Summary of

WHY AND HOW TO BETTER UNDERSTAND NONRESIDENTIAL WATER CUSTOMERS

by Melanie Beckmann

What is it about?

This is a summary of the WRRI Report #454 by Jeff Hughes, of the University of North Carolina at Chapel Hill (full report, click here). The research was jointly funded by the Environmental Finance Center at the University of North Carolina at Chapel Hill, Valor Water Analytics, and four utilities in North Carolina: the Orange Water and Sewer Authority (OWASA), Fayetteville Public Works Commission (PWC), the Town of Cary, and the City of Greensboro.

Nonresidential customers include everyone from an insurance agent's office with one toilet and sink to a beverage bottling plant that uses millions of gallons every day. This study highlights the importance of nonresidential customers, introduces general metrics and also illustrates how tracking nonresidential customers' water use, individually over time, can contribute significantly towards water- resource management and financial planning.

Although nonresidential water demand is generally known to be very elastic, the high demand and revenue alone make it worthy of tracking. On average nonresidential water customers account for between 48 and 67% of utility's total water use, although in most cases these users make up only a small portion of the number of utility customer accounts. As they contribute significantly to a utility's bottom line, changes in their demand for water resources are of consequence for utilities.

This study shows that there is value in tracking the water use and revenue trends of nonresidential customers. Understanding their patterns is the first step in anticipating their changes in water demand and their responses to prices. Additionally, utilities could use this type of analysis to develop pricing schemes and business practices that better align with water-use trends, as well as utility objectives for financial stability and customer service.

A customer-level billing analysis could become a service that the utility provides to its "key accounts." By detecting and providing information about water-use anomalies or just giving month-by-month comparisons for their meters, nonresidential customers would better understand their own water use. Consequently, they might see the utility more as a partner, rather than a monopoly water provider that simply charges them for a resource that is vital for their business success.

Still, further research is needed to propose best practices in billing database management and to better standardize the practice across the industry.

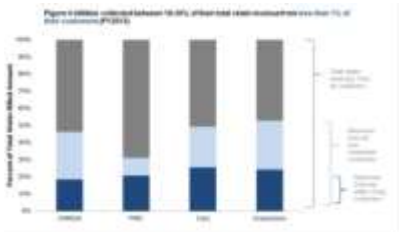
What they did and what they found:

The project is based on a customer-level billing analysis of four urban water utilities in North Carolina and in-depth staff consultation with each of the utilities. Analyses were conducted on customers' water-use patterns over a three-year period (2009 – 2013).

With the creation of **key accounts**, the team could identify the biggest water-use customers.

This is important in resource and financial planning, so that utilities are enabled to quantify what is at risk if those customers alter their demand for water for whatever reason. In the four investigated utilities, only 1% of their customers were responsible for 18 to 26% of their retail revenue as shown in Figure 1. That means that each

Figure 1: click to zoom in

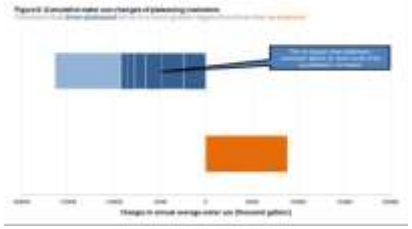


utility's revenues are significantly tied up in — and vulnerable to — the success of a few hundred customers. The advantage for utilities though, is that they could target their analysis and communicate with just a few customers to have a significant understanding of and impact on much of their resources.

A second analysis was done on all meters separately, to examine capacity, cost of service, inefficiencies, and other critical issues at the sub-premise level. It proposes an analytic method that can be used to understand and project nonresidential customers' water use, including key accounts, water-use plateaus, and meter rightsizing.

There is a great deal of opportunity in using water-use patterns to sub-classify customers. If a customer increased or decreased his average water use by at least 25%, and sustained his new average for at least 36 months, he was identified as **"up-plateau"** (increase) or **"down-plateau" customer** (decrease). If utilities would reach out to the biggest "new-plateauers," they could learn the reasons behind the changing demands and determine whether a change in price or policy is warranted. It is also important to understand that the impact of an up-plateau or down-plateau customer on the utility's water resources and revenues depends on the starting and ending points of that customer's water use (See also Figure 2).

Figure 2: click to zoom in



Even without directly contacting these nonresidential customers, a utility could use readily available secondary data to understand the types of customers that are plateauing. For example, a utility can profile those plateauing customers by incorporating tax parcel data to identify the age, size, ownership changes and other defining characteristics.

For more information, please read the full report here.

Appendix

Go back

Description of Utilities Included in Study

OWASA

The Orange Water and Sewer Authority (OWASA) is a public, nonprofit regional utility that provides water, sewer and reclaimed water services to the Carrboro-Chapel Hill community, including the University of North Carolina at Chapel Hill. The university is the utility's largest customer and owned much of the utility's infrastructure until the late 1970s before OWASA was created. There is little manufacturing in the Chapel Hill-Carrboro area. The economic composition of Orange County is primarily education, health and social services (39%) and professional, scientific, management, administrative and waste management services (14%) (Orange County Economic Development, 2015). OWASA currently serves 21,000 customer accounts.

Cary

The Town of Cary Water Resources Department serves about 60,000 customer accounts in Wake County. Cary is adjacent to the state's Research Triangle Park. The primary industry in Cary is technology, such as IBM, Lucent Technologies and Siemens. Cary's largest employer is the SAS Institute Inc., the biggest privately held software company in the world.

PWC

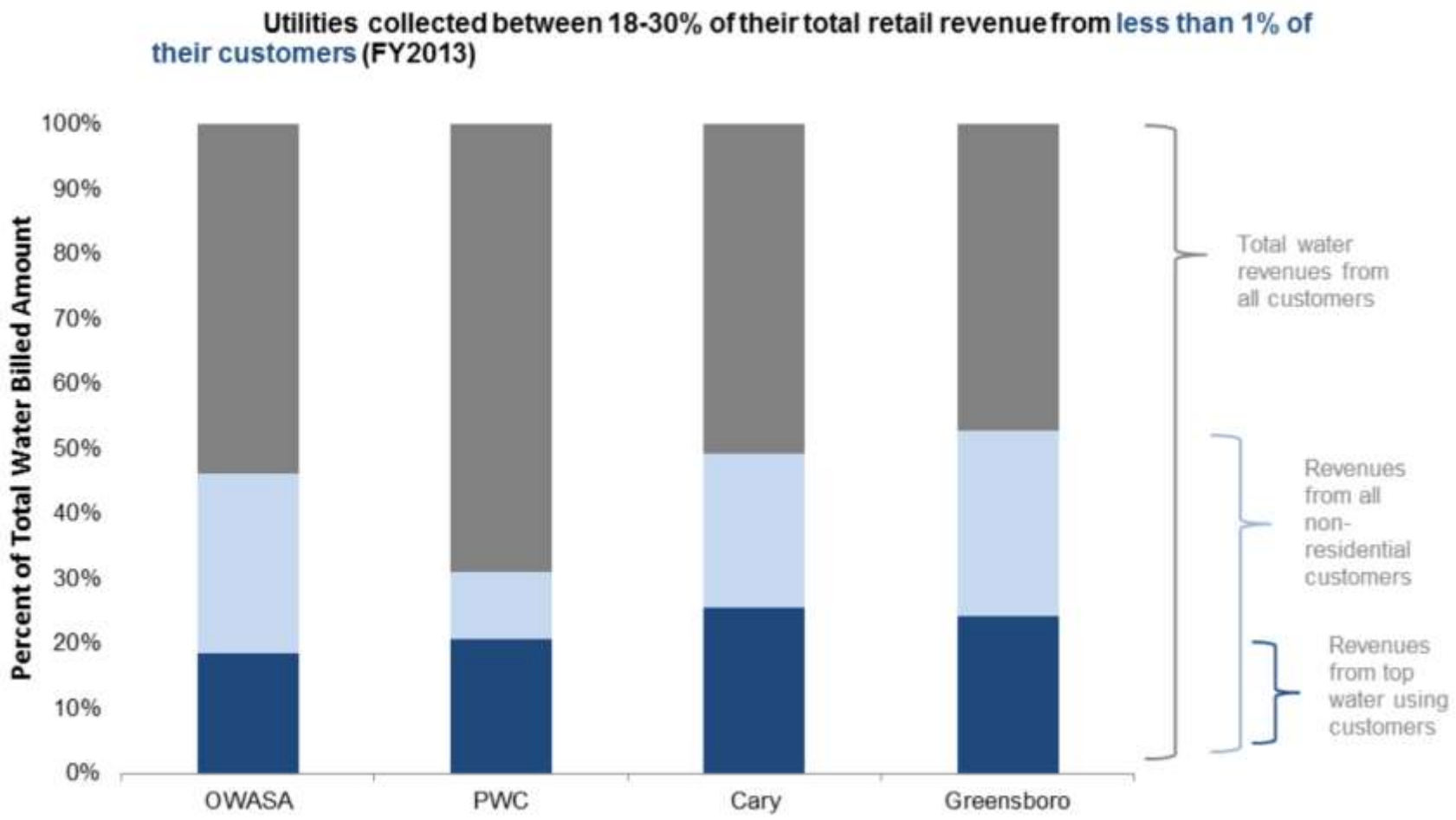
The Fayetteville Public Works Commission provides water services to nearly 70,000 customer accounts inside and outside the City of Fayetteville, including residents of the nearby Town of Hope Mills. With the U.S. Army Base Fort Bragg nearby, the primary industries in the area are defense support, manufacturing, food processing, logistics, and business and financial services (Economic Development Alliance, 2015).

Greensboro

The City of Greensboro's Water Resource Department serves over 100,000 customer accounts in the state's third largest city. There is a wide variety of industry in Greensboro, including manufacturing, aviation services, specialized business services, research life sciences, and supply chain and logistics support (Greensboro Partnership, 2015).

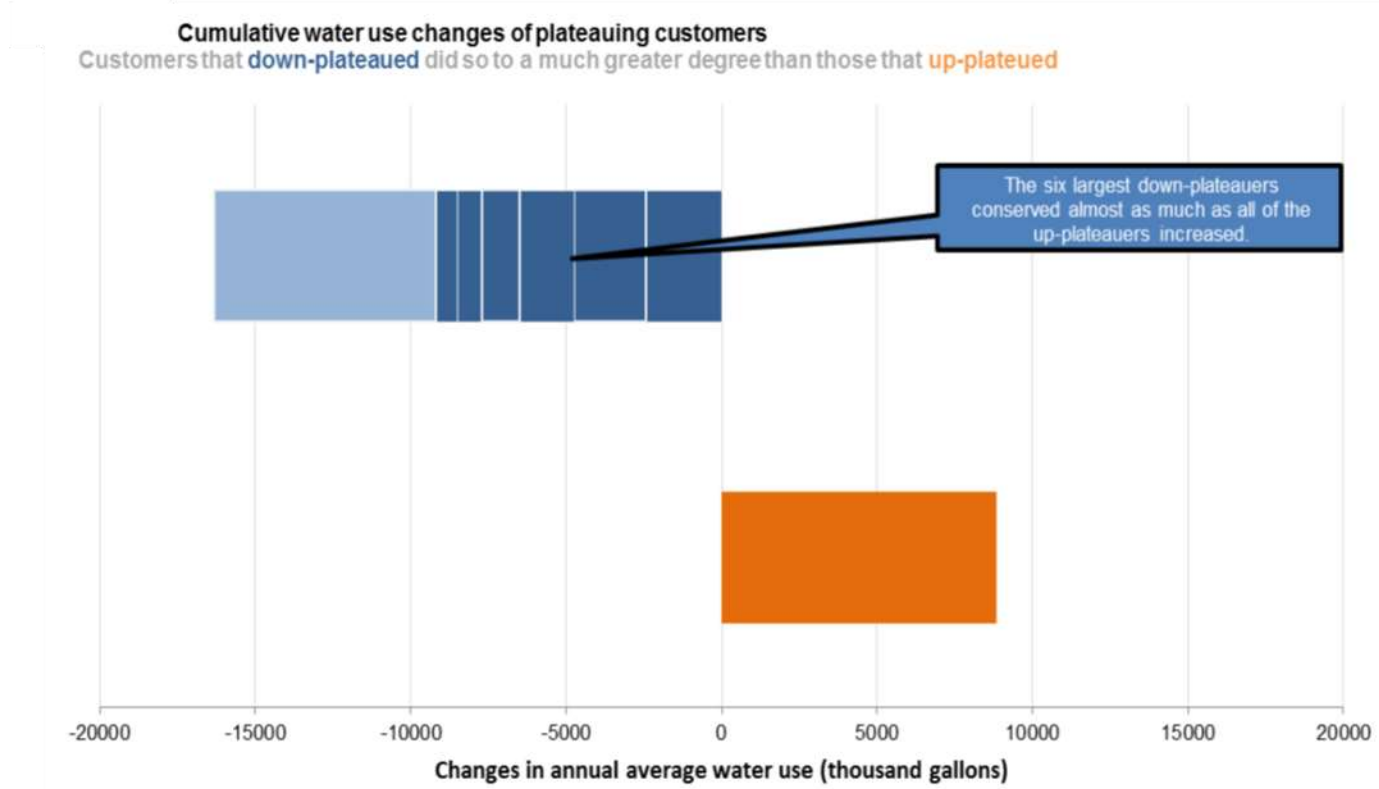
Go back

Figure 1



Go back

Figure 2



OWASA for example had 69 fewer “down-plateauers” than “up-plateauers,” but their total sustained decreases in water use was nearly twice the total of sustained increases in water use of their counterparts. In fact, the 6 “largest down-plateauers” at OWASA conserved almost as much as all of the 390 “up-plateauers” increased their water use.