

NewGen *NEWS*

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Feature Article: Demand Destruction - How Should Water Utilities Respond?



INTRODUCTION

The concept of demand destruction has been a recent hot topic within the energy industry. The permanent downward shift in customer demand due to increased reliance on renewable resources (e.g. the implementation of distributed generation (DG), such as residential solar panels), and increased household energy efficiency, has disrupted the traditional energy pricing and business models. As a result of this shift, providers are forced to focus more on revenue stream stability.

Just as the energy industry contemplates how to cope with these permanent reductions in demand, water providers are facing similar potential permanent reductions in per capita water use, which is challenging the traditional water pricing models and utility management methods. If such reductions are indeed permanent, water providers must take a page from the energy industry's book and begin responding now to maintain their enterprises' financial stability.



WATER USE TRENDS



Many water providers around the country can present anecdotal evidence on the reductions they have seen in overall system use. Stories abound on how these reductions have led to decreased revenues, forcing providers to significantly increase rates to ensure sufficient revenues. However, the question remains as to whether these reductions are permanent, or are simply caused by a variety of

temporary factors.

Fluctuations in water use can be driven by several causes. From changes in climate and precipitation to increased efficiency of plumbing applications and demographic shifts, water use will naturally vary year-to-year. While the above are often cited as variables in the water use equation, geography, and local water supply availability, as well as local attitudes and actions towards water conservation, further cloud the picture. Finally, the varying water demand elasticity by users of differing economic means and the routine shifting of overall economic conditions, can also lead to variations in actual customer demand. However, it is currently undetermined if these variables are indeed leading to a permanent reduction in water demand, and the extent to which each variable plays a part.

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In 2010 the United States (U.S.) Environmental Protection Agency (EPA) sponsored a Study, which was conducted by the Water Research Foundation, to examine household water usage in the U.S. over a 30-year period. The Study concluded that utilities are indeed seeing a decline in household water use.⁽¹⁾ This sustained reduction has occurred despite continued increases in the number of households, as well as increases in the economic resources of said households.

Additionally, the Study found that average household water usage has declined by approximately 380 gallons annually over the 30-year period. This amounts to roughly a “44% decrease of water usage per household per year since 1975.” This observed reduction is akin to an average Residential customer reducing their cumulative annual usage by over 13,000 gallons during the same period. While regional trends varied annually, the Study revealed that there was a “pervasive trend toward lower water usage per household.”

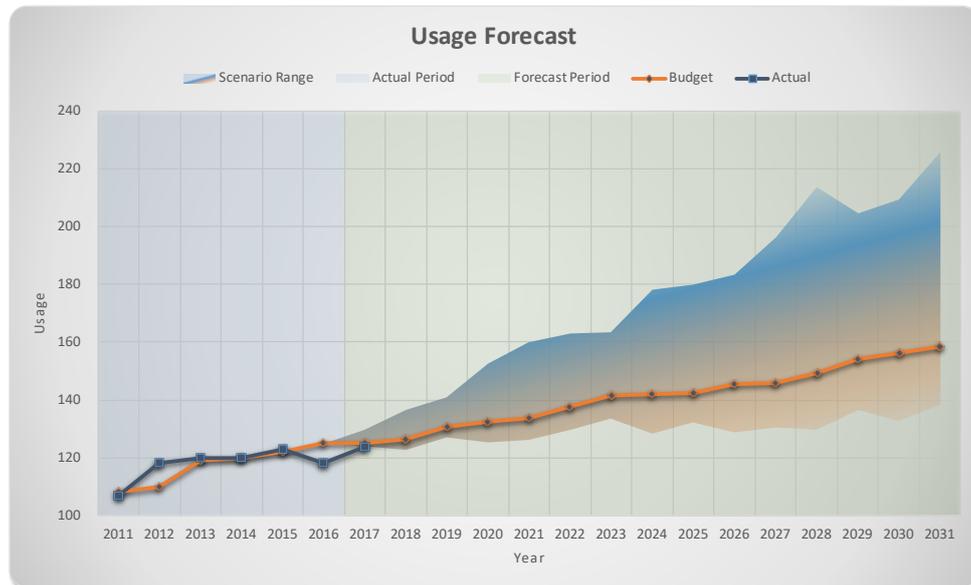


IMPACT ON WATER PROVIDERS

Given the apparent demand destruction plaguing water providers, how should a utility respond and what action is needed to ensure long-term financial viability?

Traditional forecasting is becoming obsolete. First, water utilities must realize that their traditional means of forecasting future water consumption must change.

Assuming “normal” water use from historical periods or averaging historical usage and applying said use to current connections may no longer produce an accurate estimation of system water use. Utilities should look to enhanced data collection techniques available from advanced metering technology, and begin to more fully examine long-term trends at granular levels across their respective systems. Utilities should also avail themselves of more sophisticated forecasting tools, with specific emphasis on the impact of demand shifts by larger water users. Most importantly, utilities must compare their forecasts to actual results and make necessary adjustments along the way; they should not become solely reliant on inaccurate and unreliable forecasting techniques.



Re-evaluate fixed cost recovery. Second, water utilities must examine the design of their current rate structures and carefully balance revenue recovery in the fixed and variable charges against the realities of affordability and political will. When faced with declining consumption, most utilities respond by increasing the level of revenue recovered in the fixed charge portion of the revenue stream. However, as utilities have taken these actions, consumers have pushed back citing the greater proportional impact such adjustments have on lower volume users. While much debate exists on the statistical relationship between household water use and income levels, the impact of customer rates and fees on fixed income households is typically of extreme concern to political decision-makers. As utilities look at increasing the fixed component of

(1) North America Residential Water Usage Trends Since 1992; Water Research Founding and U.S. Environmental Protection Agency, 2010.

Feature Article cont.

their revenue streams, they must not forget that rebalancing the variable components may be required to ensure sufficient revenue recovery at various consumption levels. Customer impact must be carefully evaluated, with the goal of ensuring that the pricing signals sent to customers ultimately align with political decision-makers' goals and objectives.

Enhance and expand stakeholder engagement. Third, and most importantly, water providers must enhance their efforts at public communication and education. Increases in water prices will naturally occur with reduced usage given that a utility must cover its near-term fixed costs. Water providers must counter the public outcry that occurs when consumers use less water, but are charged more. Educational efforts must focus on the long-term cost savings associated with conservation and reduced water use. Consumers need to understand that conservation results in long-term cost savings and stability in pricing, but at the risk of near-term price increases. Conservation and reductions in water demand are an investment today for a much greater return in the future.

CONCLUSION

Demand destruction as experienced by energy providers is clearly a reality for water providers as well. As water utilities experience continued decreases in household water usage, they must look at specific changes in how they approach service pricing and customer base interactions. As water utilities adjust their pricing models to ensure sufficient revenue, greater emphasis on customer education must also occur. Utilities should also avail themselves of advanced technologies to improve forecasting techniques so that business models and plans can be adjusted in light of ever changing realities. While demand destruction will change how utilities do business; if managed properly, this challenge can be used to stabilize the financial condition of the utility while ensuring efficient use of a precious natural resource.

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ENERGY INSIGHTS

Solar Applications Continue to Expand

In May, Tesla, Inc. (Tesla) began accepting pre-orders for its new Solar Roof or solar photovoltaic (PV) roof tiles that replace conventional roofing shingles. Delivery is expected to take place in 2017. Per Tesla's website, "The new glass tiles are warranted for the lifetime of your house, or infinity, whatever comes first." Additionally, Tesla claims that the tempered glass roof tiles are three times as strong as standard roofing tiles. Not all tiles installed on a roof will be solar tiles, as Tesla estimates about 40% - 60% of the roof will be solar tiles, the rest non-solar tiles or shingles depending on roof orientation, shading, etc. Tesla and Elon Musk claim the solar tiles will be competitive and less expensive to install than

comparable roofing and high-end tile materials (e.g. terra cotta and slate roofs), but significantly more expensive than conventional asphalt shingles. However, the cost of the solar tiles is likely less expensive than other conventional and high-end roofing with rooftop solar installed. Estimates range from approximately \$22 to \$40 per square foot for the tiles, not including energy savings.

Join us at APPA's National Conference in Orlando

NewGen is facilitating an American Public Power Association (APPA) National Conference pre-conference seminar on Sunday, June 18th at 8:30 A.M. on *Managing Distributed Energy Risk*. This seminar focuses on how advances in technology are rapidly changing how customers purchase and consume energy, thus altering the relationship between a utility and its customers. As adoption of new technology increases, utilities must adopt new approaches to managing risk across financial management, strategic resource planning, and customer engagement. To navigate and manage the risks, utilities must begin to better leverage advanced metering infrastructure (AMI) investments and data, identify generation portfolio risks

Energy Insights cont.

associated with altering load shapes, and prepare for demand destruction.

ENERGY PROJECT HIGHLIGHT

Rate Study and IRP Methodology Santee Cooper

NewGen recently provided a complete update to Santee Cooper's Cost of Service (COS)/Rate Design model, as well as a review and assessment of their Integrated Resource Plan (IRP). In support of the work, NewGen solicited feedback from Santee Cooper's Industrial Customer Association regarding new Industrial rate offerings development, such as mutually beneficial opportunities for interruptible rates. Additionally, NewGen developed a rate design tool to evaluate distributed generation cost competitiveness and impacts from implementation of a recent Distributed Generation Rate Rider. The COS/Rate Design provides an updated, more automated, Visual Basic for Applications (VBA)-driven integration of various data sources to calculate cost-based rates, evaluate rate scenarios, and generate standard management and stakeholder reports. Our review of Santee Cooper's IRP included an assessment of methodology utilized, including input assumptions regarding load growth, costs for alternative generation types, as well as "traditional" thermal generation, and the process by which resources are selected.



Administration Calls for Review of Waters of the U.S. Rule

A recent Executive Order issued by President Trump calls for the EPA and the U.S. Army Corp of Engineers to reconsider the controversial "waters of the U.S." rule, which was finalized under the administration of President Obama. Currently, the rule is still under legal challenge in the courts by more than two dozen states.

Utilities Express Interest in WIFIA Funding

Initial letters of interest by utilities seeking Water Infrastructure Finance and Innovation Act (WIFIA) funding were due to the EPA by April 10th. At least a dozen utilities from across the nation submitted letters of interest. According to the EPA, \$1 billion in assistance is estimated to be available.

EPA Withdraws Dental Mercury Rule

Under rules released at the end of 2016, the EPA sought for dental offices to reduce the level of mercury discharged in wastewater. The rule requires dental offices to utilize specific technology to separate mercury before discharge, and creates a new class of industrial users known as a Dental Industrial User. However, upon President Trump's inauguration on January 20th, the rule was withdrawn. Environmental groups have since filed suit against the EPA claiming they did not have the authority to withdraw the rule.

WATER, WASTEWATER, AND STORMWATER PROJECT HIGHLIGHT

Financial Forecasting Project City of Denton

In 2016, NewGen facilitated a workshop with Denton Municipal Electric (DME) and Denton Water Utilities (DWU) to clarify the parameters for the development of an "AMI driven" electric rate model and a financial planning model.

As a component of the electric rate model planning process, NewGen is developing a dynamic, Microsoft Excel-based model that provides analytics regarding interval load data for the purpose of analyzing rates, determining allocations for COS studies, auditing customer class qualifications, etc. The model includes dashboards designed to manage and manipulate large amounts of data to easily convey key load profile information. The dashboards are set up to allow the user to run scenario analyses based on changing rates by time-of-use (TOU) period, increasing DG, increased usage of electric vehicles (EV), etc. DME will use this financial decision making tool for rate analysis and planning purposes.

As a component of the financial planning process, NewGen is developing dynamic, fully integrated financial and budgeting models that will allow DME and DWU finance staff to quickly run and save multiple ad-hoc scenarios. These scenarios can be tailored to take into account a variables such as cost escalations, retail rate changes, capital plans, retail load inflation, and debt issuances. These Microsoft Excel-based tools include embedded help and updating capabilities, and will be compatible with NewGen's rate modeling and COS tools. DME and DWU will use this financial decision making tool enterprise-wide for annual budgeting and financial planning purposes. The models have a robust reporting engine that allows for a number of utility annual reports to be exported directly from the models.



SOLID WASTE AND RECYCLING INSIGHTS

Large Haulers Report Higher Recycling Revenues in 2016

A rebound in commodity values resulted in an increase in recycling-related revenues for the three largest residential haulers in the U.S.

Waste Management generated \$1.22 billion in revenue from recycling last year, a 5% increase over the prior year. Republic Services generated \$420 million in revenue, which was a 13% increase from the prior year. Finally, Waste Connections said their recycling revenues were up as well, but did not provide specific numbers as a merger with Progressive Waste Solutions occurred in June 2016, which makes a comparison of the prior year's recycling revenues somewhat difficult.

A significant portion of the revenue increase was driven by a rebound in the price recovered for recycled materials. For instance, Republic Services was able to sell old corrugated containers (OCC) at an average price of \$114 per ton in 2016 versus \$103 per ton in 2015. Its Old Newspaper (ONP) sales averaged \$99 per ton, versus only \$80 per ton in 2015.

Food Donation Act of 2017

Four House of Representatives' members joined together to introduce the Food Donation Act of 2017 (H.R. 952). The legislation was introduced in February 2017 and is intended to boost food donations across the U.S. by enhancing the coverage of the Emerson Act (i.e. the Bill Emerson Good Samaritan Food Donation Act), which was passed by Congress back in 1996. The Act promotes food donations by providing civil and criminal liability protection to food donors and food recovery organizations. The Food Donation Act of 2017 would clarify some of the terminology within the current Act, as well as promote an increased awareness of food recovery options available to grocery stores, restaurants, etc.

FCC Environmental Services Continues to Expand its U.S. Presence

FCC Environmental Services, the U.S. subsidiary of Madrid-based FCC Group, was awarded a contract to provide processing and marketing services for recyclables from the City of Mesquite, Texas. The contract is valued at \$1.5 million per

year, for five years. Including the Cities of Dallas, Garland, Mesquite, and University Park, FCC now provides recycling services for approximately 2 million North Texas residents. FCC stated that it ensures 75,000 tons of recyclables for 2017 for its recently opened Materials Recovery Facility (MRF) in Dallas. They were recently awarded two municipal solid waste collection contracts in Florida's Polk and Orange counties. FCC Group has been in business for over 100 years providing to environmental services, infrastructure, and water management services.

SOLID WASTE AND RECYCLING PROJECT HIGHLIGHT

Municipal Solid Waste Generation and Diversion Forecast

Houston-Galveston Area Council (H-GAC) Planning Region

In January 2017, the H-GAC Planning Region retained NewGen to conduct a Municipal Solid Waste (MSW) Generation and Diversion Forecast, which comprises a 13-county area within the southeastern portion of the State of Texas. This study will build upon the prior study completed in 2005 by Mr. Yanke while at R. W. Beck. The study will utilize the methodology developed for the 2005 study to fully understand what materials are being generated and diverted in the H-GAC Planning Region, by its approximately 6 million residents.

This study will estimate the amount of MSW generated by single-family homes, multi-family units, and commercial businesses. The analysis will be completed for both urban and unincorporated areas, and the study will provide a forecast of the amount of MSW to be generated for a 20-year planning period (2017 - 2036). The study will also quantify the amount of recycled material, as well as material diverted from MSW landfills. This analysis will be used to forecast the available landfill capacity within the H-GAC planning region, as well as on a sub-regional basis, since landfill capacity is not uniformly located throughout the 13-county region. NewGen will also evaluate and forecast the available capacity for recyclables at the MRFs located within the region, as well as capacity for the diversion of organics at the available composting facilities within H-GAC's planning region.

Upon completion of the study, H-GAC will use study data, analysis, findings, and recommendations to update its MSW management plan, and determine how to manage its MSW going forward in the most cost effective manner.



RECENT HIRES

Allison Trulock, Executive Consultant

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NewGen is pleased to announce that Allison Trulock joined our Environmental Practice as an Executive Consultant. Based in Florida, Allison has helped local government clients in the southeast and across the U.S. in developing and implementing solid waste management strategies to reach their goals for economic, environmental, and social sustainability.

Allison has more than 20 years of experience in the solid waste industry, specializing in strategic and master planning, solid waste and recyclables collection, options evaluations and efficiency studies, stakeholder outreach, procurement assistance, financial feasibility analysis, and ordinance review and development.

Casey Jongewaard, Analyst

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Ms. Casey Jongewaard serves as an Analyst for the Energy Practice at NewGen. Ms. Jongewaard joined NewGen in February 2017 to provide financial and economic analysis for the firm.



CONFERENCES AND SEMINARS

EUCI Fundamentals of Cost of Service and Rate Design for Water Utilities – February 2017

Chris Ekrut served as an instructor for EUCI's *Fundamentals of Cost of Service and Rate Design for Water Utilities* course held in Houston, Texas.

Texas Water Conservation Association's Annual Convention – March 2017

NewGen served as a Silver Sponsor for the Texas Water Conservation Association's Annual Convention held in Austin in March.

Texas Rural Water Association, Rural WaterCon – March 2017

Dave Yanke spoke at the conference on *Does Your Water Utility Have a Financial Plan?* Copies of Dave's presentation can be requested by emailing Mr. Yanke at dyanke@newgenstrategies.net.

2017 Government Finance Officers Association Annual Conference – May 21-24, 2017

NewGen served as a Sponsor for the 2017 Government Finance Officers Association Annual Conference held in Denver on May 21st.

American Public Power Association National Conference – June 16-21, 2017

NewGen is proud to be a Platinum Sponsor of the American Public Power Association (APPA) National Conference. Several members of NewGen will attend the conference in Orlando, in addition to facilitating a pre-conference seminar on Sunday morning, on *Managing Distributed Energy Risk*.

Texas City Management Association – June 21-25, 2017

NewGen will serve as a sponsor for Texas City Management Association's Annual Conference held in Austin in June.

Texas Municipal Utilities Association – June 21-23, 2017

NewGen will be serving as bronze sponsor at the Texas Municipal Utilities Association (TMUA) conference in Georgetown, Texas. Please stop by our booth to say "hi" to Grant Rabon and Dave Yanke.



Have a question? Contact us at

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