

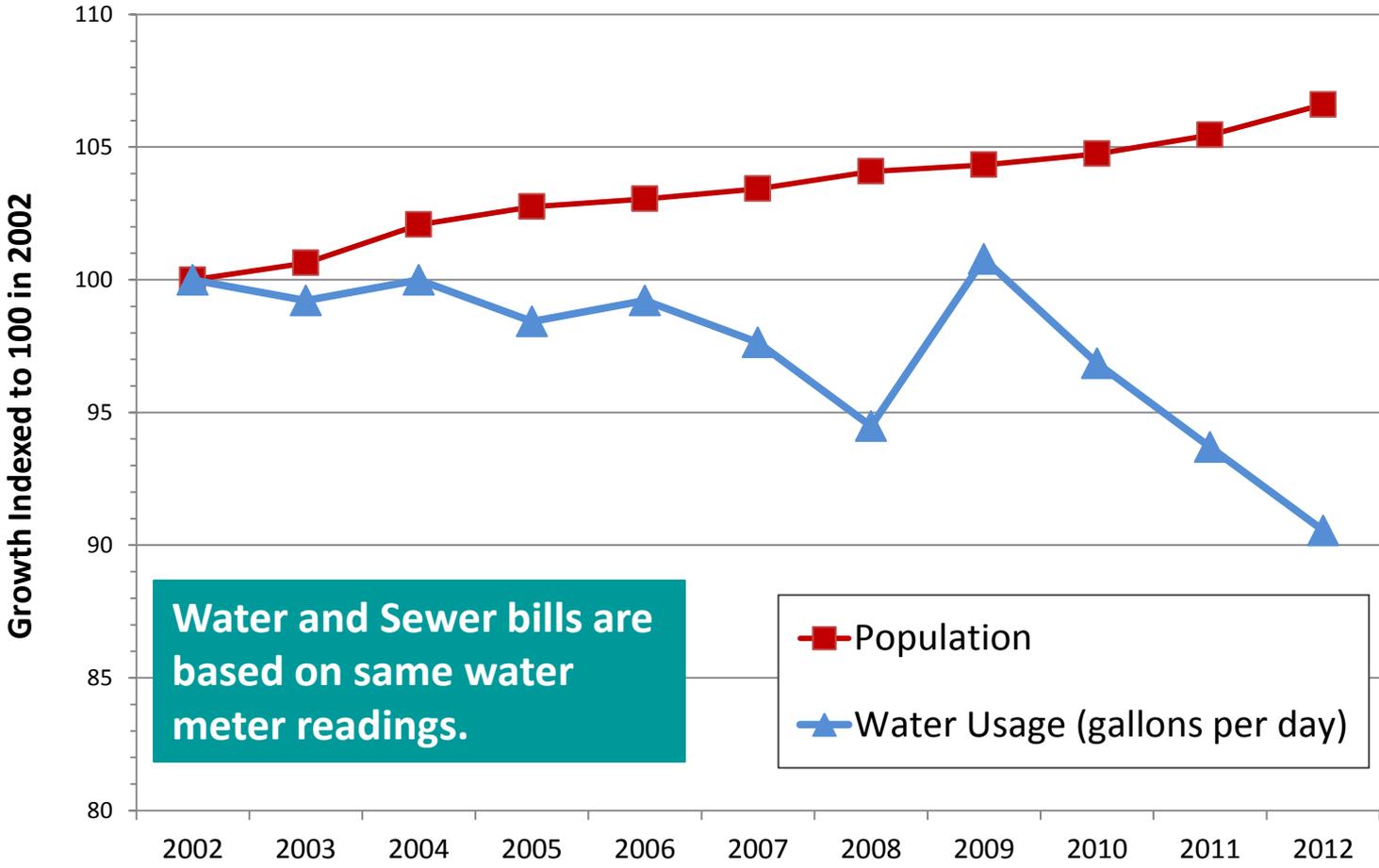


WATER & WASTEWATER UTILITIES: DESIGNING THE RATE STRUCTURE OF THE FUTURE

Whitney Katchmark
Principal Water Resources Engineer
Presented to HRPDC
September 19, 2013



WATER USAGE DECLINING



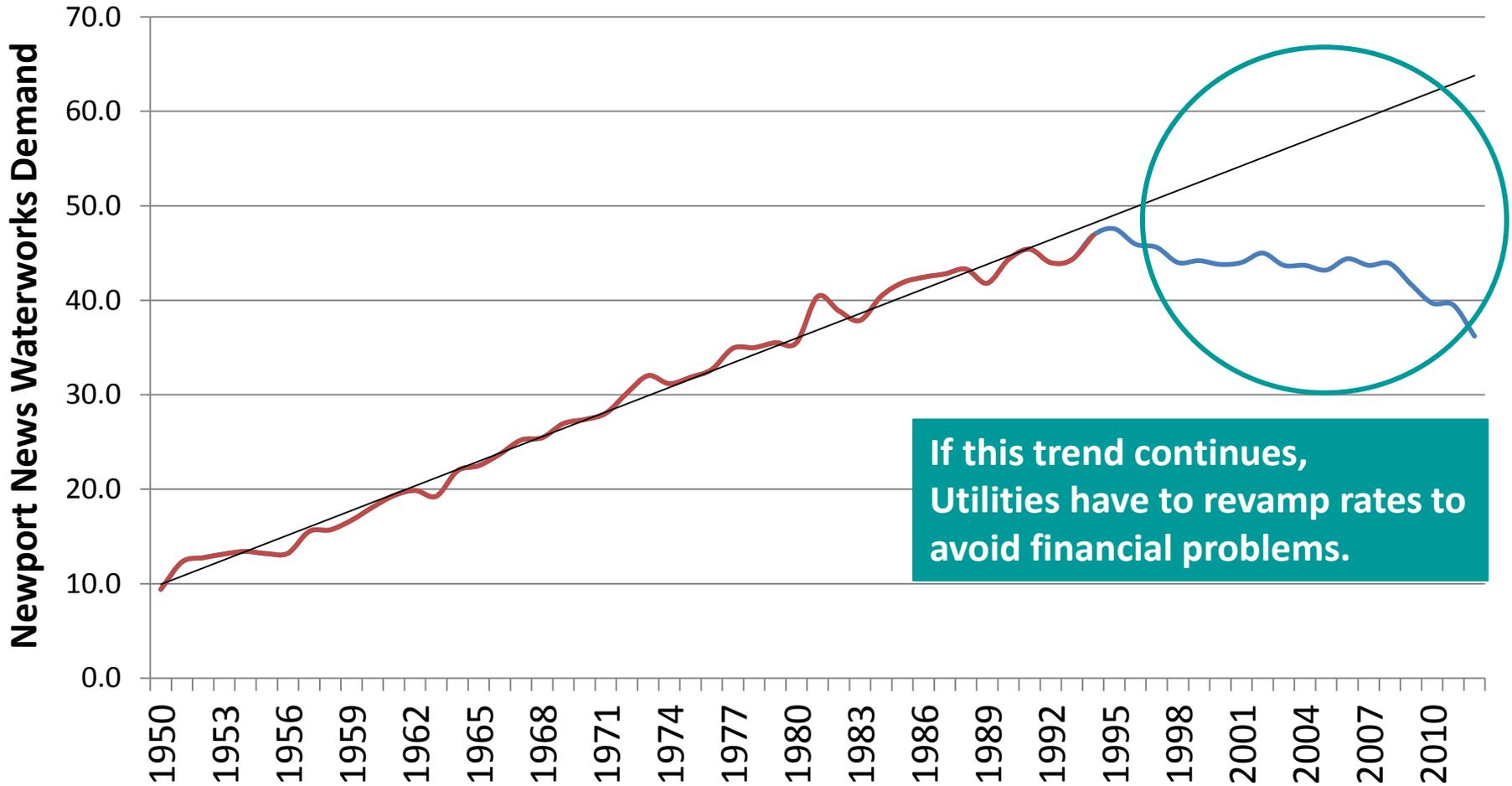
Water and Sewer bills are based on same water meter readings.

- Population
- ▲ Water Usage (gallons per day)

Source: 2002-2011 population data from HRPDC 2012 Data Book; 2012 population estimate from the University of Virginia, Weldon Cooper Center for Public Service, July 1, 2012 Estimates for Virginia and its Counties and Cities; billed consumption data from HRSD FY2012 Comprehensive Annual Financial Report.

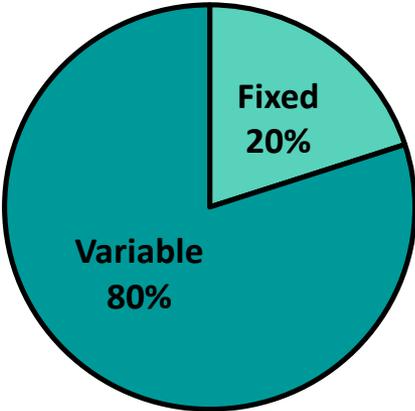


WHY THE DECLINE IS SURPRISING...



AS USAGE DECLINES, REVENUE DECLINES BUT COSTS DON'T DECLINE

Revenues



Variable

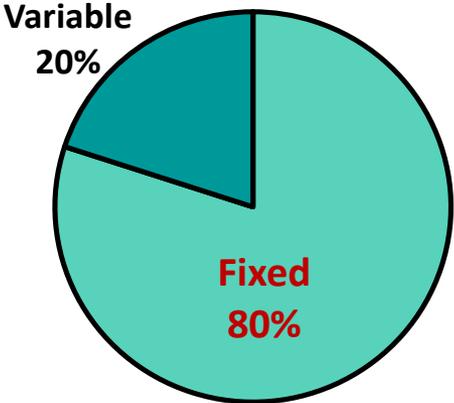
Revenues:

Cost per gallon consumed

Fixed Revenues:

Ready to serve fee
Meter fee

Costs

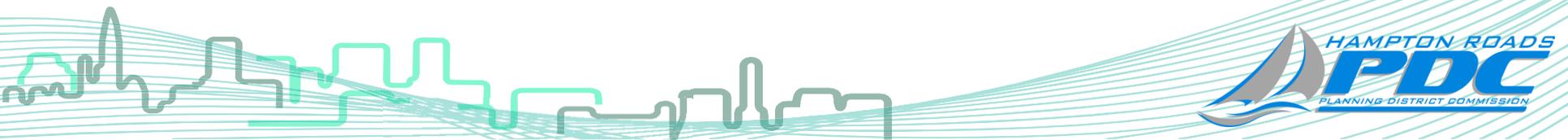


Variable Costs:

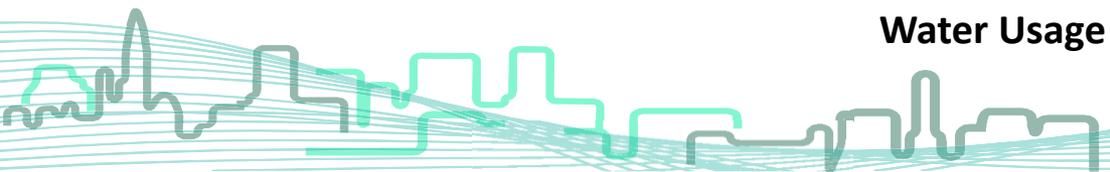
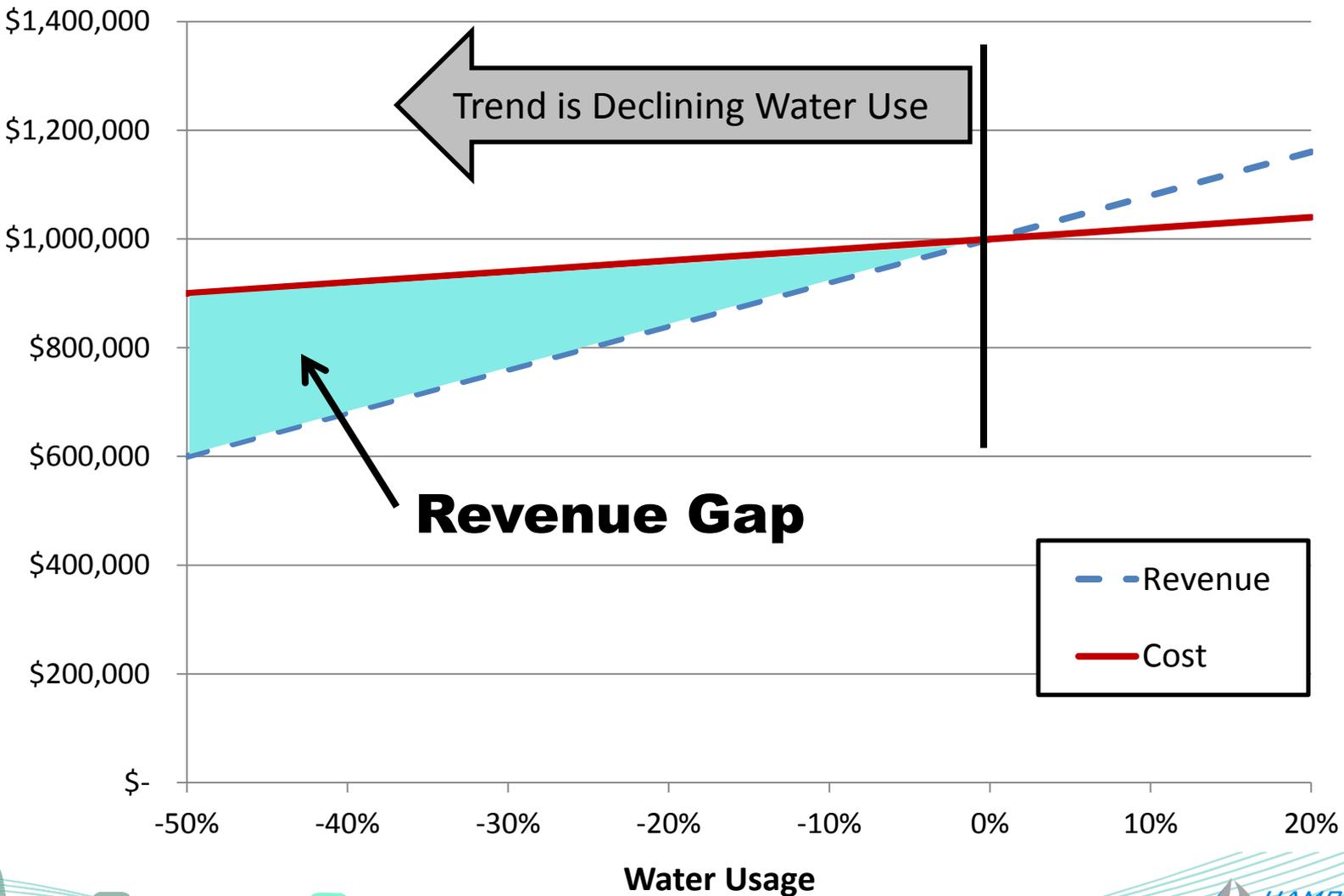
Chemicals
Energy

Fixed Costs:

Debt service
Operations
Billing
Customer Service



RATE STRUCTURE CREATES FUNDING GAPS



RATE STRUCTURE CREATES FUNDING GAPS

Example:

Start with a balanced budget of \$1M

Then water usage drops by 10%

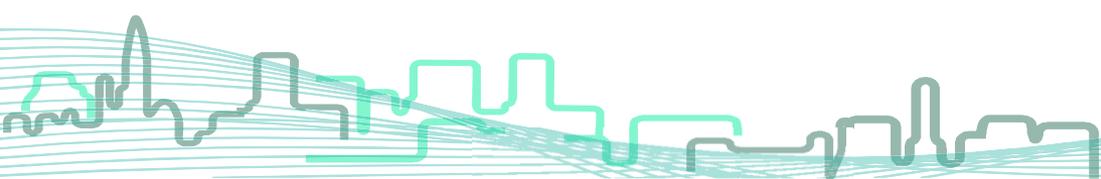
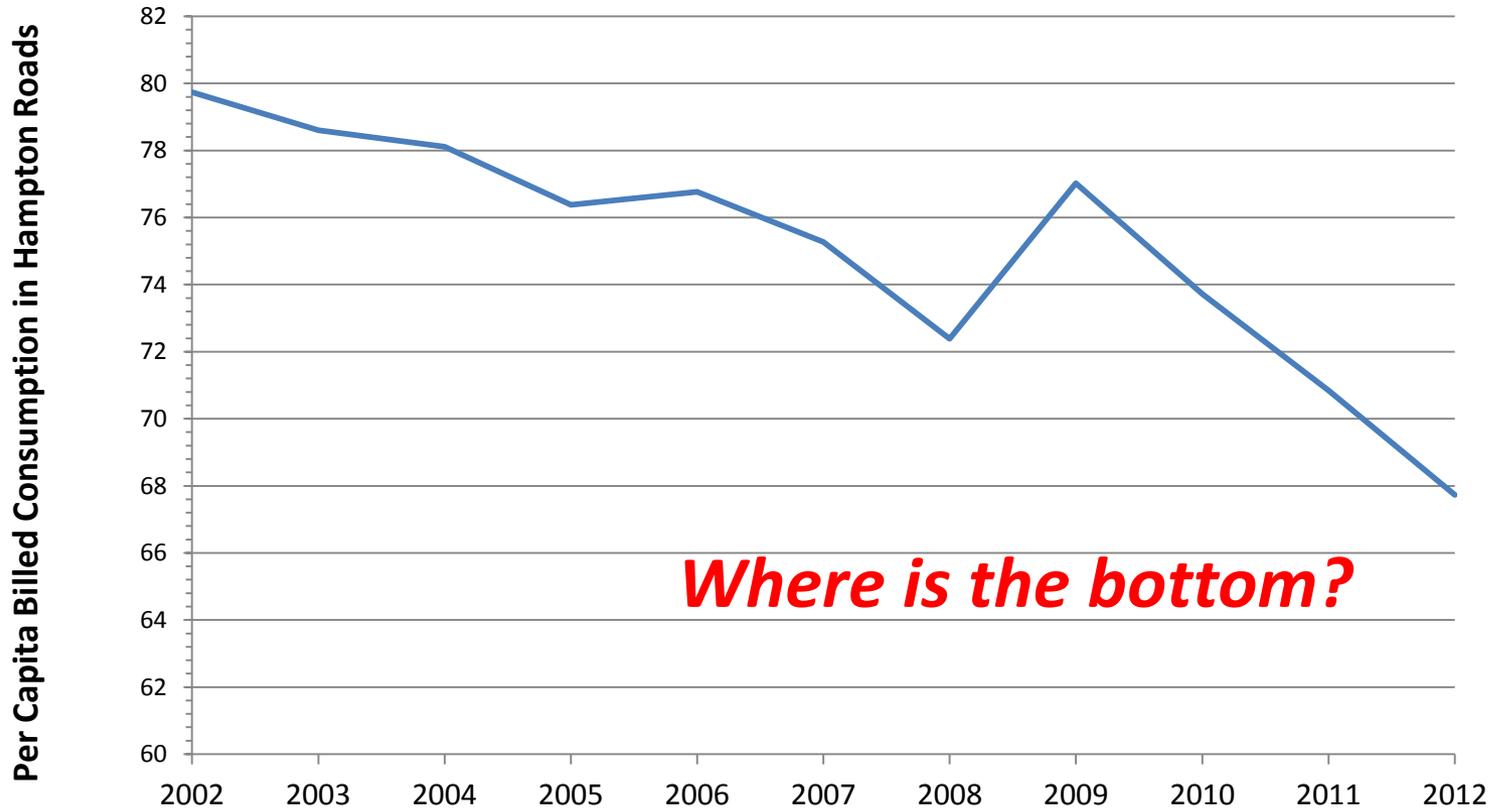
Revenue drops from \$1M to \$920,000.

Costs drop from \$1M to \$980,000.

Result is \$60,000 funding gap.

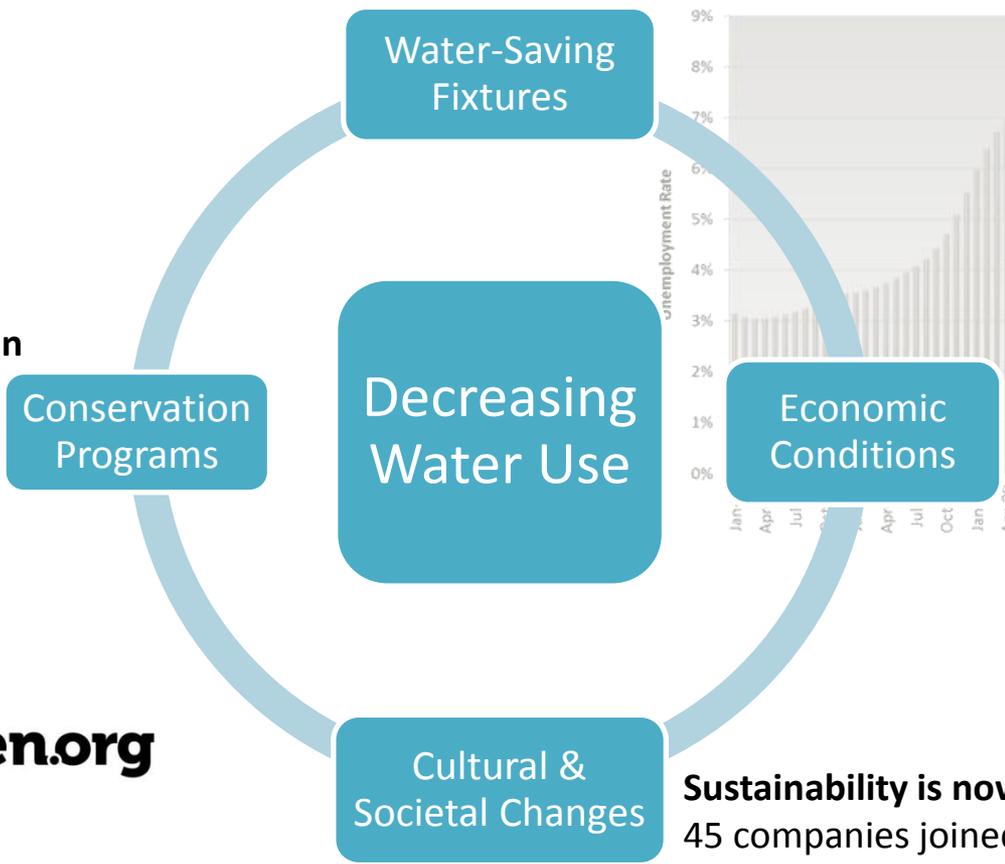
Revenue is 6% less than Cost.

WILL THE DECLINE CONTINUE?

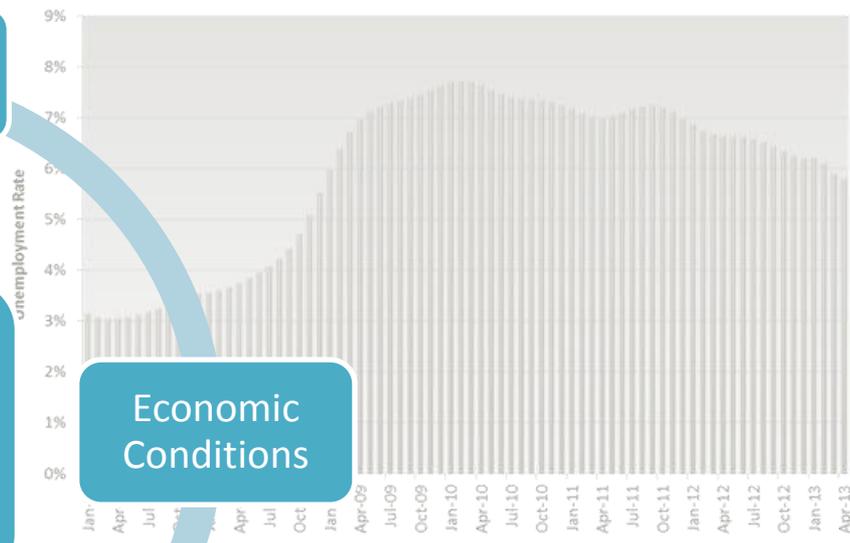


WHY ARE DEMANDS DECLINING?

Community education programs about water conservation required by permits.

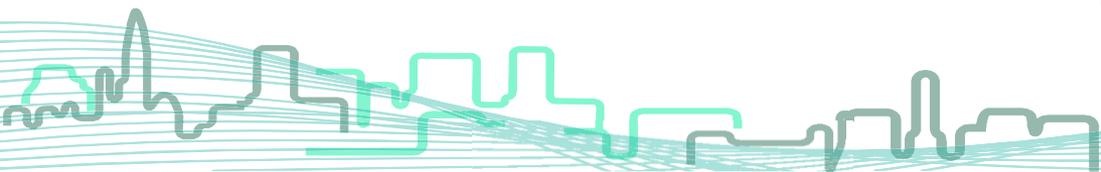


Seasonally Adjusted Unemployment Rates in Hampton Roads



Source: Bureau of Labor Statistics & HRPDC

Sustainability is now a Corporate Benchmark
45 companies joined a UN Global Compact in committing to improve water management practices (Coca-Cola, Anheuser-Busch, Nestle, Unilever, etc).



WHY ARE DEMANDS DECLINING?

Indoor water use in a home built in 2011 is 35% less than indoor water use in a home built prior to 1994.



Flow Rates for Typical Household Fixtures and Appliances

Flow rates vary significantly before and after Implementation of various federal standards.

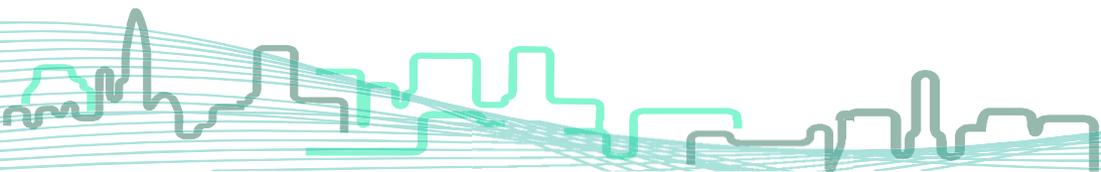
Type of Use	Pre-Regulatory Flow*	Regulatory Standards and Flows			WaterSense/ ENERGY STAR Current Specification+
		Regulatory Standard (maximum)	Federal Law	Year Effective	
Toilets	3.5 gpf	1.6 gpf	US Energy Policy Act	1994	1.28 gpf
Clothes washers**	41 gpl (14.6 WF)	Estimated 26.6 gpl (9.5 WF)	Energy Independence and Security Act of 2007	2011	Estimated 22.4 gpl (8.0 WF)
Showers	2.75 gpm	2.5 gpm at 80 psi	US Energy Policy Act	1994	No specification
Faucets***	2.75 gpm	2.5 gpm at 80 psi (1.5 gpm)	US Energy Policy Act	1994	1.5 gpm at 60 psi
Dishwashers	14 gpc	6.5 gpc for standard; 4.5 gpc for compact	Energy Independence and Security Act of 2007	2010	5.8 gpc for standard; 4.0 gpc for compact

* Source: Handbook of Water Use and Conservation, Amy Vickers, May 2001

*** Regulation maximum of 2.5 gpm at 80 psi, but lavatory faucets available at 1.5 gpm maximum

** Average estimated gallons per load and water factor

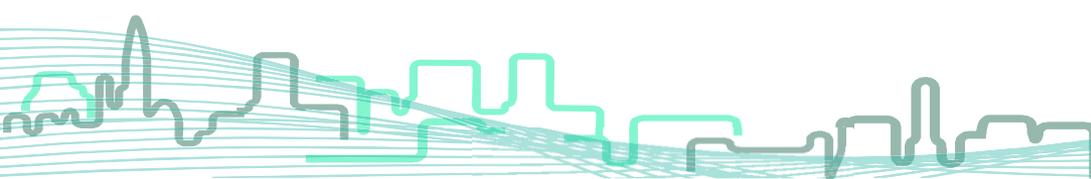
+ Source: www.epa.gov/watersense and www.energystar.gov websites



COSTS LIKELY TO RISE, NOT STAY THE SAME

Increasing Regulatory Requirements

- Regional upgrades to the sewer system to meet Consent Order/Consent Decree for overflows estimated to cost \$2B.
- HRSD must spend over \$400M to upgrade treatment plants to meet stricter permit limits on nutrients in discharges.
- Norfolk spent \$50M to upgrade reservoir dams to meet revised dam safety regulations.
- Newport News Waterworks estimate upgrades to Lee Hall reservoir will cost \$21M.



COSTS LIKELY TO RISE, NOT STAY THE SAME

Aging Infrastructure

“Early Thursday, the City of Chesapeake reported a water main break at Taylor and Pughsville Road that left hundreds without water” - Dec 16, 2011, WAVY

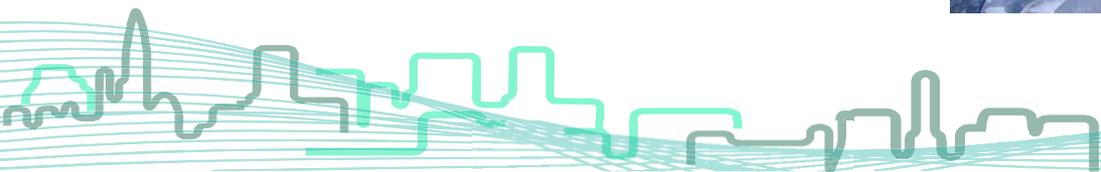
“Newport News Waterworks is investigating an apparent leak in a 42 inch raw water main where it crosses the Colonial Parkway in York County” - Jan 2011

**“Burst pipe leads to boil-water advisory for Oceanfront”
Virginian-Pilot, March 26, 2013**

**“Suffolk sewage spill dumps 9.3 million gallons in creek”
Virginian Pilot, November 2, 2012**

**“Key Norfolk sewage pipeline to be replaced”
Virginian-Pilot, January 5, 2012**

**“Norfolk road reopens after water-main break, flood”
Virginian-Pilot, June 4, 2009**



WHY AREN'T RATES STRUCTURED TO MATCH COST STRUCTURE?

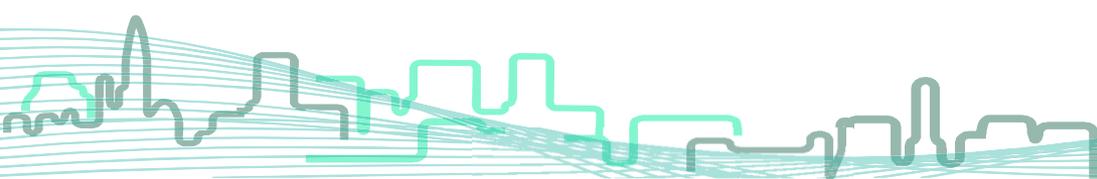
Conservation goal has driven rate structures.

Utilities want to give customers some incentive not to waste water. If water demands skyrocket, utilities have to develop new wells and reservoirs or build new wastewater treatment plants. This infrastructure is expensive and difficult to permit.

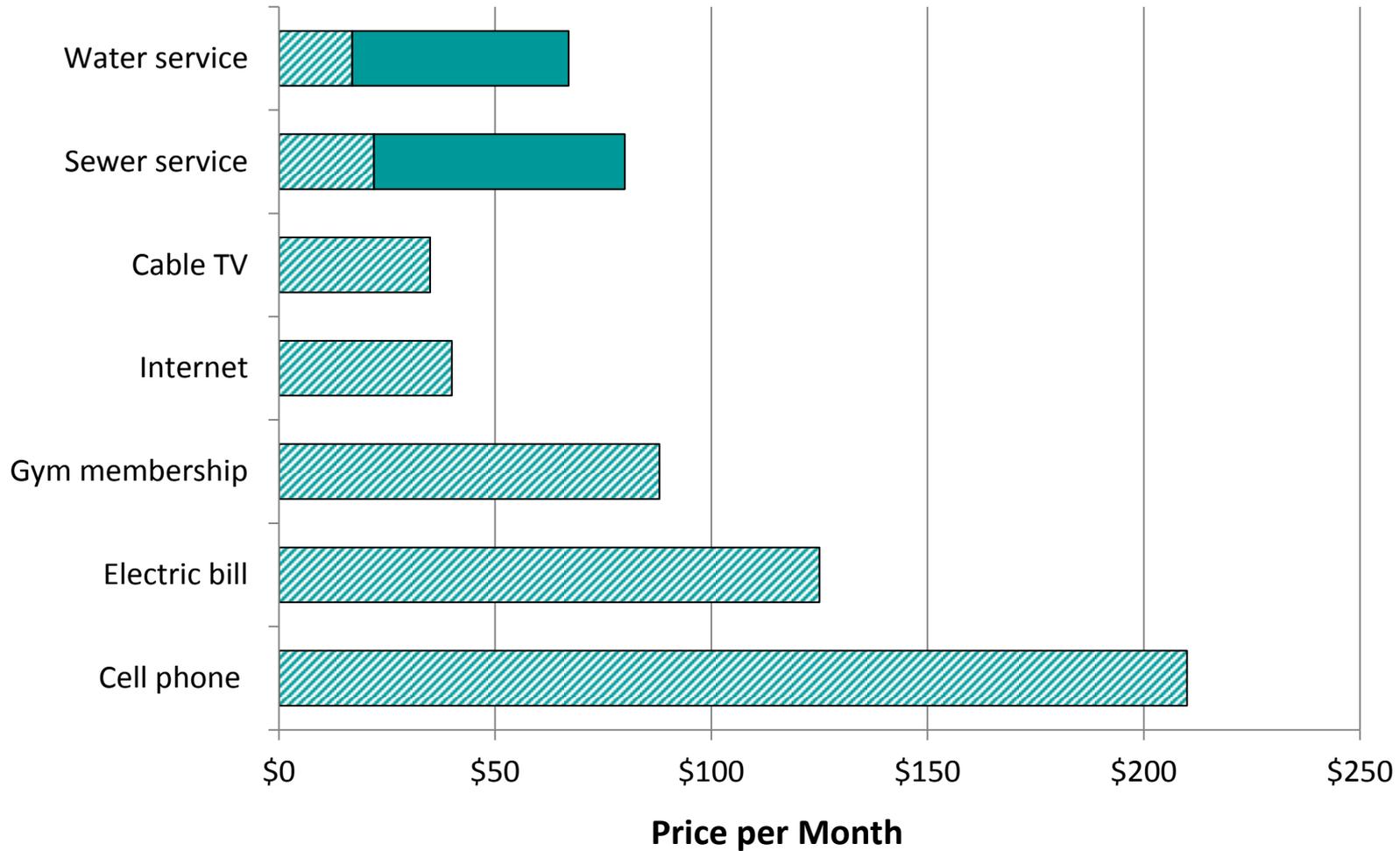
Perception that it is fair to pay for what you use.

Affordability goal dictates relatively low utility rates.

Water and sewer are essential public health services. Citizens should not be priced out of fundamental government services.



ARE WATER & SEWER BILLS EXPENSIVE?



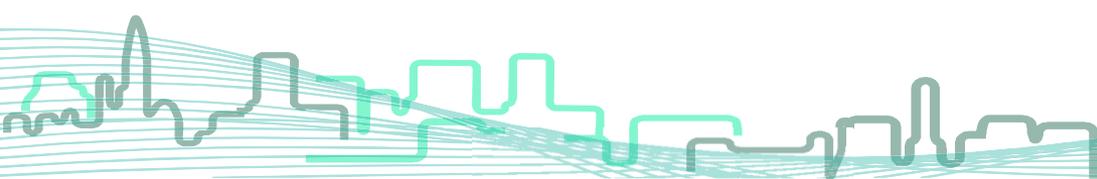
Prices are based on representative data collected by HRPDC staff. Gym membership and cell phone prices are based on costs per household. Water & sewer based on 5000 gallons.

REGIONAL UTILITY OBJECTIVES

- ❑ **Move to a model of selling a service, not a commodity.**
 - Change rate structures so they don't reinforce idea that customer is paying for how much water used.
 - Instead promote service: reliability, quality, firefighting

- ❑ **Ensure utilities meet financial goals.**
 - Create a stable revenue stream with more fixed revenue.
 - Improve accuracy of demand projections and associated revenue.
 - Depoliticize rate changes

- ❑ **Balance the need to ensure financial stability of the utility and maintain affordability for all customers.**
 - Consider expanding customer financial assistance.



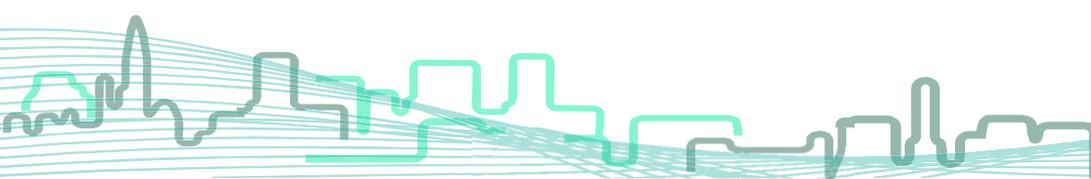
POTENTIAL NEXT STEPS

1. Distribute HRPDC whitepaper *Water and Wastewater Utilities: Designing the Rate Structure of the Future*.

2. Develop public outreach campaign.

For example, customers of the Charlotte-Mecklenburg Utility in North Carolina had finance questions along the following lines:

- *Where do utilities get their money?*
- *Whose pockets am I lining with my rates?*
- *What do you mean the utility is not run for profit?*
- *How do I know that they are doing the right things with my money?*
- *What are they doing with the money they already have?*



“Money borrowed to build and maintain plants and pipelines also must be repaid with income collected from customers. Suffolk’s utility fund owes about \$306 million in long-term debt, according to budget director Anne Seward. Most of that was amassed in recent years to expand the G. Robert House Jr. Water Treatment Plant in Chuckatuck and to extend water and sewer lines to new developments.”
Virginian-Pilot, May 1, 2013

“Marty Schlesinger, the Public Utilities Department director, said the core problem is the system needs more customers, and it’s aggravated by a drop in water usage in Gloucester of about 10 percent over the past four years. Hiking fixed fees for base usage would have to almost double to maintain revenue neutrality, he said.”
Daily Press

“Also down are water and sewer revenues. About 70 people were on the cutoff list in February, Smithfield Treasurer Ellen Minga said. “It’s getting to be more common, but that was a particularly heavy month”, she said. Minga attributes the deficit to lower consumption. The lower usage could be due to higher rates and/or weather. “That’s just something that we are keeping an eye on because we changed the structure last year.”
Smithfield Times, March 20, 2013

“What we deliver to people has mass,” Newport News Waterworks director Brian Ramaley said. “It’s not electricity or cell phone service. For a typical customer, we deliver literally hundreds of pounds of product on a daily basis.”

...the average customer uses about 34,300 pounds of water each month, so even with the rate changes, the monthly bill will be less than \$1 per day.

“You can’t get dirt delivered to your house for a dollar per thousand pounds,” he said.

“Water is literally cheaper than dirt.”
WYDaily.com, April 5, 2013

“In order to fund Newport News Waterworks, officials have been forced to dip into a reserve fund. They have taken around \$20 million in the last four years, leaving about \$30 million. Dropping below \$25 million would put their bond rating on the line.”
WYDaily.com April 5, 2013

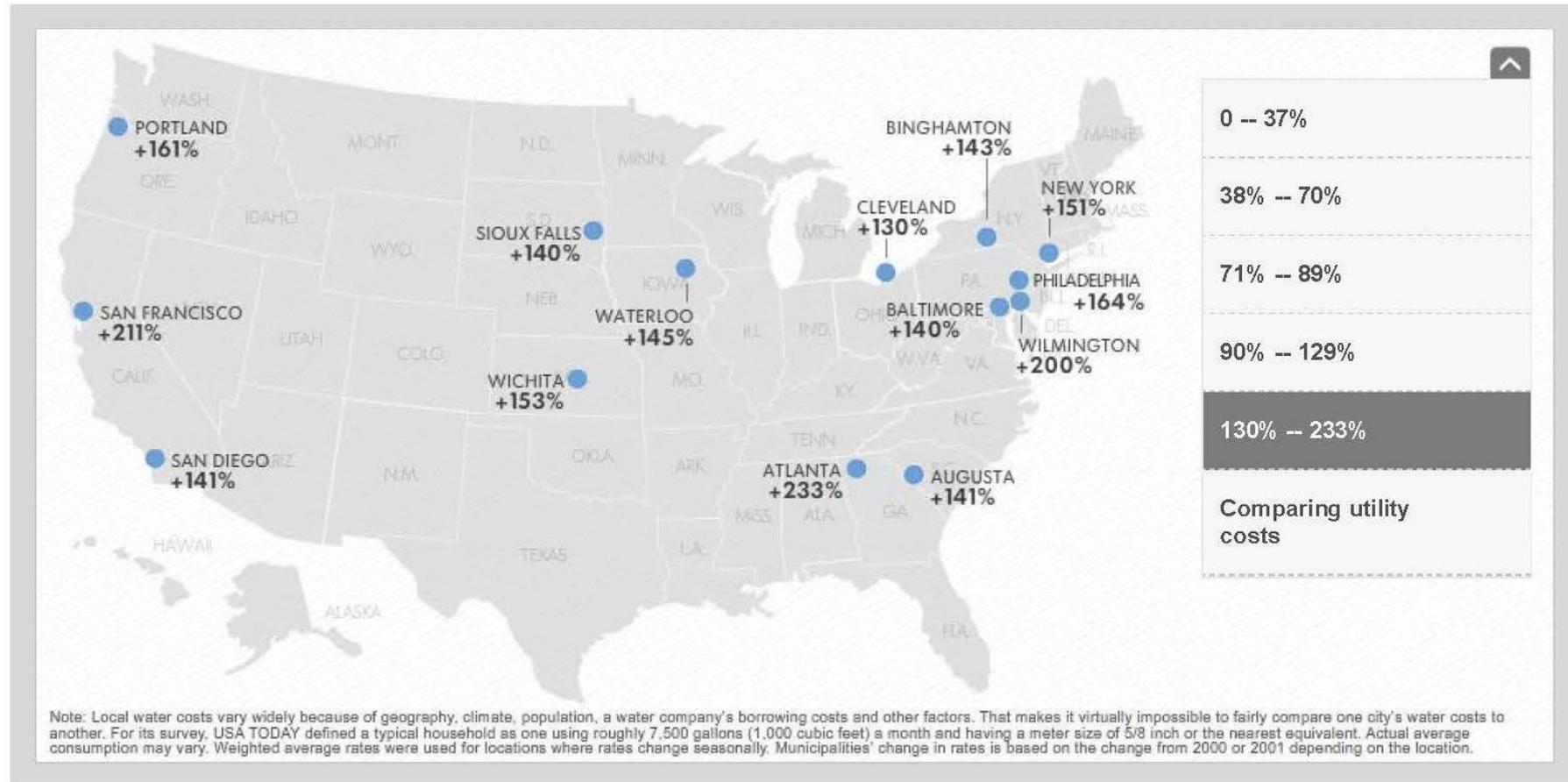
In a report to the council last month, Albert Moor, director of Suffolk public utilities, said the city has 25,000 water and sewer accounts, compared with about 150,000 accounts in Virginia Beach. “A penny to their rates yields a lot more than a penny to ours,” Moor said. He estimated 1 cent “generates about \$24,000 on water and about \$23,000 on the sewer side.” At the same time, he said, water consumption has fallen by 5 to 6 percent because of conservation. With the decline in residential construction since 2008, new installations have fallen from about 1,100 a year to around 300, depriving the city of hookup fees of \$5,520 per residence. “It’s almost like the perfect storm,” Seward said. “It’s coming at us from both directions.”
Virginian-Pilot, May 1, 2013

RATES INCREASING ACROSS U.S.

Water costs getting more expensive

<http://usatoday30.usatoday.com/money/economy/story/2012-09-27/water-rates-rising/57849626/1>

A USA TODAY survey of 100 municipalities found residential water bills in at least one in four places have doubled in the past 12 years:



Sources: Black & Veatch, Raffelis Financial Consultants and USA TODAY research of municipal water data; Energy Information Administration, Bureau of Labor Statistics, and USA TODAY research By Kevin A. Kepple, Denny Gainer, Joan Murphy, Doug Carroll, Kevin McCoy, Oliver St. John and Tom McGaritty, USA TODAY

