



Introduction

The benefits of Automatic Meter Reading are substantial and undeniable. Functionality has risen while costs have fallen. Once the realm of only the deep-pocketed, AMR is now mainstream and in use in utilities of all sizes and budgets. The financial benefits throughout the meter reading process take center stage in most utilities' ROI model. These include reduced labor costs, fewer workers comp claims and quicker revenue realization. But AMR's impact doesn't end there.

In fact, AMR's value continues to rise as utilities discover new applications for the detailed interval data provided by advanced AMR systems like the FIREFLY®. All FIREFLY Meter Interface Units (MIUs) archive usage data at user-definable intervals. For example, when set to record at 60 minute intervals, each water FIREFLY holds over 74 days of hourly consumption data. Additional value can be realized throughout utility operations in ways many have never considered. FIREFLY customers have not only cut reading costs to a fraction of their pre-AMR levels but are currently leveraging their investment in applications such as:

- Settling Customer Usage Disputes
- Eliminating Unnecessary Usage Credits
- Detecting Leaks *Prior* to a Customer Complaint
- Monitoring/Enforcing Conservation Measures
- Improving Customer Service
- Supporting Detailed and Time-of-Use Billing Initiatives
- Maximizing Operational Efficiency
- Long-Term Master Planning
- Meter and Infrastructure Right-Sizing
- Identifying Sources of Water Waste/Loss

The following case studies are a sampling of the enormous value FIREFLY customers enjoy.



Settling Consumption Disputes, Long-Term Master Planning

City of Hesperia, California

The City of Hesperia located in the high desert 75 miles NE of Los Angeles, is home to 80,000 residents and has been using the FIREFLY AMR System since 2000. Supervisor Danny Knight has managed Hesperia's FIREFLY project and has seen particular benefits from using ProfilePLUS Usage Profiling data. "I haven't been without a high bill explanation or given away a usage credit since we started using FIREFLY. We can always explain high consumption once we have the ProfilePLUS data. We have 25-30 complaints per month and save two to three man-hours per incident that we used to spend processing and researching. I figure we save more than \$1,500/month in this area alone. That's a part-time employee.

"A frequent source of complaints is new homeowners getting 'sticker shock' from their first water bill. Realtors know, especially in this area, that green lawns sell homes. So they'll set sprinklers to water almost constantly while the house is on the market. Then the new residents move in, leave the sprinklers settings and are blown away at what it costs to keep a lawn green here in the desert. They complain and we show them their usage on a ProfilePLUS graph. You just can't miss irrigation events on the graph – they're enormous usage spikes. Homeowners immediately understand and most cut way back after that.

"We've started offering ProfilePLUS graphs to some of our larger users for a modest fee. They are ecstatic to have the hour-by-hour breakdown of their usage. And it makes us look good to be able to offer them a service like this that helps them better manage where their consumption and money are going.

Knight continues, "Our engineers have also begun relying on ProfilePLUS data to develop our long-term water Master Plan. We pulled profile data over a full year from a district-wide cross-section of 110 customers. Now that they have detailed yearly profiles for every type of water user, they use them to accurately model our projected water needs and plan infrastructure growth with much more precision than ever before."

Bottom Line:

- FIREFLY delivers data that decisively settles 25-30 usage disputes every month, increasing the level of customer service and cutting \$1,500 in processing/research costs.
- FIREFLY now enables the City to offer value-added service to large users by sending them hour-by-hour data on their water usage.
- FIREFLY provided previously-unavailable data for the City's water master plan, enabling greater precision than ever before.



Leak Detection

Island Water Association - Sanibel Island, Florida

Island Water Association is a non-profit, member-owned water utility that produces drinking water for Sanibel and Captiva, barrier islands on the west coast of Florida.

Assistant General Manager, Rusty Isler recounts a situation that occurred early in their FIREFLY deployment:

“One of the first meters on which we installed a FIREFLY was at a large local resort. When the first data ProfilePLUS data was pulled, it showed that the water consumption was a flat line at about 800 GPH throughout the early morning hours. We immediately realized they had a large and steady leak. Our calculations indicated that the leak was wasting more than seven million gallons per year!

“The resort staff made several unsuccessful attempts to locate the leak, after which they hired a leak detection company. The leak was finally revealed by injecting an inert gas into their internal water pipes. The investigation showed that the leaking water had been flowing directly into a storm drain which explained why it had gone undetected until the FIREFLY was installed.

“The resort’s usage at 3:00am has since dropped from 800 GPH to 80 GPH. Their sewer and water bills dropped by \$3,500/month and \$2,000/month, respectively. The total dollar savings was over \$5,000/month or \$65,000/year. I suspect this is one customer that would agree that FIREFLY was a good investment! The resort’s General Manager was very thankful for our assistance in discovering his elusive water leak.”

Bottom Line:

- FIREFLY’s rapid leak detection saved one commercial customer 7 million gallons and \$65,000 per year.



Ensuring Meter Reader Safety

Springfield Utility Board – Springfield, Oregon

Beginning in June 2004, Springfield Utility Board in the City of Springfield, Oregon, began a FIREFLY pilot. The program spanned two years and included several areas with high concentrations of hard-to-read meters. Difficult terrain, deep vaults and aggressive dogs were among the challenges the utility faced throughout these areas.

One targeted area was an extremely hilly region that was particularly dangerous during the winter months. Employees were at risk for injuries from slipping and falling on muddy hillsides. "Prior to the FIREFLY installation, it took more than two hours to collect data from the area, or approximately 25 reads per hour," noted Brenda Owen, Application Support Analyst for the Springfield Utility Board. "However, after installing FIREFLY, we reduced reading time for the entire area to about 20 minutes and reduced the potential for worker injuries in the area."

One particular route of note included 190 meters, which took four to five meter readers over four hours to complete. After installing FIREFLY, however, the route could be completed in 45 minutes with only one meter reader. The utility was able to redeploy the remaining meter readers to other routes across the city.

Another part of the SUB territory has a large number of vaulted meters, an issue which prompted strong reactions because of a tragic event. "Two maintenance workers from a nearby city were killed by carbon monoxide poisoning while reading a vaulted meter in the late 1980s. It was a real wake-up call that's caused us to evaluate our reader safety policies. The good news is that with FIREFLY, our readers don't have to go into vaults to read meters anymore" said Owen.

"Another challenge we face, is that our entire territory has over 400 aggressive dogs, many of which are in high crime areas throughout our service territory," added Owen. "Pre-FIREFLY installation, only seasoned meter readers would read these addresses if they felt comfortable or if an aggressive dog was secured by its owner. But now data collection can be completed by any one of our meter readers, giving SUB greater versatility over the allocations of its staff. We also placed FIREFLYs on meters located in the middle of rural fields, where access was time-consuming and reads were costly. This has enabled our readers to collect the data quickly and safely."

Bottom Line:

- FIREFLY has greatly reduced injury risk to meter readers from adverse weather conditions, vaulted meters, aggressive dogs and difficult access to meters.
- FIREFLY devices have significantly reduced skipped readings due to access issues such as potential animal attacks.



Conservation Monitoring / Customer Savings

City of Santa Fe, New Mexico

Located in a particularly arid region of the US, the City of Santa Fe, New Mexico, often experiences seasonal droughts, which require a close monitoring of the region's precious water resources. To help conserve water supplies and encourage conservation, the City imposes large surcharges for water overages. The FIREFLY has been a key tool in helping the City resolve disputes, conserve water and save its customers money.

3,000 FIREFLY Meter Interface Units (MIUs) are currently operating throughout the City. The ProfilePLUS Usage Profiling data provided by each FIREFLY has proven to be an immediate asset for the city's conservation efforts. While Santa Fe has used the ProfilePLUS technology to resolve billing disputes with customers, it has also used the information proactively to pinpoint and identify leaks for customers that would otherwise incur heavy surcharges.

For example, almost immediately after installing only the second MIU, the FIREFLY flagged abnormally high water consumption. The residents were on vacation when the city identified a leaking toilet that was wasting 44,000 gallons per month! The City calculated that the leak likely began two to three weeks before it was discovered. Fortunately, FIREFLY flagged the leak immediately, before it reached the level of overage. Had the leak gone undetected it could have cost the residents thousands of dollars in fines.

A fully running toilet can easily waste 44,000 gallons a month. In fact, it is possible for a leak the size of half-inch hole to waste 15,000 gallons a day while a leak the size of a pin tip can go through roughly 3,600 gallons a month.

In an effort to expand their water conservation efforts, Santa Fe is planning the installation of 9,000 additional FIREFLY MIUs through 2007.

Bottom Line:

- FIREFLY identified 44,000 gallon/month leak during first week of the project.
- FIREFLY is supporting critical conservation measures with user-defined high usage flags.
- FIREFLY pinpoints key areas where water is being wasted to improve conservation efforts and save customers money.



Settling Consumption Disputes, Identifying Water Waste

City of Trenton, Ohio

The City of Trenton, located 20 miles north of Cincinnati, has been using the FIREFLY AMR System since 2004 and has found it to be a powerful tool for settling customer usage and billing disputes.

“When a customer calls us about a bill they believe is too high, we pull the ProfilePLUS data and show them their daily usage,” noted Pam Mrusek, Utilities Billing Administrator. “We typically find that there is a leak somewhere in their system. Unfortunately, they usually don’t believe us until they actually see it. We typically receive and settle about eight complaints per month.

“Many of these complaints have come from residential customers using water softeners. FIREFLY enabled the city to track high consumption rates back to these units, which did not cut off at night like they were programmed. These softeners were using 40 to 50 gallons for each cycle, and if run continually, waste about 200 gallons per hour. At our current rate of \$6.55 per thousand gallons, a malfunctioning or improperly programmed water softener could cost a customer as much as \$270. Thankfully, FIREFLY catches these issues quickly.”

Bottom Line:

- FIREFLY provides the City with easy-to-understand data to decisively settle usage disputes with skeptical customers.
- FIREFLY identified issues with a large number of water softeners, saving each customer up to \$270. FIREFLY is providing compelling data to decisively settle consumption disputes.



Meter Right-Sizing

City of McKinney, Texas

McKinney, Texas is a municipality north of Dallas with 26,000 water meters whose population growth had strained its limited staff, budget, infrastructure and water supply. During an audit of water consumption, McKinney Meter Reading Supervisor Cory Dobbie noticed that meters in a particular section of town were registering usage that did not seem to fit the size of the property. He suspected that a great deal more water was being used to keep these lawns and gardens green.

Upon inspection, 5/8 x 3/4-inch meters were found on 1-inch services. FIREFLY ProfilePLUS data was extracted on a sample suspect meter. On evaluating the ProfilePLUS graph, it was noted that during the known time that sprinkler systems were in operation, the registered usage often approached or exceeded the rated capacity of the meter.

To confirm what was suspected, the City installed new 1" meters with FIREFLY MIUs. ProfilePLUS data was extracted for the next thirty-day period from the new meter. Registered usage jumped – for some customers as much as six times what the previous meter was measuring! Further investigation indicated that approximately 8,000 meters were undersized and hundreds of thousands of gallons of billable water were going unmeasured each month.

By using data from the FIREFLY AMR System to pinpoint the sizing problem and “right-sizing” the meters, the City gained about \$220,000 a month in previously lost revenues. This translated into over \$2.5 million in additional revenue per year, which more than paid for the investment in the AMR system. Of equal importance, the efforts have resulted in much better conservation enforcement and awareness by residents. While initially homeowners were not happy with their larger bills, more have appreciated the city's efforts to improve efficiency and meet their needs.

“Our AMR system has proved to be a valuable ally for the City. Our meter reading costs have been greatly reduced. The ability to profile accounts is a critical part of our success and a key element of daily system management. We have a complete new way of managing our system and providing service to our customers.”

Bottom Line:

- FIREFLY helps diagnose widespread undersized meter problem that after fixing, helped the City recoup \$2.5 million per year in previously lost water revenues.
- ProfilePLUS data provided the hard data to address the customer service backlash over higher water bills.