



Memorandum

To: The Honorable Bill Bell, Mayor, and Members
Durham City Council and
The Honorable Ellen Reckhow, Chairman, and Members
Durham County Board of Commissioners

From: Bill Holman, Visiting Senior Fellow
Nicholas Institute for Environmental Policy Solutions

Re: Efficient use of water resources

Date: November 29, 2007

Thank you for the opportunity to speak to your joint session on November 13, 2007. I am writing to follow up on my oral comments and to provide additional information.

The City of Durham and Durham County have a long and active history in wise management of water resources. The City built Lake Michie on the Flat River in 1925 at a cost of \$2,400,000 and Little River Reservoir on the Little River in 1987 at a cost of \$31,000,000. Durham has worked to protect these supplies by adopting local rules stricter than the state minimum water supply watershed rules and by targeting local and state funds to acquire key properties in these watersheds. These high quality water supplies and local actions served Durham well in the last century.

However, increasing population, increased demand for water services, and more extreme weather associated with global climate change will require new water policies. The greatest and most cost-effective source of “new” water to sustain Durham’s population, economic growth, and environment in the 21st century is water efficiency. I am writing to provide some options for you to consider increasing efficient use of water in Durham.

Earlier this year the Nicholas Institute provided some options for State officials to consider increasing efficient use of water in North Carolina (www.nicholas.duke.edu/institute/waterreport.pdf). Some policies may be more appropriate for state action; others, local action. The 2007 General Assembly of NC authorized its Environmental Review Commission (ERC) to study water allocation policies.

The ERC and the 2008 General Assembly may also consider statewide water efficiency ideas, such as improving water use reporting by agriculture and community water systems, strengthening the plumbing code, clarifying use of grey water, and providing more authority to counties to regulate withdrawal of water from private wells.

We can also look for opportunities to connect our energy and water efficiency programs, because such efficiencies are cross-cutting. Pumping and treating water requires significant energy, and power plants are major consumers of water, so efficiency gains in either sector reduce the impacts of the other. North Carolina and the nation are increasing efforts to improve energy efficiency.

Conservation Pricing for Water Services

Water services in the 20th century were abundant and cheap. If we want industries, institutions, businesses and citizens to value and conserve water in the 21st century, we need to price water services accordingly. Durham has already taken some steps in this direction. In the 1990's Durham wisely eliminated declining block rates and adopted an irrigation rate (twice the water rate). These are important conservation policies.

However according to UNC-CH's Environmental Finance Center (www.efc.unc.edu) Durham charges less for 5000 gallons/month of water than 90% of the other utilities in its class and less than 50% of other utilities to large residential water users (greater than 10,000 gallons per month).

It is possible to develop a water and wastewater rate structure that is affordable for average users and sends a stronger price signal to large users, providing a financial incentive for conservation. I understand that Durham is updating its utility billing system so that it will have more capacity to analyze and differentiate rates and impacts. More detailed, monthly water bills will be necessary if Durham desires to educate customers on their choices.

In addition to considering a conservation rate structure, consider setting aside adequate capital reserves to implement the Capital Improvement Plan; to aggressively detect and repair leaks (and to reduce revenue lost for unaccounted water); to fund conservation technical assistance, financial assistance and education; and to increase local funding to protect and restore riparian buffers, wetlands, and floodplains upstream from Lake Michie and Little River. Sediment and nutrient loading in Lake Michie and Little River have reduced water storage capacity and increased treatment costs. Lake Michie has lost about 3118 acre-feet or almost 25% of its storage capacity. About one foot of sediment has covered Little River since it was built in 1987.

I note a large, downstream neighbor of Durham also under prices its water and wastewater services and may also consider developing and adopting a conservation rate structure. Other neighbors of Durham, Cary and Orange Water & Sewer Authority, have adopted and implemented a conservation rate structure.

Mandatory, Year Round Conservation & Efficiency Programs

Mandatory, year-round water conservation and efficiency programs are more effective than occasional efforts. While short-term conservation strategies rely on asking consumers to forgo or reduce uses to which they expect to return to eventually, efficiency strategies rely upon positive action to meet the same or growing needs with less water.



There are several ways that Durham can build on its successful showerhead exchange program.

For example, Durham could cost-share the costs of **water audits** for larger industrial, institutional, and commercial customers and could conduct free water audits for residential customers. A conservation rate structure will make many measures such as industrial water recycling more cost effective. Electric utilities, like Duke Energy, cost share the costs of energy audits. Both the city and county could conduct water audits of their own buildings by the end of the 2007-2008 fiscal year, and identify cost effective improvements for the 2008-2009 fiscal year.

In existing buildings, Durham could also offer incentives to retrofit with water efficient fixtures and appliances, possibly by partnering with appliance and fixture sellers. In new buildings, Durham, which is already a leader in green building, could promote more water efficiency, in municipal and county buildings and by drawing attention to the water use efficiency measures taken in proposed developments.

Durham could participate in regional and statewide water conservation marketing campaigns. As Councilor Clement observed the public is confused by different local regulations and programs. If we want the public to understand and conserve, we need to provide clear and simple messages.

Finally, Clean Energy Durham, a non-profit organization, has begun to identify energy efficiency and renewable energy opportunities in Durham. Durham could work with them and others to also identify water efficiency ideas.

Lost Water Equals Lost Revenue

According to the local water supply plan that Durham submitted to the NC Division of Water Resources over 11% of the water that Durham treats is unaccounted for. Leaks are the most common source of lost water. Lost water is also lost revenue.

Like many cities much of Durham's water infrastructure is old. Pipes and pumps wear out. Durham has recently increased funding for its leak detection and repairs. Investments in leak detection and repair will pay for themselves.

Is Water Pressure Too High?

We pressurize our water systems to fight fires more than to deliver drinking water. Higher pressure increases leaks and losses. While we need to maintain pressure to fight fires, new technology enables cities to selectively manage water pressure. Durham and its customers could reevaluate the water pressure in its system.

Storm Water is a Resource

Collection and treatment of storm water reduces flooding, reduces stream erosion, and protects water quality. Storm water could also become a source of water for purposes

such as irrigation and cooling. According to estimates provided by Durham Stormwater Services about 3,000,000,000 gallons of water ran off Durham's streets, parking lots, roofs, and other impervious surfaces during the three inch rain storm in October. Durham could work with citizens and developers to evaluate its storm water ordinances and policies to increase collection and reuse of storm water. Durham could also investigate the benefits of requiring more storm water collection such as rain barrels and cisterns at new construction.

Wastewater is a Resource

Like storm water, treated wastewater can be used for non-potable drinking water purposes such as irrigation and cooling. Durham could develop a strategic plan to increase use of treated wastewater or reclaimed water. Increasing use of treated wastewater will also help Durham comply with stricter nitrogen and phosphorus standards proposed to improve water quality in Jordan and Falls Lakes.

Landscaping

Durham could encourage or require more drought resistant plants and landscaping practices. Increasing use of compost, soil amendments, and mulch conserves water and helps plants survive droughts. Durham's Soil and Water Conservation District and Cooperative Extension Service could help educate homeowners, landscapers, and others.

Duke University

Duke University is committed to helping Durham conserve water. President Dick Brodhead wrote all Duke students, faculty and staff to encourage us to reduce our water use by 30% on November 13. Duke is auditing its use of water and evaluating strategies to conserve.

Duke would like to be a resource for Durham and other communities on water use and designing appropriate water policies. Bill Chameides, Dean of the Nicholas School for the Environment & Earth Sciences at Duke, would like to co-host a Town Hall meeting in January with Durham city and county officials on the drought and ideas to increase water efficiency.

Thank you for your consideration. Please contact me if you need more information or if I can be of assistance.