ULTRASONIC TECHNOLOGY AND ADVANCED METERING INFRASTRUCTURE

Mike Phillips-Master Meter
Alex Grpcevski-Ferguson MAG Group

METERING SIMPLIFIED

Legacy Products vs Ultrasonic

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FERGUSON® Waterworks

Meter & Automation Group

LEGACY PRODUCTS

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ULTRASONIC METERS

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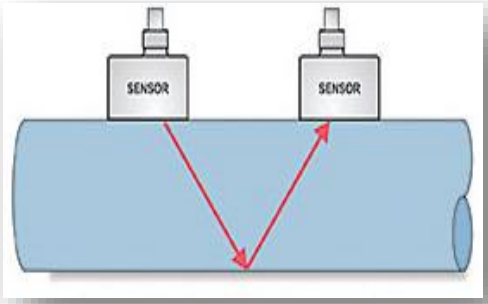
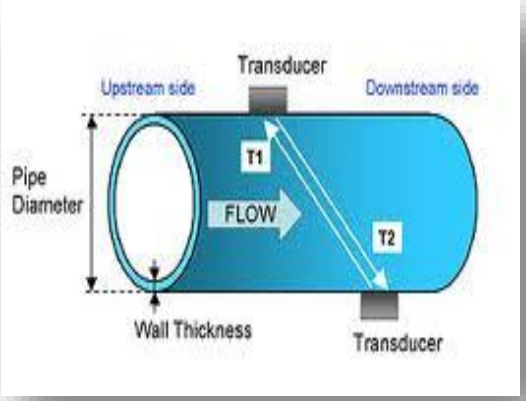
WHAT IS ULTRASONIC?

HOW ULTRASONIC WORKS

- Basic Operating Principle is Sound
- Two types:
  - Transit Time (the Octave)
    - Best suited for clean water.
    - Sound waves are generated by a transmitter and are either reflected to, or sent across the pipe to a receiver.
    - This same process happens in the opposite direction. (one with flow, one against flow).
    - Upstream and downstream times are compared. The difference in time equates to the water velocity.
      - No time difference = no flow





HOW ULTRASONIC WORKS

- Dual Beam
- Ultrasonic Transit Time
- Sing Around

Flow Direction

Key Features

Key Features	Octave/ (Ultrasonic Meters)	Turbine	Compound	Fire Assembly	Floating Ball
Solid-State (no moving parts)	•				
Sustained Accuracy	•				
Low Flow Measurement	•		•	•	•
High Flow Measurement	•	•		•	•
No Cross Over	•	•			•
Low Pressure Loss	•				•
Light Weight	•	•		•	
Does Not Require Strainer	•				
Multiple applications/services (fire or domestic)	•				
Submersible beyond 4 feet	•	•	•	•	
Internal Data Logging	•				•
Various Installation Orientations	•				
Smart Technology	•				Some

ULTRASONIC VS TURBINES

3” TURBINE
3 GPM Average Low Flow @ -5% - +1%.
5 GPM Normal Range @ + 1.5%

The 80/20 Rule

- 0.5 - 0.7 GPM Average Flow

- Toilets (‘92): Up to 1.6 USG per flush
- Urinals (‘92): Up to 0.5 USG per flush

Why it is important?

- Unmetered consumption
- Inaccurate meters
- Damaged meters
- Frequent repairs

All lead to lost revenue

Keep It Simple

ELIMINATE:

- Installing the wrong meter type installed
- Excessive maintenance costs
- Gradual decrease in accuracy
- High overhead & inventory costs
- Decrease installation costs

Simple Installation

VS.

- Turbines up to 80% heavier
- Compounds up to 300% heavier
- Fire Assemblies up to 1800% heavier

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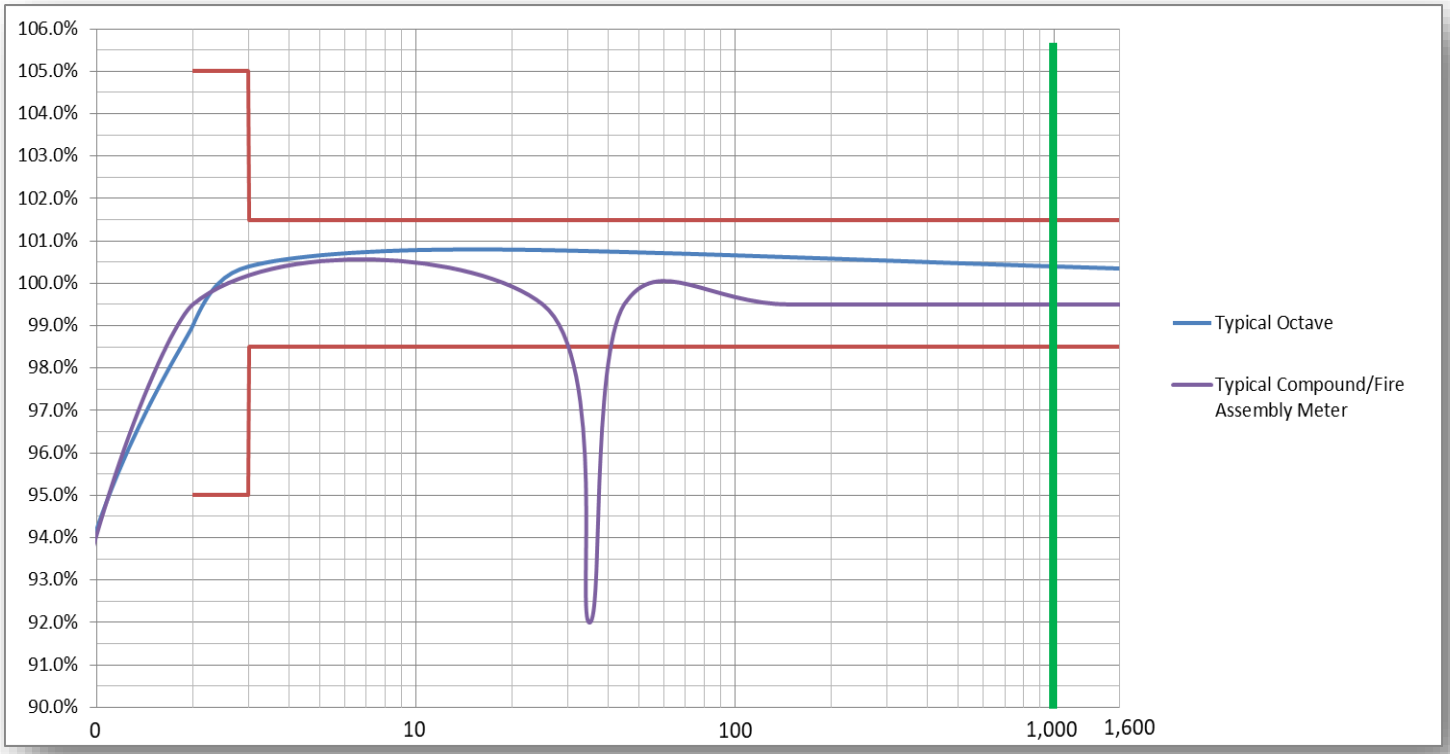
No Moving Parts, No head loss

Turbine

Ultrasonic

Cross Over & Continuous Duty

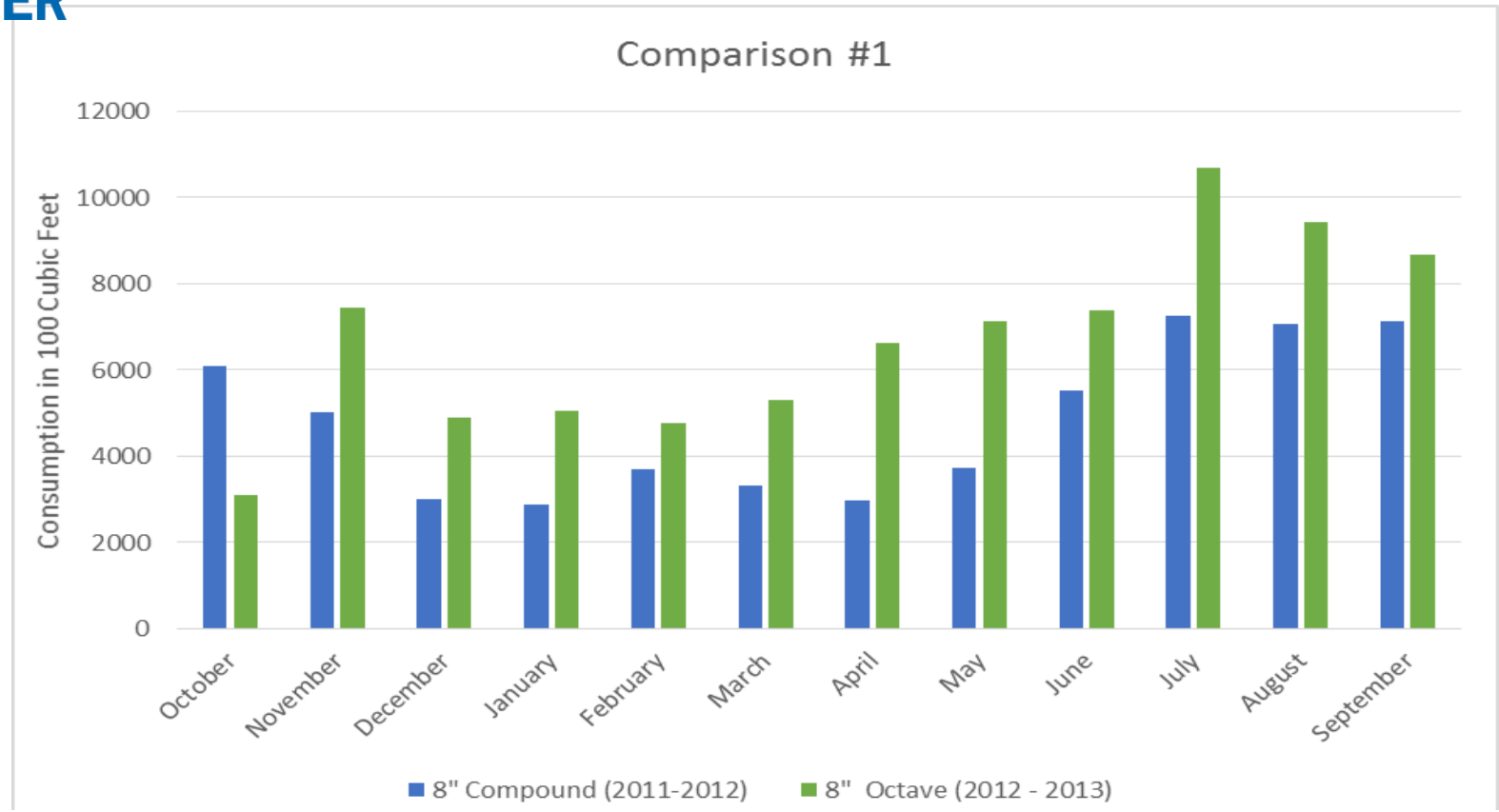


PD Comparison

Size	Low Flow (>95%)	Intermediate (98.5%-101.5%)	High Flow (98.5%-101.5%)	Turndown Ratio	FM Approved
1-1/2" Octave	0.25 GPM	0.5 GPM	250 GPM	1000:1	Yes
1-1/2" PD	0.75 GPM	2.0 GPM	100 GPM	134:1	No
2" Octave	0.25 GPM	0.5 GPM	250 GPM	1000:1	Yes
2" PD	1.00 GPM	2.5 GPM	160 GPM	160:1	No

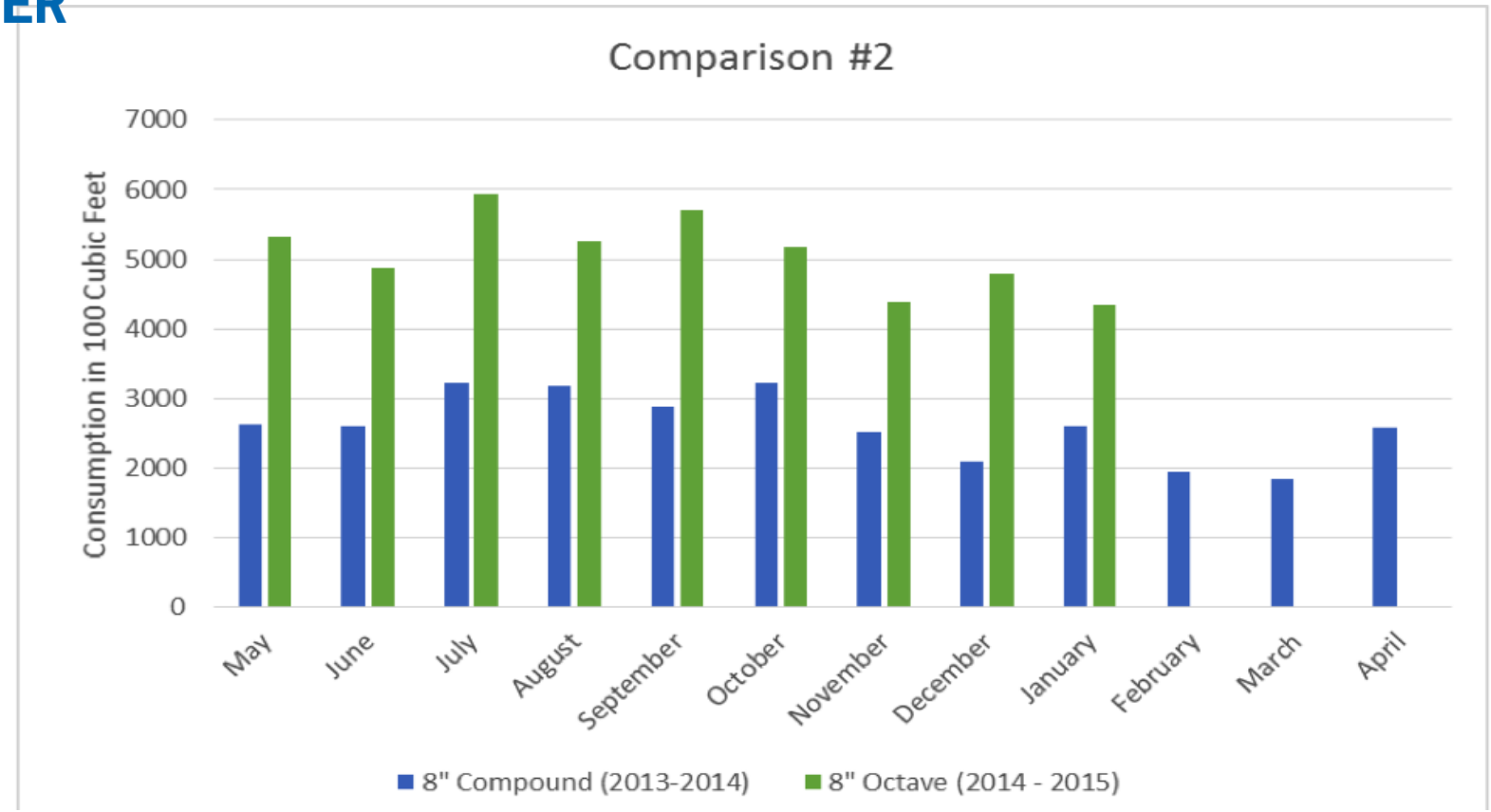
REAL WORLD SUCCESS

Real World ROI



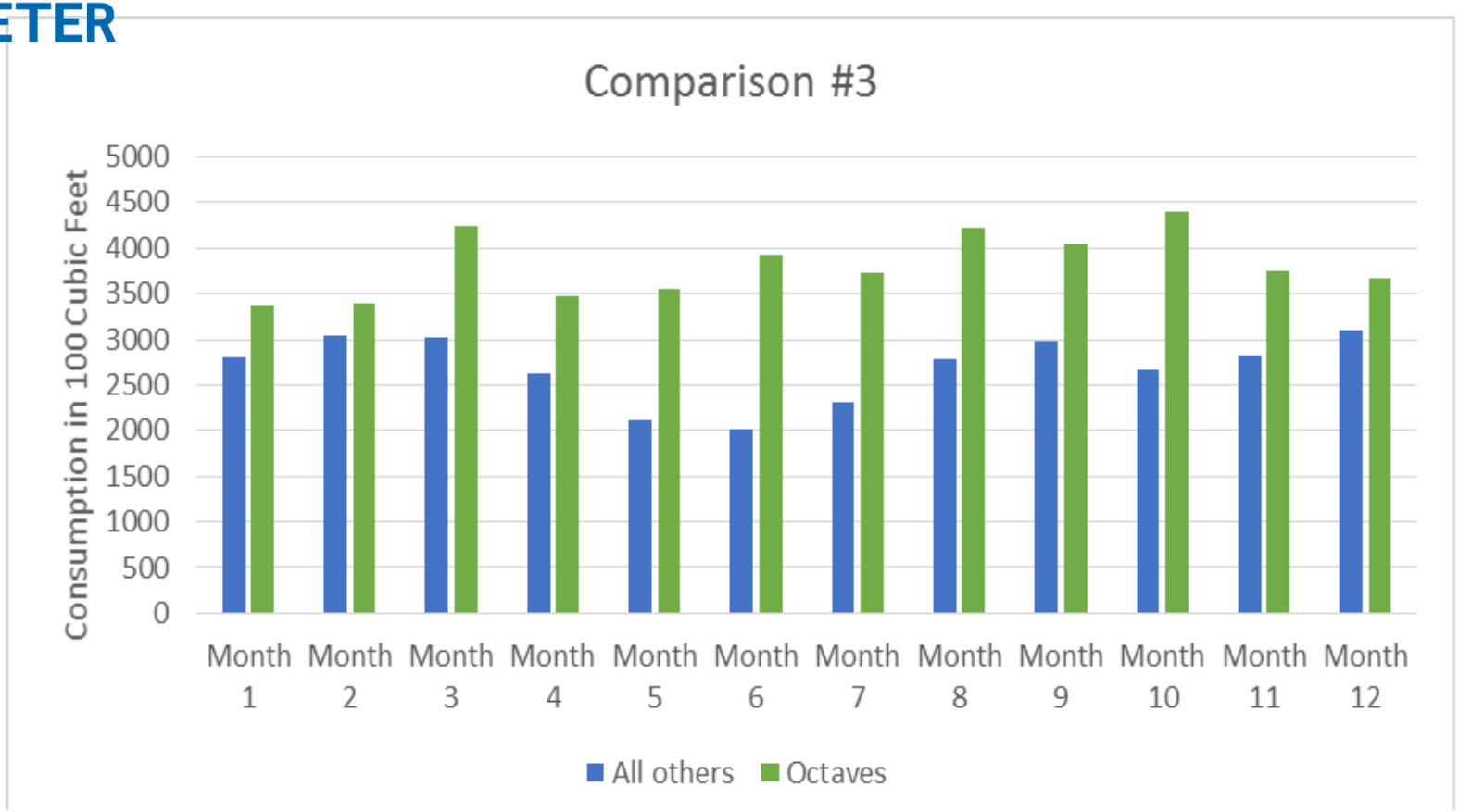
- **$52,315.80 |** Annual Increase in Revenue
- **39.38% |** Increased % of Consumption

Real World ROI



- **$48,028.60 |** Annual Increase in Revenue
- **46.47% |** Increased % of Consumption

Real World ROI



- **$31,001.70 |** Annual Increase in Revenue
- **41.73% |** Increased % of Consumption

Real World ROI

- **Hazelton, PA |** One meter increased revenue from $6,000 per month to $50,000 a month.
- **Bradford, PA|** After replacing a meter with the Octave Ultrasonic, the utility found a leak that amounted to 6,000 gallons a day.
- **Big Flats, NY |** Replace compound and increased revenue in by 900,000 gallons in one month. Projected to bring $17,000 in revenue annually.
- **Peru, IN |** Replaced compound and increased consumption by 33%.

Large Utility Users

Las Vegas, NV

Seattle, WA

Birmingham, AL

Tallahassee, FL

Philadelphia, PA

Columbus, OH

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AMR VS AMI

AMR

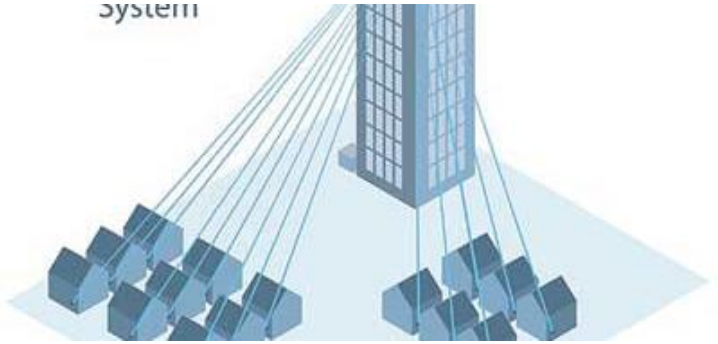
- A technology which automatically collects metering data and transfers that data to a central database for analysis and billing purposes, generally called “smart meters”.
- Technology includes:
  - Touch read
  - Drive By

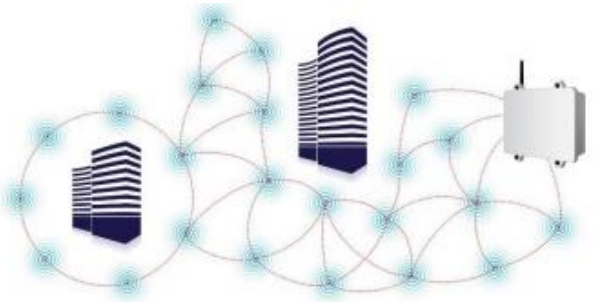
AMI

- Advanced metering infrastructure starts with smart meters and adds two-way communication between the meter and utility, and between the meter and consumer. This means that in addition to providing readings, the meter can also receive (and often act on) instructions sent from the utility or consumer

Benefits of AMI

- 3 Day Reading Becomes 3 Minute Reading
- AMI from AMR more challenging than Direct-AMR
- Automated Data logging
- Hourly Reads
- On Demand Reads
- Functional Leak/Theft Detection
- Customer Service Tool
- Remote Software Upgrades
- Shut-Off Valve Capable





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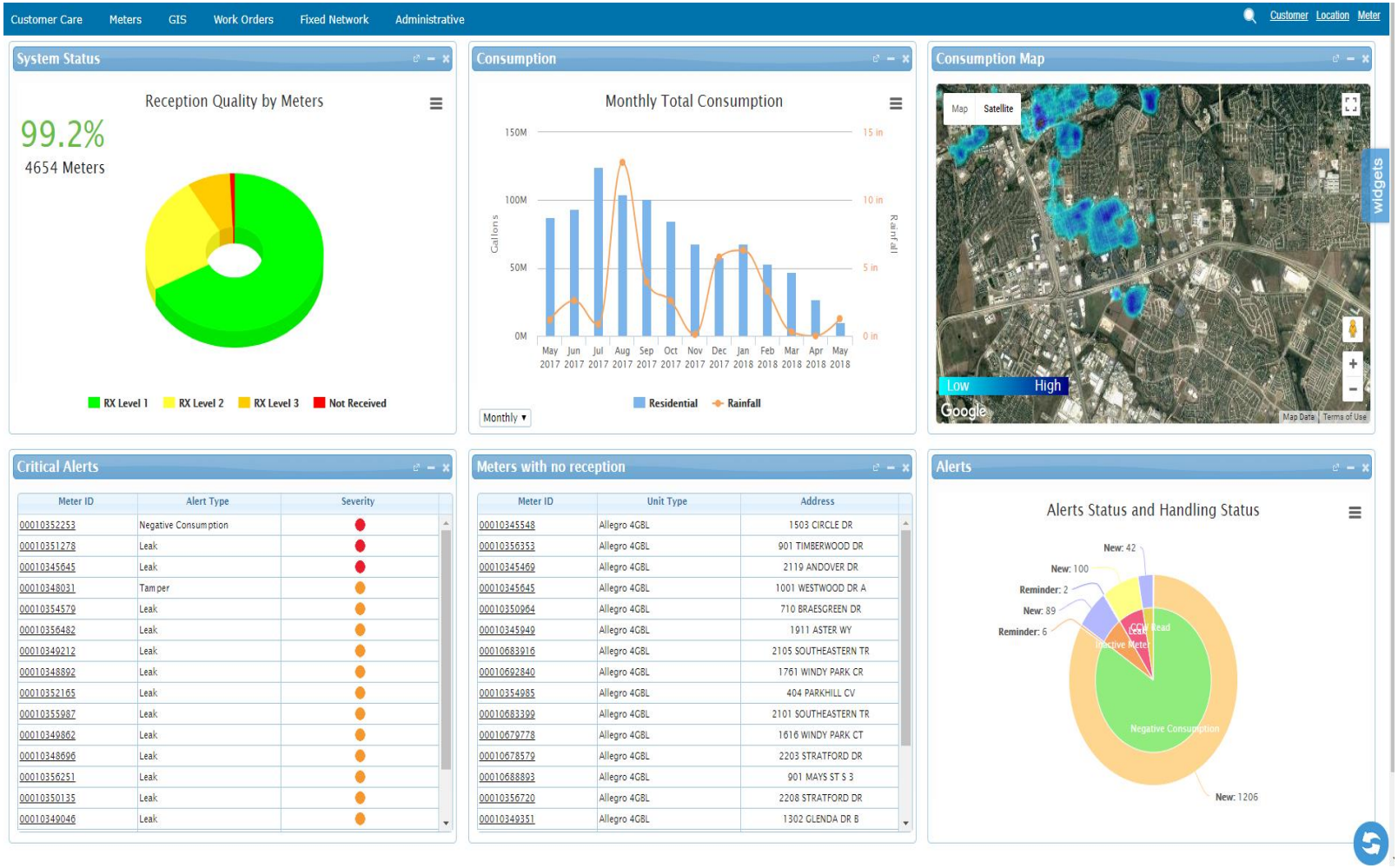
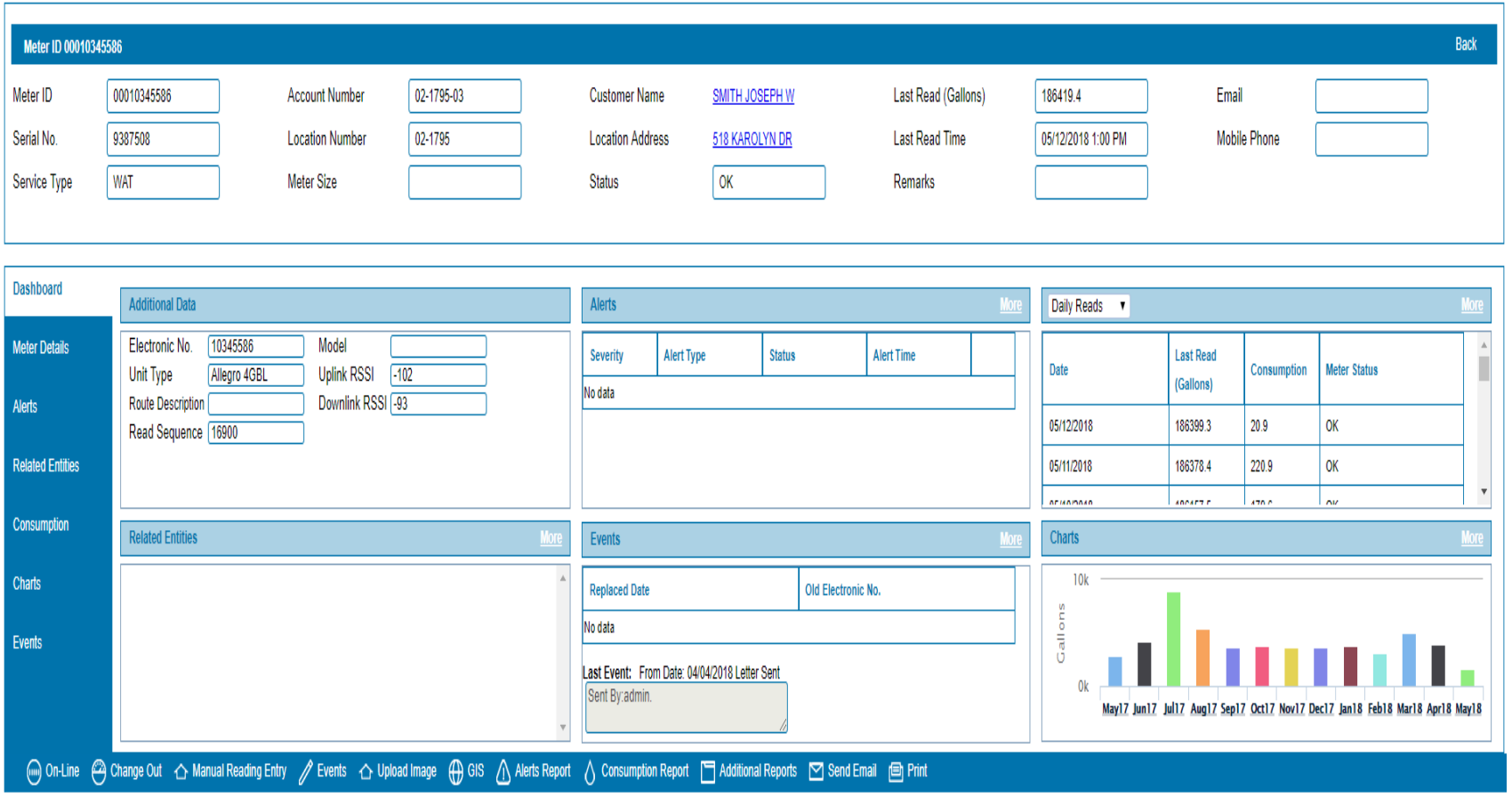
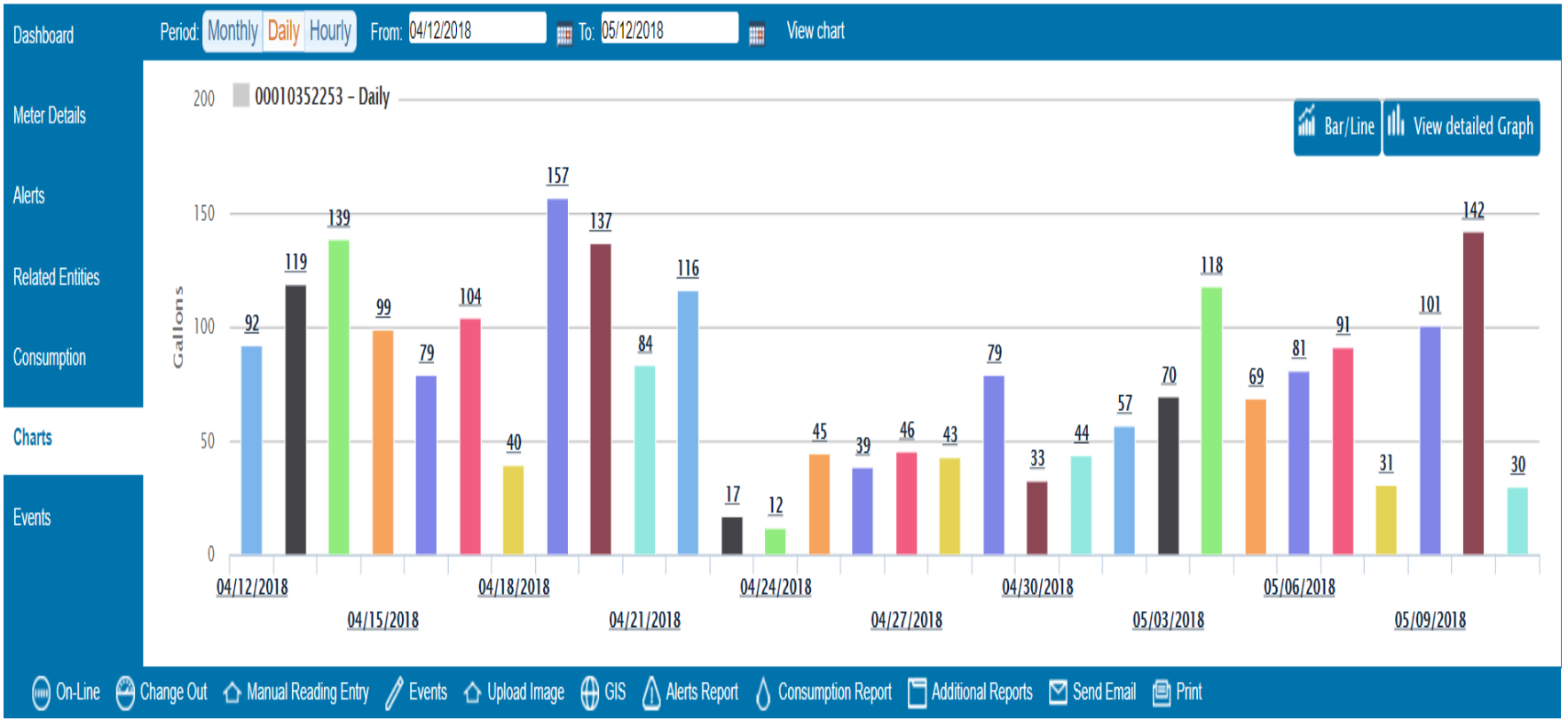
AMI is all about anayltics



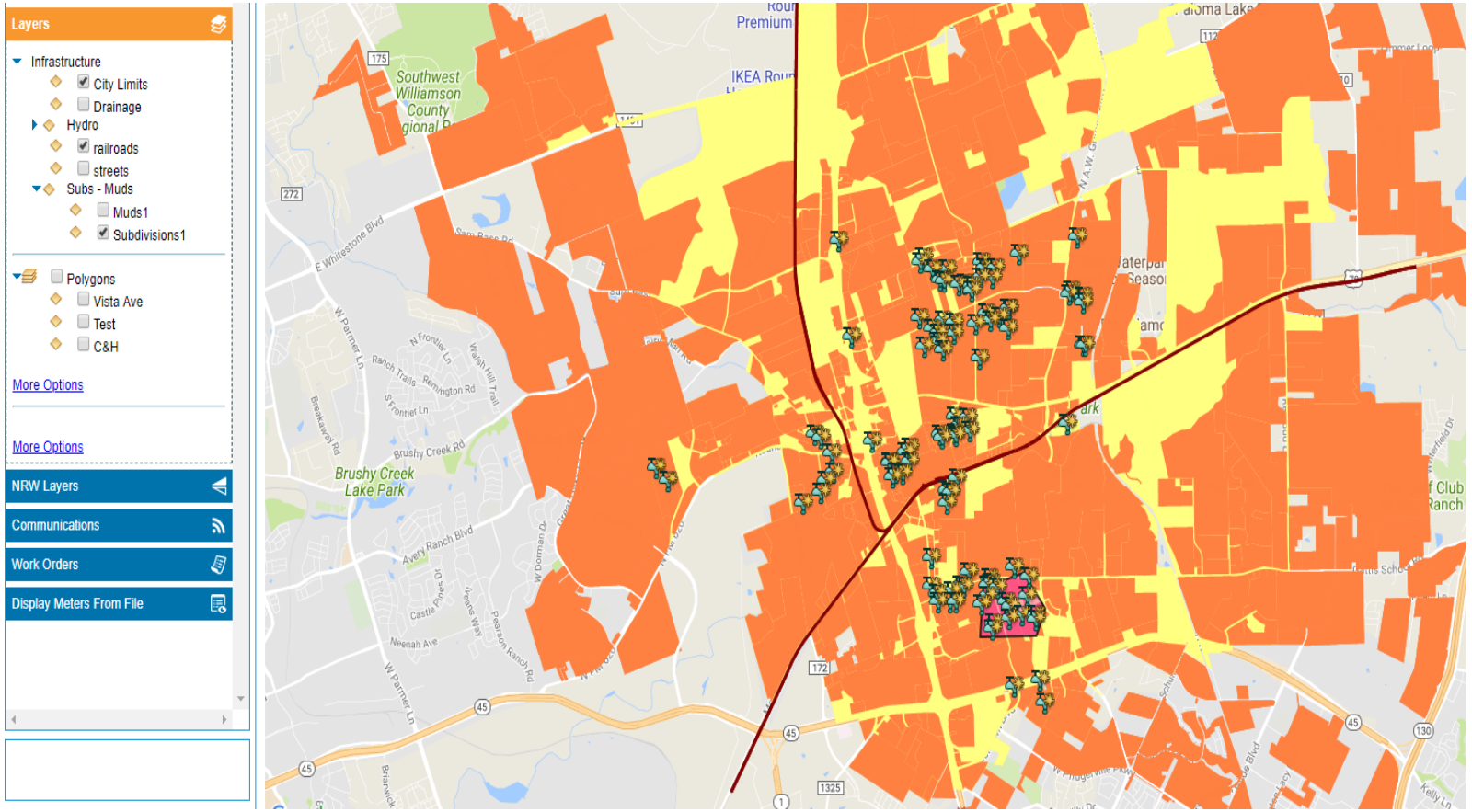
Detailed Meter Profiles



Readily Available Consumption Reports



Import GIS Data

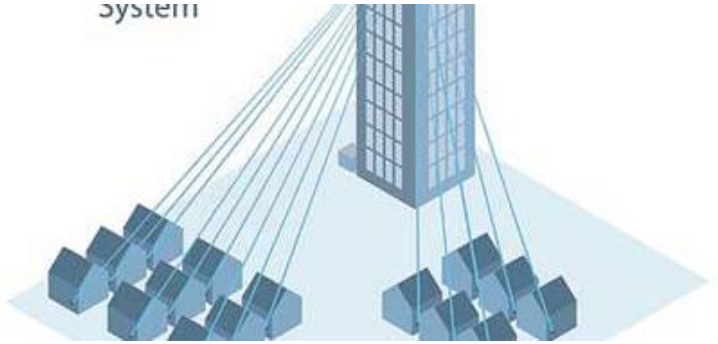


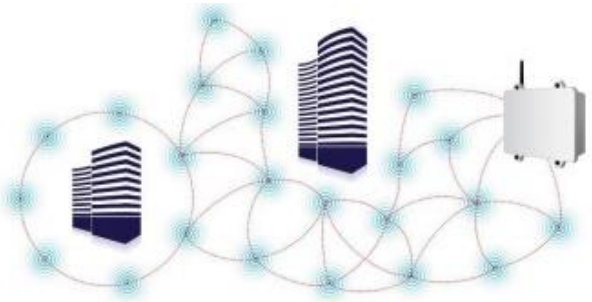
Customer Engagement Tools

- Customer Premise Leak Alerts
- Household Water Budgeting
- Vacation Period Usage Notifications
- Email or Text Messaging
- Apple or Android Smartphone App

Different types of AMI

- Master Meter
  - Line of Sight
- Sensus
  - Line of Sight
- Badger
  - Line of Sight/Cellular
- Neptune
  - Line of Sight
- Mueller
  - Mesh/Line of Sight
- Zenner
  - Mesh





QUESTIONS?