Water Supply Planning: Finding our Hidden Reservoirs

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ABSTRACT. As the Southeast faces the challenges of limited water supplies, extremes in weather and surging population growth, utilities and communities must find new ways to secure reliable supplies of clean water. Communities across the Southeast are starting to secure cost-effective, timely and reliable water supplies through water conservation and efficiency.

In this session, American Rivers will show how utilities and their bottom line can benefit from water efficiency and conservation planning. We will explain why water efficiency is our best source of affordable water. Water efficiency policies that communities can implement to secure cost-effective and timely water supply will also be emphasized with a focus on water loss auditing and revenue recovery. The session will conclude with a discussion of the importance of state level support for successful water efficiency policies so we can realize water efficiency improvements. American Rivers will share policies from our 2008 report Hidden Reservoir: Why Water Efficiency is the Best Solution for the Southeast. This report highlights nine proven policies that can be implemented in the Southeast to secure more reliable water supplies, encourage conservation and protect revenues. This session will cover three policies in more depth because they provide the best starting point for utilities: stopping system leaks, pricing water at its true value, and metering all water users. Policy recommendations will be augmented by case studies for success in water and revenue savings from communities and utilities across the Southeast.

By implementing these policies and programs, utilities can secure timely and cost effective water supplies, customers can save money, and rivers can flow more freely. Implementing water efficiency policies can also delay the costly expansion of drinking water and wastewater treatment capacity. Water efficiency accomplishes more with less by replacing outdated infrastructure with the best available technology and using water in smarter and more innovative ways. Changing out the hardware secures the ongoing savings.

Water Supply Planning Today

A changing climate, increasing droughts, and population growth are straining water resources in the Southeastern United States (American Rivers, 2008). Concurrently, water treatment infrastructure is aging and costs continue to increase. A recent American Water Works Association report cites an investment of $1 trillion is needed for buried drinking water infrastructure in the US between now and 2035 (2012).

Traditional solutions also show an increasing risk. While communities historically turned to new reservoir development, however, today the financial and water resources risks inherent in this option make the need for innovative water supply and efficiency policy necessary (American Rivers, 2012). Perhaps more importantly, the long held belief that water supply must increase with population is no longer holding true. For instance, both the Cities of Raleigh (Raabe, 2012) and Seattle have seen consumption decrease as population increases (Dietemann, 2012).

In a 2008 report titled Hidden Reservoir: Why Water Efficiency is the Best Solution for the Southeast, American Rivers shares nine proven policies that can be implemented in the Southeast to secure more reliable water supplies, encourage conservation and protect revenues. By implementing these policies and programs, utilities can secure timely and cost effective water supplies, customers can save money, and rivers can flow more freely. These water efficiency policies can also delay the costly expansion of water treatment capacity. Water efficiency accomplishes more with less by replacing outdated infrastructure with the best available technology and using water in smarter and more innovative ways. Changing out the hardware secures the ongoing savings. I will focus on three key policies:

1. Stop Leaks
2. Meter all Water Users
3. Price Water Right

These three policies provide the best starting point for utilities because they provide an opportunity to “clean up your own house first.”
Stop Leaks
Leaky pipes and aging infrastructure often make up a significant portion of lost drinking water. Many utilities don’t have systems in place to determine where their lost water is going, much less a system to reduce the loss. Utilities should regularly conduct self-audits to identify system leaks, reduce non-revenue water loss (unbilled authorized consumption, apparent losses, and real losses), and eliminate unmetered uses. Auditing and leak detection should become an integral part of ongoing operations.

Reducing leaks to 3% could yield as much as 2.8 MGD for a system the size of Durham, North Carolina. The Clayton County Water Authority (CCWA) in Georgia has significantly reduced their non-revenue water rate from 20% in 2000 to 12.5% in 2009 and in doing so they saved $4,252,136.78 in production costs. Moreover, according to Mike Thomas, General Manager for CCWA, they use the same amount of water today as they did in 1995 while having added 42% more customers (Thomas, 2009).

Meter all Water Users
Many water utility customers are not metered at all or are included in a larger apartment building meter, rather than being sub-metered. Most rental properties and buildings include water in rent or monthly fees, making water seem free. Encouraging sub-metering can yield an average savings of 15%.

After adopting a policy requiring sub-metering, the City of Austin, Texas found that sub-metered apartments used 15.3% less water than master-metered multi-family dwellings (Mayer, 2004).

Price Water Right
Many utilities incentivize water waste through discounted ‘bulk pricing’ where the unit cost of water lowers as consumption increases. Alternatively, some utilities charge based on volume of water consumed without including a base fee, creating budget shortfalls when water consumption decreases through water efficiency or conservation. Water can be priced to cover costs and encourage efficiency. One option is to adopt a two part fee system which establishes:

- A flat service fee that covers all utility fixed costs.
- A variable fee for the volume of water consumed, charging higher rates as consumption increases and lower rates for conserving households and low-fixed income customers. The higher fees can provide funding for conservation incentive programs.

Greensboro, North Carolina adopted a conservation pricing structure in 2000. They lowered the price per gallon for conserving households and increased the price per gallon as consumptive households went above-average levels. In seven years, average household consumption dropped 22% with only a modest increase of one-third of a penny per gallon even at the highest rate (Williams, 2008).

Water Supply Planning for Tomorrow
In the Southeast, and particularly in South Carolina, we must become acutely aware of the changing needs and trends in water supply planning. We can no longer act alone when planning for our own community’s water supply. First, we must start by improving efficiencies within our utilities, industry, and residences. The options exist for smart water efficiency-based planning.

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