SUCCESS STORY

TROPOS networks
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# Network Started with Water AMR—Now Used For Range of Municipal Services in Wellington, Florida

**HIGHLIGHTS**

**Challenges**

- Reduce water reading misreads that were as high as 25%
- Improve accuracy of existing drive-by meter reading system, suffering from misreads as high as 25%

**Solution**

- Replacement of 23,000 meters with smart water meters
- Single broadband mesh network supporting multiple municipal applications

**Results**

- Projected savings: $452,540 per year plus additional revenue of $275,000 per year and 20-year ROI estimated at 128 percent
- Water revenue increased by 15 percent in first 3 months
- Faster detection and pinpointing of leaks reducing water loss
- Reduced dependence on cellular data cards saves $2,000 per month

**Systems and Services**

- Tropos Networks outdoor fixed and mobile mesh routers
- Badger Meter smart water meters equipped with ORION transmitters
- Multitrode, Inc. MultiSmart lift station controllers
- BIG Wireless: system integration and design

The Village of Wellington, located in Western Palm Beach County, Florida was originally planned as the world's largest strawberry field. It has since grown into an affluent and thriving community with 58,000 residents, one the world's largest equestrian areas, and an exclusive "fly-in" aeronautical community.

## The Challenge

Wellington Utilities maintains more than 20,000 meters across 40 square miles. The utility's drive-by meter reading system was not working effectively with approximately 25 percent misreads, resulting in poor customer satisfaction and inaccurate billing.

The Utility's goal was to select the most productive and cost effective meter reading method possible, so they began working with the Village's IT department to evaluate alternatives. The Utility researched several replacement systems, evaluating criteria such as reading services, additional services, cost savings areas, revenue generation areas, installation costs, payoff timeframe, and ROI.

Their analysis showed that a wireless broadband network that provided connectivity for smart water meters would be the best approach for to upgrading the metering system, while also providing opportunities for other municipal departments to utilize the communications infrastructure. Specifically, the wireless network could replace the current radio-reading backbone for the Supervisory Control And Data Acquisition (SCADA) network—used to control utility systems. The network could also enable service improvements and operational efficiencies for mobile workers in other municipal departments, including the building department, public safety, general administration.

## Results

As Tom Amburgey, CIO for the Village of Wellington, explained, "We found that the Tropos mesh system would save over $450,000 compared to our current system, the highest of the four solutions that were considered. ROI over a 20-year period was estimated at 128 percent, with a tremendous amount of currently unrealized ROI based on future system use." The original problem became an opportunity to greatly enhance and improve worker productivity, citizen satisfaction and overall savings throughout the Village.

Through research and testing, it was determined that Tropos IP broadband mesh routers would provide the most robust and scalable solution, while meeting all of the project requirements. The Village also selected Badger Meter, Inc. as the most technologically sound and cost-effective Automated Meter Reading (AMR) system for the Utility. Multitrode, Inc. was chosen for their MultiSmart lift station controllers, which provided greater functionality and IP communications capability.

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www.tropos.com

> "Tropos was chosen because it offered the most robust and scalable broadband mesh solution."
>
> Tom Amburgey
> CIO, Village of Wellington

The project was largely completed in 2009, and included replacement of 23,000 water meters, wireless meter reading equipment installation, wireless network installation, upgrading lift station to use wireless mesh communications, vehicle retrofits for full mobile connectivity to the network, and testing of the storm water system's use of the wireless network.

The results were dramatic. Within the first three months, water billing revenue increased by 25 percent due to more accurate reads. The new system provides scheduled water meter reads every 4 hours instead of once a month. The lift station SCADA configuration times were reduced to 30 minutes, down from the previous 8 to 10 hours. In fact, communication time was cut by 97 percent!

"In addition to improving meter reading efficiencies and accuracy, the application enhances the water department's ability to detect and pinpoint the location of leaks and other service problems faster, which will help reduce water loss and improve customer service," said Amburgey. Utility workers can pull up permits and maps from anywhere in the city. Employees can pinpoint and react to the cause of most problems almost immediately.

Fewer field meter personnel are needed — three staff members have been reallocated from meter reading to other important customer service functions, further enhancing productivity and customer responsiveness. "We don't have to send people out to read gauges," said Village Manager Paul Schofield. "It can be done by any computer on the system."

## Tropos Solution

The new wireless broadband mesh provides communications based on standard 802.x technology, delivering broadband connectivity virtually anywhere in the Village. The Village replaced its water meters with Badger Meter meters equipped with ORION transmitters, which connect to the Tropos network. The Tropos routers link to Wellington's existing wireless backhaul, sending data to the utility's billing center for processing. Mobile utility vehicles are equipped with Tropos 4210 mobile mesh routers, extending network coverage and replacing expensive cellular cards in PCs – eliminating cellular modems saved $2,000 per month while providing greater connection speeds. The design, installation, and implementation of the Tropos broadband mesh system was handled by BIG Wireless, which also helped design and implement the AMR system. BIG Wireless also created the communication capabilities for lift station controllers, and installed wireless cameras at parks.

## Additional Applications

Village personnel use standard Wi-Fi-equipped laptops and handheld devices to connect to the Tropos network. Some additional applications include:

- Palm Beach County Sheriff's Deputies use for field communications
- The Utility is currently fine tuning its paperless work order system enabling work orders to be completed in minutes instead of hours
- Mobile utility workers use instant video chats, allowing crew members to transmit live video of work sites to supervisors for questions and reviews
- Building inspectors in the field have a system that enables live data access and printing of inspection results. Field access to the Village's document management system enables review of project documents and pertinent property information without returning to the main office.
- Code Enforcement officers access GIS maps in the field for fast access to accurate graphical data. In addition, they can access case files in the field, including photos, reports, documents, and notes.
- Irrigation and storm water pump systems can now be controlled from a central location.



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