



# Remote monitoring system pays for itself

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Water and wastewater systems are generally spread over a wide area. Wells, water towers, lift stations, and booster stations are often miles from the central office or control room. To stay in compliance and to maximize the efficiency of these processes, it is essential to monitor key parameters wherever they may happen throughout the distribution or collection systems. Below, we analyze four methods of monitoring remote sites and some relative costs:

## Scenario:

- 10 remote sites need to be monitored. No telemetry/supervisory controller data acquisition (SCADA) equipment exists.
- Collection system with sites ranging from a half-mile from the wastewater treatment plant (WWTP) to 12 miles from the WWTP.
- Topography and foliage prevent direct line of sight between several remote sites and the WWTP.
- Municipality's water towers are available as radio repeater sites.
- Two radio repeater towers must be built to enable a municipal-owned radio system.
- Regulations dictate that each remote site must be visited daily if not equipped with telemetry/SCADA.

## Approach 1 – Send an employee to check:

- No capital cost (other than more frequent replacement of trucks).
- Operational cost – fuel and vehicle maintenance: 60 miles/day at \$0.55/mile = \$21,840/year.
- Opportunity cost – employee spends four hours a day (mostly driving) to assess conditions and collect data rather than performing higher-value tasks: half the annual cost of the employee = \$35,000/year.

**10-year cumulative cost: \$568,400**

## Approach 2 – Traditional remote terminal unit (RTU) with municipality-owned radio system:

- Capital cost:
  - RTUs with radios (installed cost): quantity of 10 \* \$10,000 = \$100,000.
  - SCADA software and server: \$20,000.
  - Radio towers (including engineering): \$40,000.
  - Radio repeaters: quantity of 3 \* \$2,000/each = \$6,000.
  - SCADA programming/configuration: \$10,000.
- Operational cost – SCADA annual updates: \$2,000/year.

**10-year cumulative cost: \$196,000**

## Approach 3 – Traditional RTU with cellular modem and traditional municipal-owned SCADA:

- Capital cost:
  - RTUs with cellular modems (installed cost): quantity of 10 \* \$10,000 = \$100,000.
  - SCADA software and server: \$20,000.
  - SCADA programming/configuration: \$10,000.
- Operational cost:
  - SCADA annual updates: \$2,000/year.
  - Annual cellular cost: quantity of 10 \* \$30/month \* 12 months/year = \$3,600

**10-year cumulative cost: \$186,000**

## Approach 4 – Cloud-based telemetry/SCADA:

- Capital cost – RTUs with cellular modems (installed cost): quantity of 10 \* \$5,000 = \$50,000
- Operational cost – annual cloud service cost (includes cell cost): quantity of 10 \* \$40/month \* 12 months/year = \$4,800.

**10-year cumulative cost: \$98,000**

In Approach 4, the cloud-based telemetry/SCADA approach turned out to be the least costly. Perhaps counterintuitively, the option of not investing in any SCADA system turned out to be the most expensive!

### **Introducing the Phoenix Contact EAGLEi remote monitoring solution**

EAGLEi from Phoenix Contact is a cloud-based, end-to-end monitoring system that helps water and wastewater utilities stay on top of the status of their remote assets and processes. Just install the RTU, and wire the analog and digital inputs you want to monitor. Do some simple drop-down menu-driven configuration specific to your application, and give us a call to activate. Access your information from smartphones, tablets and computers anywhere there is an internet connection, via the secure EAGLEi web portal. For more information, visit [www.phoenixcontact.com/EAGLEi](http://www.phoenixcontact.com/EAGLEi).

