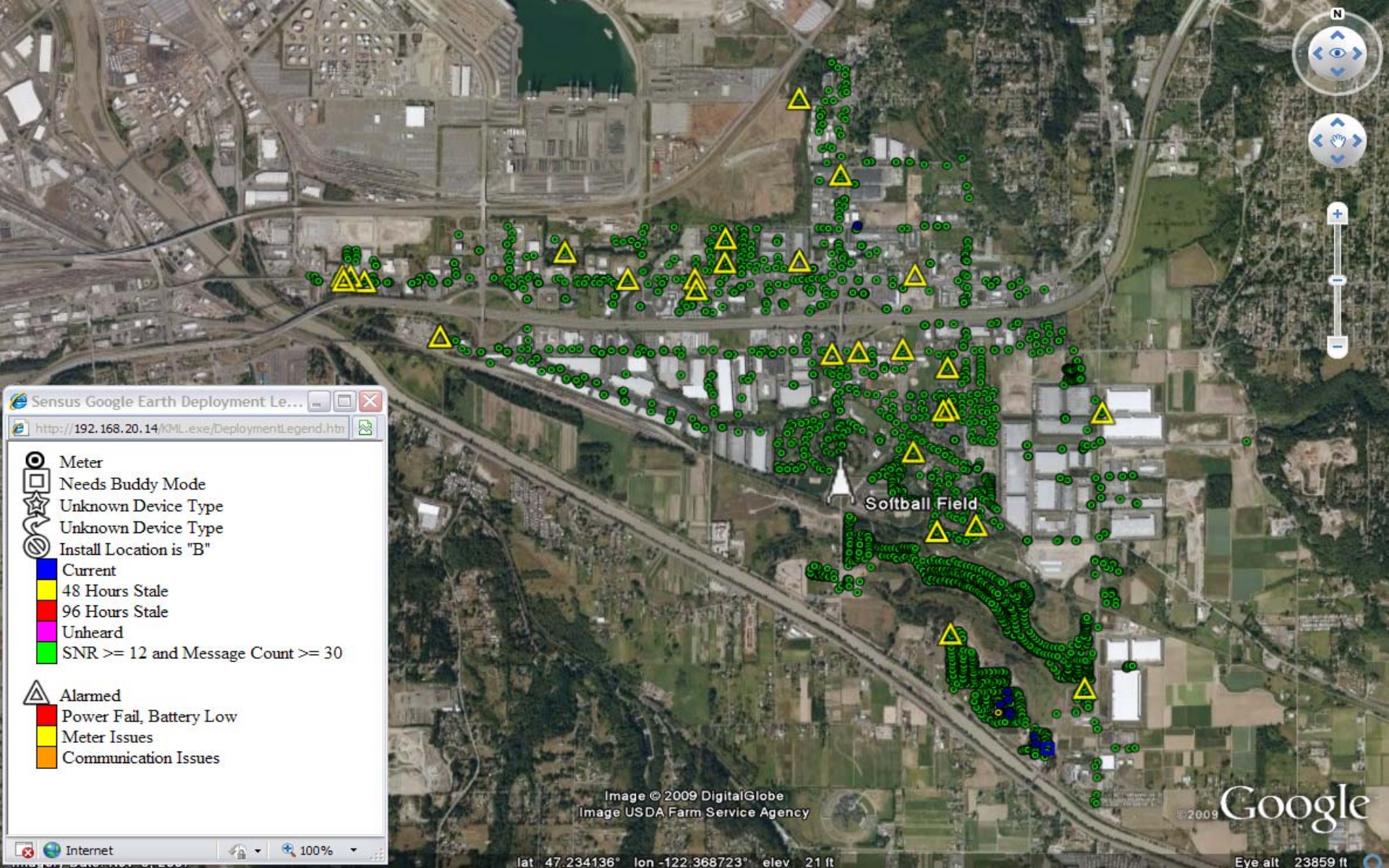
<none>
Clear
Import
Read
Process
Backup
Reprocess
Export
Report
Restore

Configure

Customer Service

- When a call comes in you will be able to view the history in a chart or tabular form easily.

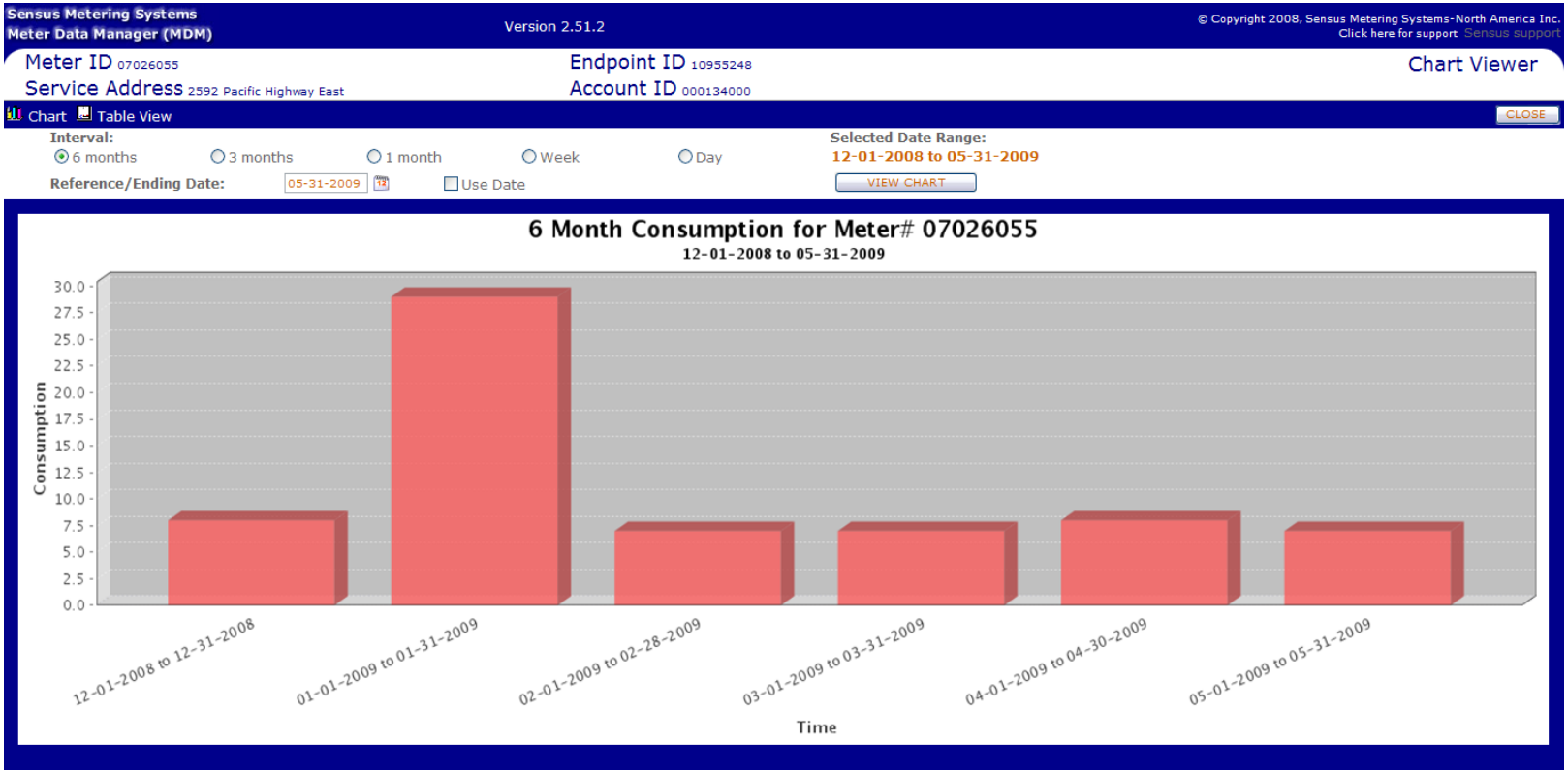



Sensus Google Earth Deployment Le...
http://192.168.20.14/KML.exe/DeploymentLegend.htm
Meter
Needs Buddy Mode
Unknown Device Type
Unknown Device Type
Install Location is "B"
Current
48 Hours Stale
96 Hours Stale
Unheard
SNR >= 12 and Message Count >= 30
Alarmed
Power Fail, Battery Low
Meter Issues
Communication Issues
Softball Field
Image © 2009 DigitalGlobe
Image USDA Farm Service Agency
Google
Internet
100%
lat 47.234136° lon -122.368723° elev 21 ft
Eye alt 23859 ft

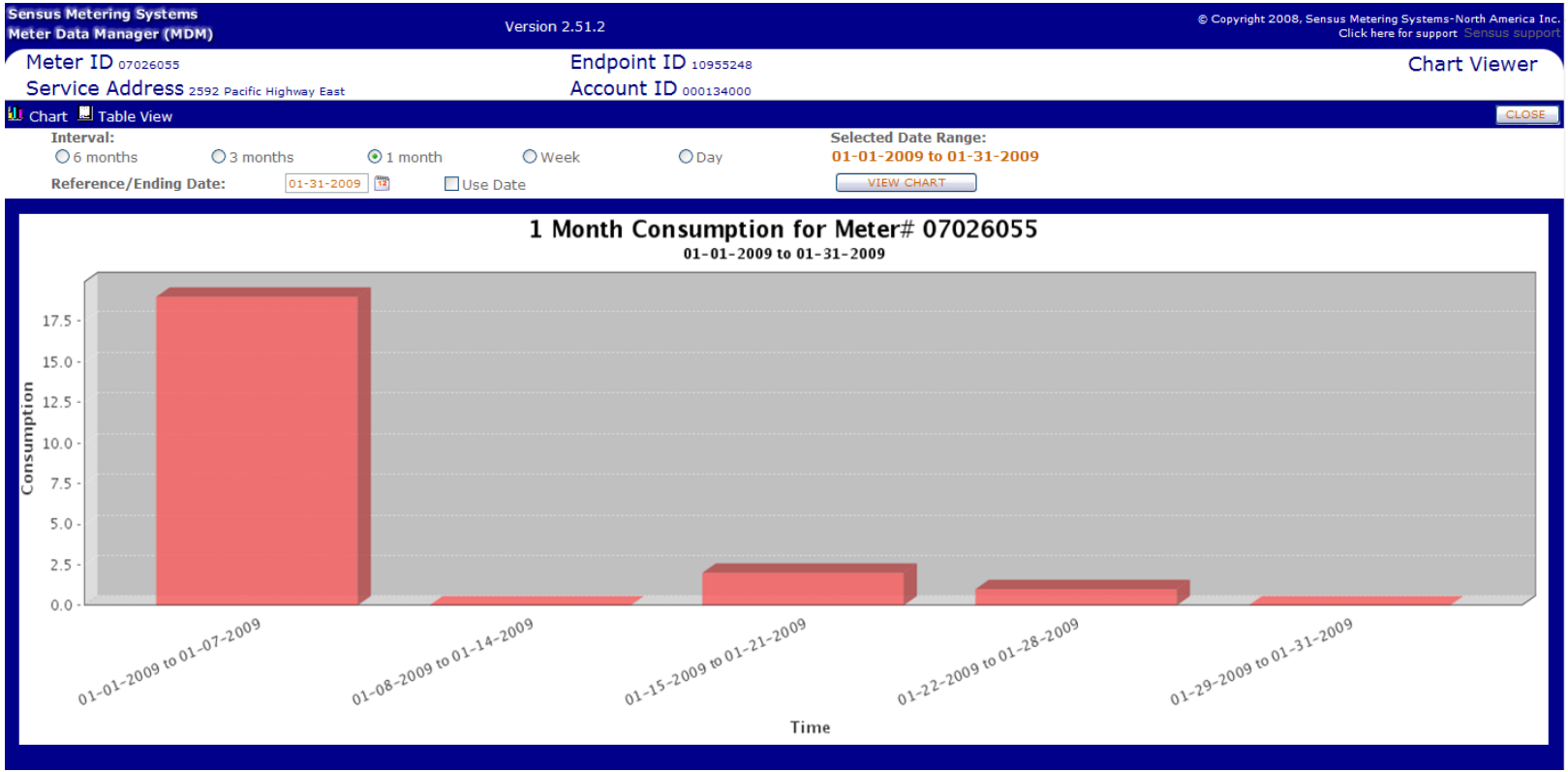
Showing meters 1 to 100 of 2414 >>

	ID / Type	Date Inst	READ RIS %	30DY RAW %	24HR GAP CNT	BUDDY NOISE	P - A / 2-SIG	kHz Ofst	TWR DST (MI)	TWR REP	METR RI	XMT INT	MODE	ALRMS	XMT CNT	BUD OTHR	BUD ME	MAX GAP HRS	LAST TTM HRS	LAST READ HRS
2414		04/17/09	100.0	78.7	0	0.0	12.7/10.2	0.1	0.8	1	1 HR	4.5 HR	BM/mP/NM (1:1:3)		129	0	0	17.0	3.6	3.8
Report	10959528 w	12/04/08	100.0	76.9	0	0.0	12.8/11.0	0.0	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)		120	0	1	15.0	1.4	1.4
Report	10966784 w	12/04/08	100.0	79.7	0	0.0	10.6/11.0	0.2	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)		122	0	1	15.0	3.4	3.4
						0.0	18.7/11.0	0.1	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)		131	0	1	14.0	1.9	1.9
						0.0	15.4/13.0	0.0	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)		145	0	1	11.0	5.1	5.1
						0.0	16.1/11.0	0.2	1.6	1	1 HR	5 HR	BM/mP/NM (1:1:3)		99	0	1	20.0	11.0	11.0
						0.0	21.0/12.0	0.1	1.1	1	1 HR	5 HR	BM/mP/NM (1:1:3)		146	0	1	10.0	0.1	0.1
						0.0	11.7/11.0	-0.3	1.1	1	1 HR	5 HR	BM/mP/NM (1:1:3)		134	0	1	15.0	1.1	1.1
Report	10966938 w	12/04/08	100.0	91.6	0	30.4	27.1	0.0	13.1/11.0	0.1	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)	142	0	1	10.0	4.1	4.1
Report	10967640 w	12/04/08	100.0	96.1	0	32.8	28.4	0.0	14.2/13.0	0.1	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)	147	0	1	10.0	0.1	0.1
Report	10960640 w	12/04/08	100.0	88.3	0	37.8	21.3	0.0	10.6/8.0	0.3	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)	136	0	1	11.0	0.8	0.8
Report	10956956 w	12/04/08	100.0	74.4	0	25.2	14.0	0.0	15.8/13.0	-0.1	1.0	1	1 HR	5 HR	BM/mP/NM (1:1:3)	116	0	1	17.0	10.4	10.4
Report	10965842 w	12/02/08	100.0	94.2	0	29.8	27.7	0.0	11.9/9.0	0.1	1.7	1	1 HR	5 HR	BM/mP/NM (1:1:3)	145	0	1	10.0	3.3	3.3
Report	10959270 w	12/04/08	100.0	79.5	0	30.0	14.8	0.0	10.4/10.0	0.3	1.1	1	1 HR	5 HR	BM/mP/NM (1:1:3)	120	0	1	15.0	1.3	1.3
Report	10960152 w	12/04/08	100.0	90.9	0	38.3	20.2	0.0	13.4/12.0	0.1	1.1	1	1 HR	5 HR	BM/mP/NM (1:1:3)	140	0	1	10.0	4.3	4.3
Report	10962314 w	12/04/08	100.0	82.6	0	25.4	15.9	0.0	15.0/12.0	0.0	1.1	1	1 HR	5 HR	BM/mP/NM (1:1:3)	128	0	1	15.0	2.7	2.7
Report	10961080 w	12/04/08	100.0	81.6	0	28.3	16.6	0.0	15.2/15.0	0.1	1.2	1	1 HR	5 HR	BM/mP/NM (1:1:3)	124	0	2	15.0	4.4	4.4
Report	10966794 w	12/02/08	100.0	69.6	0	16.4	0.0	0.0	13.1/10.0	0.2	1.6	1	1 HR	4 HR	Normal	133	0	0	20.0	11.1	11.1

First Experience



Weekly


Sensus Metering Systems
Meter Data Manager (MDM)
Version 2.51.2
© Copyright 2008, Sensus Metering Systems-North America Inc.
Click here for support Sensus support
Meter ID 07026055
Service Address 2592 Pacific Highway East
Endpoint ID 10955248
Account ID 000134000
Chart Viewer
Chart
Table View
CLOSE
Interval:
6 months
3 months
1 month
Week
Day
Selected Date Range:
01-01-2009 to 01-31-2009
Reference/Ending Date:
01-31-2009
Use Date
VIEW CHART
1 Month Consumption for Meter# 07026055
01-01-2009 to 01-31-2009
Consumption
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
01-01-2009 to 01-07-2009
01-08-2009 to 01-14-2009
01-15-2009 to 01-21-2009
01-22-2009 to 01-28-2009
01-29-2009 to 01-31-2009
Time

Daily

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Click here for support Sensus support
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Interval:
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01-01-2009 to
Reference/Ending Date:
01-07-2009
Use Date
VIEW CHART
JANUARY 2009
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Weekly Consumption for Meter# 07
01-01-2009 to 01-07-2009
Consumption
Time
01-01-2009
01-02-2009
01-03-2009
01-04-2009
01-05-2009
01-06-2009
01-07-2009
Saturday @ 4PM
Monday @ 8AM

Real Benefits

- Read meters and import into billing in 2 minutes
- Relieves two (2) crew members for other tasks
- Monitor Irrigation Accounts
  - Have lots of off season theft
- Crew can take vacation around holidays
- Solving all customer disputes from the office
- Monitor large revenue customers weekly/daily
  - Praxair and Emerald Queen Casino

System Redundancy and Resiliency

Best of Breed Endpoint

7 Days Storage
2 Channels

History Reads
In Every Transmit

Highly Reliable TGB

Redundant
Backhaul

30 Days Storage
If Backhaul Lost

8 Hour Back-up
If Power Lost

Redundant RNI

13 Months
Hourly Data
Storage

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The Measure of the Future

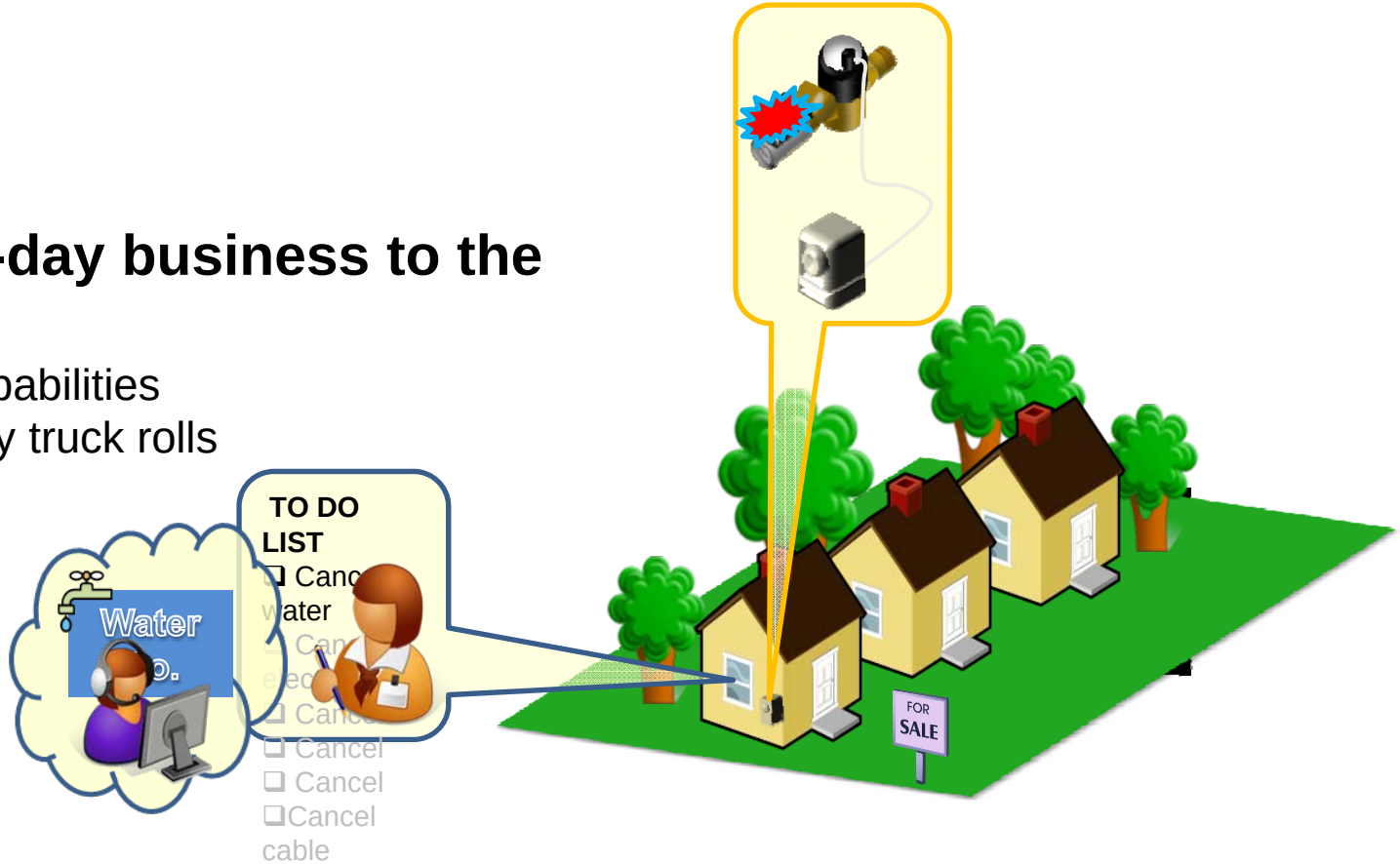
UNITED PIPE & SUPPLY

Case Study

Day 2 options

Taking day-to-day business to the desktop…

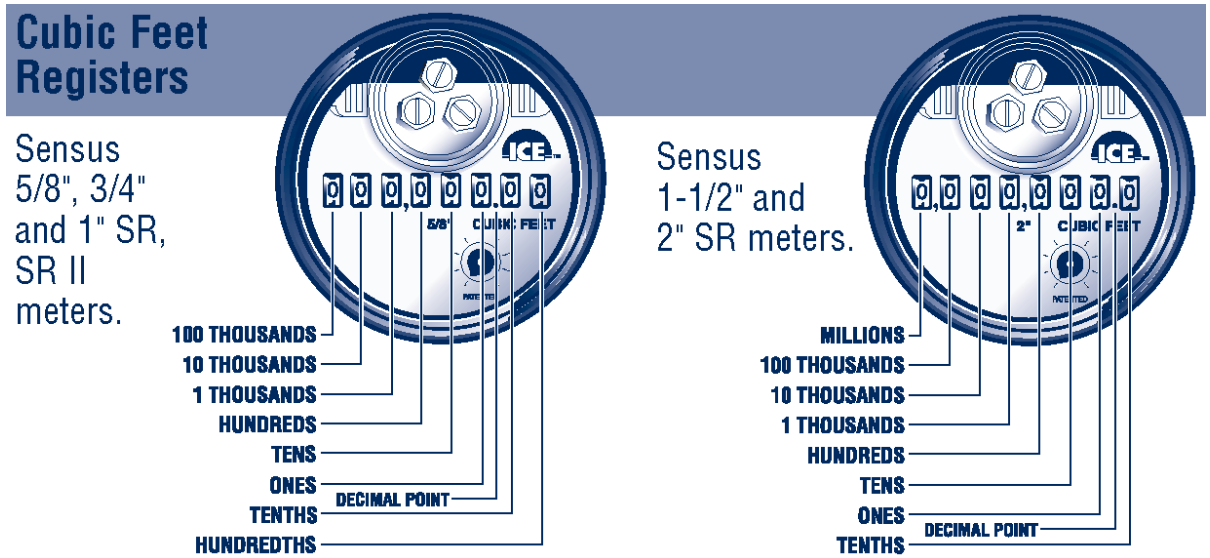
- remote shutoff capabilities
- avoid unnecessary truck rolls

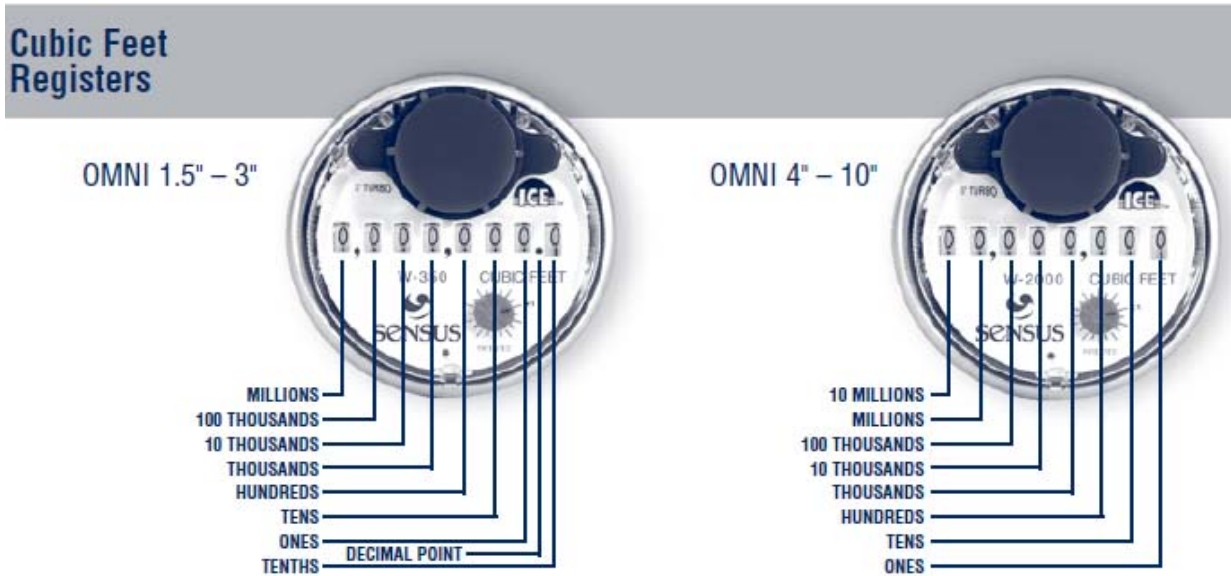


Reading resolution

Currently reading 100 cubic foot resolution, with the Sensus ICE register.

- We have the ability to read 1 cubic foot up to a 10 inch meter.





Customer Web Portal created in house or third party

Informing customers and increasing efficiency…

- inform with hourly usage history
- reduce service center call volume
- provide guidance for conservation

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Dashboard
Electric
Gas
Water
Welcome resident@mail.com | Sign Out
Devices
Billing
Notifications
Water Usage Tips
Help
Meter
Sensors
Water Meter
SENSUS
009278316
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056125406

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Dashboard | Electric | Gas | Water

Welcome resident@mail.com | Sign Out

Devices | Billing | Notifications

Water Usage Tips | Help

Bill | Usage | Rate Tiers | Messages

Current Bill - April 25 2009

Account # 00612884700018

Balance On Last Bill		$49.55
Payments and Other Credits		
Payment(04/15/09)	($49.55)	
Total Payment and Other Credits		($49.55)
Current Billing and Charges		
Customer Charge	$ 13.80	
Sewer Cost	$ 6.30	
Water Cost	$ 18.09	
7 units @ $1.301	$ 8.23	
3 units @ $2.51	$ 7.78	
State Tax Adjustment Surcharge	($ 0.05)	
Current Bill		$63.19
Amount Due		$63.19

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Bill | Usage | Rate Tiers | Messages

Current Water Usage

Meter # 1553291

Electronic Readings
05/20/09 1122324.3
04/20/09 -1121811.0

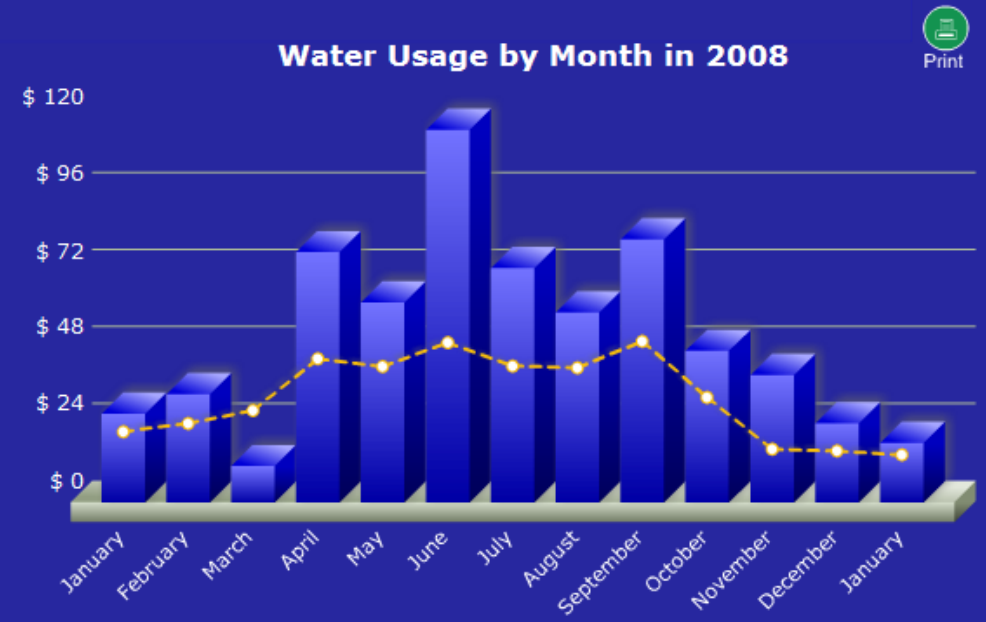
Usage in 30 Days 1110.3

Next bill will be mailed
05/21/09

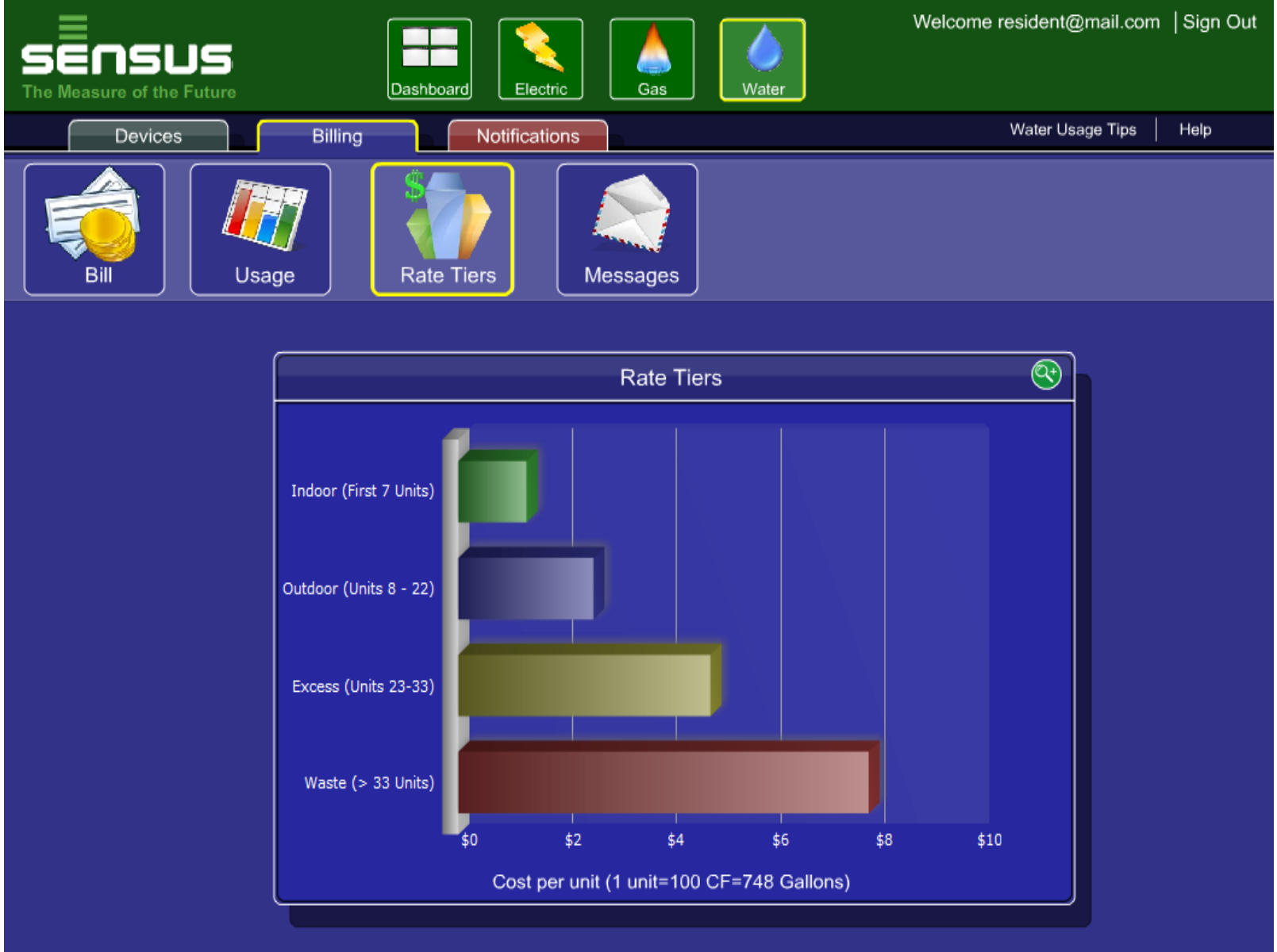
Due Date -- 06/15/09

Water Usage History

Print



Units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Dashboard
Electric
Gas
Water
Welcome resident@mail.com
Sign Out
Devices
Billing
Notifications
Water Usage Tips
Help
Bill
Usage
Rate Tiers
Messages
Rate Tiers
Indoor (First 7 Units)
Outdoor (Units 8 - 22)
Excess (Units 23-33)
Waste (> 33 Units)
$0
$2
$4
$6
$8
$10
Cost per unit (1 unit=100 CF=748 Gallons)

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Dashboard | Electric | Gas | Water

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Devices | Billing | Notifications

Water Usage Tips | Help

Cost | Usage | Alerts | Prepay | Restriction | Sensors

Usage Alert

If my daily water usage
is more than:

20 Gallons

Then notify me via my:

- [ ] Email: jim@4home.com
- [ ] Home Phone: (704) 558-3316
- [x] Mobile Phone: (408) 823-1859

SENSUS
The Measure of the Future

Dashboard | Electric | Gas | Water

Welcome resident@mail.com | Sign Out

Devices | Billing | Notifications

Water Usage Tips | Help

Bill | Usage | Rate Tiers | Messages

Messages

From: Water Provider @ 08:09:00 April 26, 2009
Your bill for April includes $2.34 in state taxes.

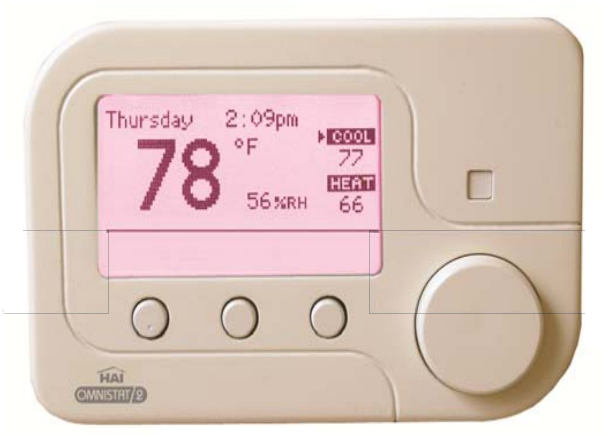
From: Water Provider @ 07:16:00 April 26, 2009
Water restrictions are in effect for your property. Irrigation only allowed Tues,Thurs,Sun

From: Water Provider @ 07:00:00 April 26, 2009
Thank You! The Water Company is pleased to serve you and appreciates you paying your water bill.

From: Water Provider @ 16:06:20 April 20, 2009
Payment received for your April water bill in the amount of $71.65. Thank You! Your business is very much appreciated.

In-Home Displays

- Continuous In Home Communications
- Flexible Time of Use Pricing Tiers
- Critical Peak Pricing
- Flexible Override Features
- Boil Water Restrictions



Third party applications

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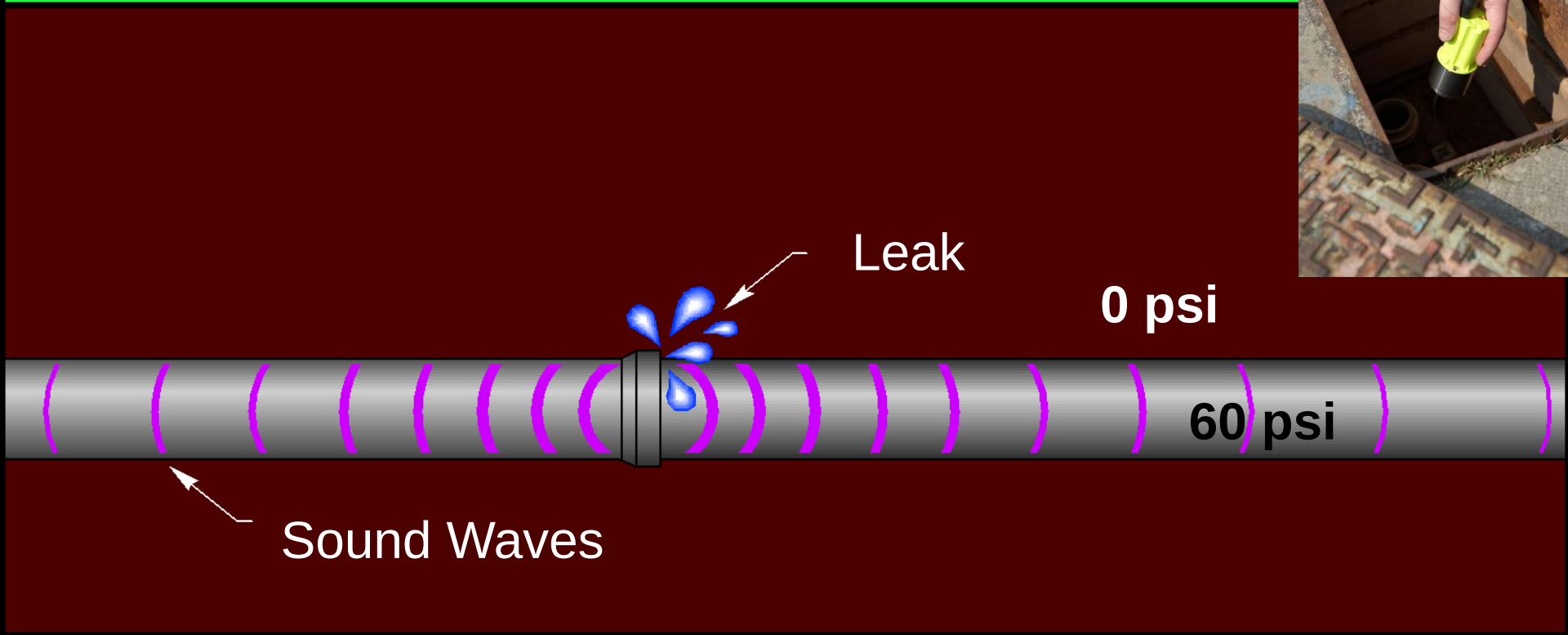
ssociated costs

The Science of Leak Sound



SCADA Opportunities

Telemetric
Now part of
SENSUS

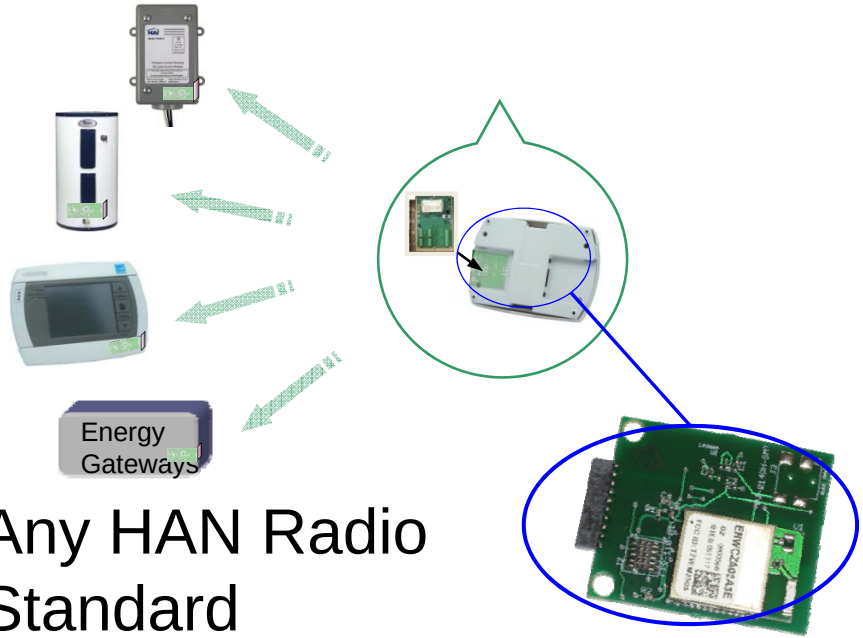
SCADA-Xchange™ SCADA Interface to Telemetric Equipment

- **PRIAMRY LICENSE**

Reaching Future Endpoints

U-SNAP

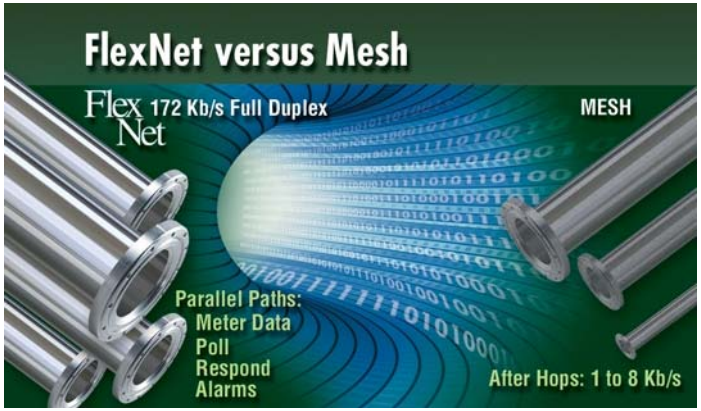
(Utility Smart Network Access Port)



Any HAN Radio Standard

Future Equipment

- Enough bandwidth to work with applications yet to be determined…..



Considerations

- Coverage is Guaranteed?
- Long Term Costs to Operate/Maintain the AMI System?
- Complexity, Reliability and Required Staff?
- Reading Frequency vs. Battery Warranty
- Network Supports Future Enhancements?
- Analytical Tools Available?
- References?

THANK YOU!

Questions?