

### Highlights:

- Number of services: 6,196
  - 5,526 residential
  - 670 commercial/industrial
- Non-revenue water decreased from eight percent to two percent
- Achieved 99.59 percent meter read success
- Increased customer service with daily and hourly consumption monitoring

Monroe, Washington is thirty miles northeast of Seattle with a population of approximately 18,090. The Public Works department is responsible for managing, maintaining and providing service for Monroe's drinking water, garbage and recycling, sanitary sewer, storm water, streets and the wastewater treatment plant.

Monroe's drive-by radio-read Sensus MXUs were installed in the early 2000s. As the years passed, technology advanced and residents began to expect more from their utility service providers. As well, the aging infrastructure resulted in measuring inaccuracies.

The City of Monroe Public Works determined that the most cost effective way to upgrade their meter infrastructure was to install an Automated Metering Infrastructure (AMI) system where they would realize long-term savings.

*"Our old meters were at the end of their useful service life, and we considered simply replacing them with new manual-read meters," said City of Monroe Public Works Director Jakeh Roberts. "We began costing out both manual-read meters and an AMI system. Despite the fact that AMI would cost us more up front, after we spoke to our billing and customer service teams, we knew our customers would benefit most from the newer technology."*

They chose an AMI system and installation services provided by **Ferguson Waterworks**.

### The Challenges

The City of Monroe had challenges that needed to be addressed with the right AMI system:

- **Aging infrastructure.**  
Monroe's meter system was 10-15 years old and nearing the end of its useful life, and reading accuracy was steadily declining.
- **Limited meter reading resources.**  
A full-time equivalent employee was required to read meters over the course of five to six days. Illness and weather could affect their ability to complete reads safely and on-time.
- **Vehicle and fuel costs.**  
The cost to maintain and fuel the vehicles used to read meters continued to rise.
- **Lost revenue.**  
Approximately eight percent of Monroe's water was unaccounted for due to failed leak detection, resulting in lost revenue. In addition, the Washington State Municipal Water Law requires water suppliers to maintain their distribution system leakage at or below 10 percent of production.

## The Recommendation

Ferguson proposed the Sensus Fixed Base FlexNet® Advanced Metering Infrastructure (AMI) solution to address the City of Monroe's needs. The Sensus FlexNet® system is a long-range radio network that serves as a dedicated and secure two-way communications highway for utilities. Using FlexNet® technology, City of Monroe Public Works can collect and access real-time data from various smart sensors.

- **Automatic meter reading.**

FlexNet® eliminates the need for manual meter reading, thus allowing the City of Monroe Public Works to re-allocate their employee to other services.

- **Meter read success.**

The technology guarantees 98.5 percent meter reads.

- **Detection.**

FlexNet® provides a programmable leak detection feature built into every SmartPoint® radio that would detect leaks previously missed by the aging meter system. It can detect and report on backflow, broken pipe, zero consumption, register malfunction and other issues.

- **Mode of operation.**

FlexNet® takes advantage of multiple transmit modes and separate frequency channels for each type of message (inbound, outbound, alarm, etc.), which increases overall system performance, reliability and capacity.

- **System capacity.**

The regional network interface (RNI) has the capacity to store 24 months of standard hourly data for all meters on the network.

- **Frequency of reading.**

The default reading interval of the FlexNet® system is one reading per hour. The MIUs transmit the hourly reading history up to six times per day. Each transmission contains up to seven days of hourly reading history.

- **Read on demand.**

Users can directly poll MIUs over the FlexNet® two-way network for real-time reading.

- **Communication channels.**

Sensus already held FCC licensed spectrum primary use of all the necessary frequencies for the City of Monroe.

- **Minimal infrastructure.**

Sensus requires fewer data collectors than any other system.

*“The FlexNet® system matches the functionality, reliability, flexibility and simplicity the City of Monroe required in an AMI solution,” said Ferguson outside sales associate Tom Erickson. “The network monitoring, system maintenance and upgrades ensure that the system will operate at optimal performance levels throughout its useful life.”*

## The Technology

The system upgrade consisted of:

- An M400 FlexNet® Base Station
- iPERL® 5/8” and 1” water meters
- OMNI™ 1-1/2” through 8” water meters
- SmartPoint® 520M pit set modules

## The Results

Monroe saw increased efficiencies with their new metering technology, saving time and money for both the customer and the city itself:

### Customers

- Provides better customer service with early leak detection, saving customers money they lose from wasted water. The technology upgrade identified dozens of continuous leaks.
- Shares data with customers and provides enhanced customer service by utilizing real-time meter reading information.

### City of Monroe Public Works

- Saves staff time, vehicle travel costs and gas expenses by eliminating the need for manual meter reading. Meter reading now requires less than two days, and City of Monroe Public Works was able to re-allocate its meter reading employee to other service areas as all meter reading is now automatic.
- City of Monroe's unaccounted water went from eight percent, down to two percent, increasing supply revenue. It is also well below the 10 percent leakage standard required by Washington State.
- Eliminates all costs associated with closing customer accounts.
- The Sensus FlexNet® achieved 99.59 percent read interval success rate – higher than the Sensus guarantee of 98.5 percent. This means that the data from almost all the meters in the city is automatically reported on-time each billing cycle.



## Ferguson Waterworks Support

### Installation Services

The Ferguson installation team installed the new AMI system from May 2016 through December 2016. The project started with changing out the city's residential and commercial accounts with meters in sizes from 5/8"x3/4" up to 2". Toward the end of the project, the city added the larger accounts, 3" and up. Ferguson's installation team worked closely with City of Monroe's service technicians to remove the old, larger meters and helped locate and schedule the accounts to be upgraded.

The installation worked performed by Ferguson is under warranty for one full year, and iPERL® meters and SmartPoint® transmitters are under warranty for 20 years.

*"Communication between the City of Monroe and Ferguson was fantastic and a key reason this project went so well," said Ferguson meter installation business development manager Lynnsey Bondi. "All challenges were quickly communicated between us and the city, resulting in swift resolutions and on-time installation."*

*"We teamed up with the Ferguson installation group to ensure meter connection points that weren't up to City standard prior to the project were corrected by Public Works staff in preparation for the meter swap. This coordination made the project go much more smoothly. Having the Ferguson crew onsite made a substantial difference in the overall timeliness of the project delivery."*

### Project Coordination

Ferguson provided project coordination services for the installation process and system configuration between Sensus, Springbrook Software and City of Monroe Public Works and finance department staff. Coordination services included integration file field mapping, testing and providing customer instruction on properly operating and managing the system. A proprietary work order management system developed by Ferguson automated the data transfer process by matching old and new meter numbers, documenting GIS coordinates and taking photographs of newly installed meters so that City of Monroe was up and running on the new system and able to bill and provide data back to customers quickly and accurately. The work order management system provided by Ferguson ultimately saved City of Monroe hundreds of hours of labor manually entering integration data for more than 6,000 customer accounts.

Ferguson is also providing on-going support by helping to troubleshoot and resolve any potential base station or transmitter issues.

### Sensus FlexNet® proves immediate value through leak detection

After being upgraded to the new Sensus Flexnet® system, City of Monroe Public Works received a leak flag on a residential customer's account. The City reached out to the customer regarding the flags, who initially was unable to locate the source of the leak. With help from Ferguson, City of Monroe Public Works shared water usage data reflecting a pattern over a specific timeframe, clearly illustrating the presence of a leak which the customer was then able to tie directly to their irrigation system. The customer ultimately discovered and resolved two previously undetected leaks.