



WATER INFORMATION TECHNOLOGY ROI SUMMARY

OVERVIEW:

The U.S. water infrastructure is rapidly aging, decaying and causing disease outbreaks, water loss, and extensive property damage; these problems are primarily caused by ancient water pipes. Many of these pipes have not been upgraded since they were first installed in the years following World War II. Some of these pipes are more than 60 years old and account on an average over 700 water main breaks a day, flooding homes and causing thousands of dollars in property damage.

In the 2009 Report Card of America's Infrastructure, the American Society of Civil Engineers rated the U.S. water infrastructure at a "D-." The main impediment to making critical maintenance or upgrades is cost. In 1999 the EPA estimated that the total cost of repairing and updating the U.S. water infrastructure was \$198 billion – the latest estimate was \$335 billion. Recent estimates would set that number at \$365 billion.

Aside from the crumbling infrastructure, we have entered an era of severe fiscal restrictions faced by federal, state, and local governments. Therefore, it is critical that this investment is adequately prioritized and well-directed. The development of a smart water grid system allows for better day-to-day management of a watershed, and the ability to better plan and allocate dwindling fiscal resources. Through the use of innovative technologies for sensing & monitoring, information exchange, and data analytics, a smart water grid system can drive a quantum leap in efficiency of water use and distribution. This would contribute towards maintaining drinking water infrastructure at the traditionally high standards to which the public is accustomed.

A nationwide smart water grid would create a central command and control center. This would allow for individual communities and watersheds to utilize an advanced water IT system for the management of their water systems. This would create a common standard. Furthermore, this system would allow for data exchange that exceeds traditional community boundaries and looks at where and under what conditions water is accessed, used and discharged. A smart water grid system would have an enormous long and short term impact fiscally, improving human health and the environment.

The Water Innovations Foundation has undertaken research over the past several months, to explore the impact of a water system to better understand its effect on utilities and communities and the potential return on investment. These are some of the initial key findings.

KEY FINDINGS:

- Approximately 83% of the 53,000 community water systems, serve 3,300 or fewer people.
- In 2009, more than 20 percent of water treatment systems in the U.S., which provide water to 49 million people, have violated key provisions of the Safe Drinking Water Act over the previous five years.
- The average residential water bill has risen from \$17(drinking) and \$22 (sewer) in 2001 to \$28 (drinking) and \$36 (sewer) in 2010 - approximately a 5.5 percent compound annual increase
- Commercial and industrial water bills have risen at even faster rates than residential

- It will take 15-20 years of significant investment to stabilize and modernize the U.S. water infrastructure
- Predicted costs to repair U.S. water infrastructure system: \$365 billion
- Smart Water Grid would create \$102 billion in savings (28 percent)
- Cost to deploy Smart Water network is estimated to be \$19.2billion
- Total Savings: \$82.8billion

- Total Cost to address current water infrastructure problems: \$282.2 billion
- A water IT system will lower annual operating costs on average of 33 percent-- providing more impact on larger systems
- This is not one project but hundreds of interconnected projects
- Approximately 15 percent of municipal water is lost to leaks
- Public water systems that serve more than one million people in the United States average a loss of 17 percent leakage
- 45 percent of the country's pipes will be rated poor, very poor or beyond repair by 2020
- Leaking pipes lose an estimated 7 billion gallons of clean drinking water a day
- A water IT system would allow for significant treated water savings -- nearly 54 percent less leaks for same projected 20 year growth in use and required investment
- In 2010, Electricity consumption totaled nearly 3,884 billion Kilowatthours (kWh)
- Electricity use in 2010 was more than 13 times greater than electricity use in 1950
- The U.S. water system uses over 4 percent of U.S. electricity
- Water utilities would save 37.5 percent on average if a Water IT system were put in place
- In addition to lowering energy usage, a water IT system would insure improved environmental conditions, less environmental accidents and reduction of chemical use by a staggering 68 percent
- Numerous U.S. water experts claim that 55 percent of waterborne illness is caused by improper monitoring, testing and reporting.
- A water IT system would cut outbreaks of water borne illness by 81 percent
- A water IT system would lessen the amount of treatment - particularly chemicals - used to ensure safe drinking water by over 18 percent