



# OVERCOMING A CASCADE OF CHALLENGES FOR BETTER WATER CONTROL





## POWERFUL, FLEXIBLE SCADA IMPROVES WATER QUALITY AND MANAGEMENT

Managing the water supply for a large, geographically diverse county is not an easy task. The highest levels of water quality must be maintained, requiring constant and consistent measurement and oversight. Facilities—often situated in hidden, hard-to-reach locations—must be monitored round the clock, constantly on the lookout for problems such as leaks, bursts or contamination. System flexibility in response to natural and environmental events ranging from earthquakes to wildfires must be managed and maintained. Furthermore, the success of water management and distribution often depends on a variety of different equipment and technology located at a large number of sites over a wide geographic area.

The continuous high-degree of monitoring, data gathering and reporting on a large-scale water system isn't something that can be done manually. It's a job best performed with an advanced SCADA (Supervisory Control and Data Acquisition) system. SCADA solutions allow water systems managers to monitor, control and automate functions that help optimize water management and distribution operations.

This Western United States county needed a water management system that would be able to communicate and coordinate with water departments in each of the county's large and small cities and towns. In addition, the solution had to be able to work over a 4,752 square mile area, and in terrain that includes mountains, beaches and ravines, all of which present formidable obstacles to fast, accurate data transfer and communications.

### CUSTOMER PROFILE:

**Company:** Western United States  
County Water Department

**Industry:** Water & Wastewater

**Solution Partner:** Technology  
Resource Company, Inc. (TRC)

**Key Benefits:**

- Communication on a single common infrastructure
- Wireless resilience against earthquakes and wildfires
- Reliable communication even in near or no-line-of-sight mountainous terrain
- Ensured continuity of operations with proven mission critical grade products
- Interoperability across multiple networks

**Product:**

- ACE3600 Remote Terminal Units

**“This is a turnkey Motorola Solution that simplifies planning, deployment and maintenance and enables the county's entire water system to communicate on a single common infrastructure.”**

- Mark Serres, Technology Resource  
Company, Inc.



## THE CHALLENGE

Complex water operations in counties covering hundreds of square miles containing multiple municipalities present some of the most complex challenges in all of government.

Many large water counties, especially those in rugged coastal or mountainous regions, are saddled with major challenges in terms of terrain. In these types of environments, it's almost certain that a number of reservoirs, treatment plants, pumping stations, meters, water tanks, pipelines and other facilities and equipment will be situated in hard-to-reach locations such as mountains, remote canyons and deep ravines. No matter how remote, these sites must be monitored 24/7.

Water districts can face significant natural and man-made disaster situations, ranging from monsoons to earthquakes to wildfires to tornados and many others. This county is located in a major earthquake zone, and in addition, every year it must deal with the problem of wind-driven wildfires. In an earthquake, power lines are always one of the first casualties. Cellular towers are also vulnerable to both seismic activity and fire. Under these circumstances, water is not just important, it is vital. A water department cannot wait hours or days for equipment to be repaired or re-installed. These are major public safety issues that wireless systems are best suited to solve.

## THE SOLUTION

The client and solution partner TRC selected a complete Motorola wireless SCADA solution that includes ACE3600 Remote Terminal Units (RTUs). The RTUs are located at 38 different sites to help water management personnel control the county's fresh water networks, wastewater operations, water treatment and flood control systems. They interface seamlessly with the different types of technology and equipment, including water quality instrumentation and existing Programmable Logic Controllers (PLCs).

A crucial network measurement for the county is meantime between failure. Under critical, yet uncertain circumstances, a system must be online at all times.

The county's SCADA solution is based on technology proven to have a meantime between failure rate of over 150,000 hours of continuous operation. Our RTUs can run for years without re-booting.

The SCADA system also includes seven store-and-forward sites. These sites, based on our point-to-multipoint OFDM technology, collect data from numerous RTUs in the remotest of locations up and down the coast, the foothills and the mountains, then distributes the data to the county's central water management control station where it can be viewed on a single computer.

## THE BENEFITS

The SCADA solution offers the county water department significant cost advantages. The system was quick and easy to deploy, and is self-operating, helping to reduce or eliminate altogether the recurring monthly costs for phone—such as expensive T1 lines—or cellular connectivity. By eliminating these monthly costs, the system is saving the county significant dollars—and time.

Our SCADA solutions are also hardened, secure systems offering strong encryption options. They are designed to collect and transmit secure wireless data communications for public safety and critical infrastructure applications. The inherent security built into the ACE3600 ensures peace of mind in the ability to provide continuous water services to the county's population without interruption.

In a SCADA system containing numerous different types of networks—including two-way radio and broadband—it's important to be able to combine data from each network and transmit it directly to the water department's control center. The ability to accomplish this is one of the major benefits of the ACE3600's communications flexibility. It can move data from a wide variety of media—VHF, UHF, 800 MHz digital trunking and 900 MHz frequencies; 2.4, 4.8, 5.2 and 5.8 GHz frequencies, fiber optics, IP and more—accurately and simultaneously. It's simply plug and go.

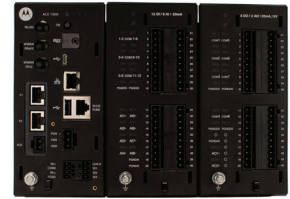


# DRIVING PRODUCTIVITY AND SAFETY WITH THE INDUSTRIAL INTERNET OF THINGS

IIoT, which typically relates to long term data collection for analysis and comparison with different solutions, can greatly benefit from the intelligence of day-to-day plant operations fed by SCADA systems.

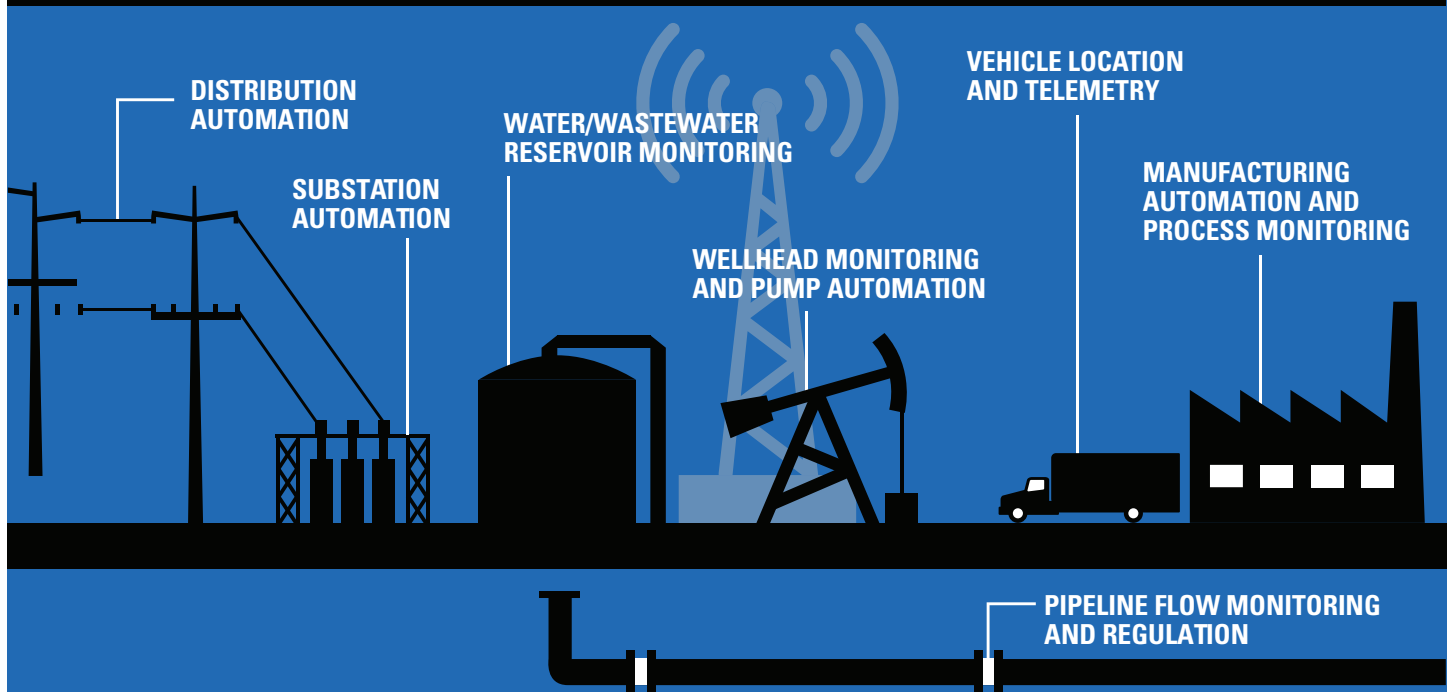
## SCADA / IIoT

Our remote terminal units (RTUs) are made to help you keep your teams out of harm's way, reduce downtime and optimize operational efficiencies – maximizing the safety, productivity, and profitability of your organization. With versatile communication network interconnectivity and support for a variety of data protocols, we ensure the most flexible, encompassing process automation and data communication.



ACE1000 Remote Terminal Unit

## INDUSTRIAL IIoT



**GIVE YOUR ORGANIZATION THE POWER TO BE MORE PRODUCTIVE  
AND THE INSIGHT TO INCREASE WORKER AND COMMUNITY SAFETY**

**The Industrial Internet of Things (Industrial IIoT) has the potential for ...**

**12%**

savings on scheduled repairs

**30%**

reduction in overall maintenance costs

**70%**

reduction in breakdowns

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