

NewGen *NEWS*

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NewGen Industry Perspectives

As the challenges and opportunities of 2019 continue to unfold, it is constructive to reflect on how we have arrived at our present state in each of the utility markets we serve. NewGen works diligently to employ our extensive industry experience and integrated perspective of strategy, stakeholders, and analytics when helping our clients navigate this environment of increasing change in technology, customer, and market demands. We combine complex data analysis and innovative solutions to help our clients address today's challenges and tomorrow's needs.

WATER, WASTEWATER, AND STORMWATER

2018 REVIEW

The more things change, the more they stay the same. Nowhere is this statement more true than in the water and wastewater industry. While technological innovations continued to result in greater efficiencies, enhanced management, more robust customer engagement, and

overall improved reliability in service, the concerns shared by utility managers remained unchanged over the last half-decade. As indicated in the 2018 State of the Water Industry Report published by the American Water Works Association (AWWA), it is repair and replacement of infrastructure, and how to fund said improvements, that remains one of the top concerns for most industry professionals – a concern that has been expressed within the AWWA report since at least 2014.

The challenge faced by industry professionals to fund and implement infrastructure replacement is further compounded by a public that does not fully appreciate the value of water and the level of service and monetary resources needed to maintain reliable service within regulatory standards.

Repair and replacement of infrastructure, and funding these improvements, remains a top concern of utility managers in 2018

While the Flint Water Crisis no longer holds the public's daily attention, it revealed and stoked a deep-seated public distrust in the quality of public drinking water, creating yet another factor with which utilities must contend.

2019 OUTLOOK

With ratepayers openly challenging the affordability of water and wastewater service, it is unlikely that the key issues facing the industry will change in 2019. Utilities will continue to face intense scrutiny when it comes to the needed increases in rates and fees to fund



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ever-expanding capital programs. However, the continuation of financing programs, such as the federal government's Water Infrastructure Finance and Innovation Act (WIFIA) program and various state-level funding sources, will provide utilities much needed sources of funding to continue investing and replacing critical infrastructure. That said, industry leaders must continue to engage in actionable discussions with lawmakers to determine how other public funds, including taxes, can be used to support the ever-increasing cost of compliance with federal and state requirements.

In the new year, it is also critical that utilities continue to engage the public and provide education on the complexities and cost associated with providing safe and reliable drinking water and proper disposal of wastewater. One of the keynote speakers for Water for Texas 2019, Roy Spence, said it best when he indicated that, as an industry, we do so many amazing things, but we never talk about it. In 2019, industry professionals need to make a concerted effort to engage with the public and help them understand the value of clean, safe, and reliable water supply and wastewater treatment services and how the value, and the related benefits for public health, are significantly greater than the cost.

While 2019 will continue to see the same challenges as the past, the professionalism and dedication of industry professionals will undoubtedly result in continued advancements and improvements to the quality, reliability, and safety of our critical, life-sustaining water and wastewater resources.

In 2019, concern regarding service affordability will continue to place constraints on utility capital funding, which emphasizes the importance of continued customer engagement and education

SOLID WASTE AND RECYCLING

2018 REVIEW

When discussing solid waste issues in 2018, they can be summarized with one word: China. The volatility in the recyclables market has always existed, going back to the early 1990s, but the



China Sword brought a new level of uncertainty to the market when China announced to the World Trade Organization (WTO) in July 2017 that it would begin prohibiting the import of certain recyclables and scrap into their country, including mixed paper and mixed plastics, beginning in January 2018. At the same time, China also announced increasingly more stringent contamination standards for recyclables being imported into China (less than 0.5%). The year 2018 was spent by many private waste companies and municipalities struggling to find a place for their recyclables, which were continuing to be collected from commercial and residential customers. These seismic changes in 2018 were the catalyst that began a serious dialogue within the solid waste industry concerning what these changes by China meant for recycling within the United States going

Municipalities struggled in 2018 with declining revenues for their recyclables as a result of China prohibiting the import of certain recyclables

forward. (For more detail on this topic refer to the NewGen News Issue No. 10 (August 2018) – “Commodity Markets for Recyclables: So, What’s The Good News?”)

2019 OUTLOOK

Recyclables will continue to take center stage in 2019 for both private sector waste companies and municipalities. Private sector companies will most likely continue to report lower revenues and profits from their recycling lines of business – as well as experience continued volatility. Municipalities will need to explain to elected officials why their recycling revenues continue to remain at historic lows. However, the news is not all negative. Although some companies and cities have landfilled, or stockpiled, their recyclables due to poor or non-existent markets, and some cities have ceased offering curbside recycling programs, cities that continue to offer recycling services to their citizens (like many of NewGen’s clients) have begun to “sharpen their pencils” to determine how they can continue to provide this service to their residential and commercial businesses in the most cost effective manner. Additionally, the market continues to see capital investment by corporations in the United States in new facilities to process old corrugated containers (OCC), mixed paper, and plastics so they can be used in the manufacturing process (i.e. “closing the loop”). For additional information regarding city responses, contact Dave Yanke (dyanke@newgenstrategies.net) to obtain a copy of NewGen’s Texas SWANA Chapter Conference (March 27, 2019 in Houston) presentation titled “The Markets for Recyclable Commodities

NewGen Industry Perspectives (cont.)

are Terrible – How are Cities Responding?”.

While recycling is presently the main topic of discussion in the solid waste marketplace, there are other trends that should be mentioned as well. We continue to see cities increasingly reviewing their financial operating and capital costs to ensure they are providing solid waste and recycling services cost effectively. This includes looking at the various level of services provided with regard to yard waste, brush, and bulky collection services, and how they are priced (costs embedded in the user fee, a call-in fee based on volume of material collected, etc.). Finally, it should be noted there has been some interest by cities that currently provide residential collection services, but not commercial collection services, in examining whether they should begin offering commercial collection services as a way to increase revenues to the city and to relieve pressure on the city's general fund. At the same time, we also see cities that face the pressure of privatization if they do not provide a high-level of service at a reasonable price.

2019 is unfolding as a year in which municipalities will continue to face volatility with regard to the recycling markets, and the continued demand to provide a variety of solid waste and recycling services at a reasonable price. Good luck!

ENERGY

2018 REVIEW

The electric market in 2018 saw amplifications of recent trends in renewables, demand destruction, and natural gas while the push to grow electric markets in the West died (for now). 2018 saw renewable energy production increase by more than 20% from 2017, while coal continued its decline. Multiple utilities announced plans for increased renewable levels and/or dramatic reductions in fossil fuel generation. In its Energy Climate report, Xcel Energy (Xcel) announced plans to reduce carbon emissions by 80% by 2030 and to be carbon free by 2050. In addition, Southern California Edison's (SCE) Integrated Resource Plan (IRP) only includes investment in renewables and storage. SCE included 4.2 GW of new renewables and 1.6 GW of storage by 2030. The storage equates to more than 7% of their system demand. While we saw continued growth in natural gas generation, we also saw the United States continue to increase its role as a net exporter of natural gas. 2018 saw another liquefied natural gas (LNG) export terminal come online, with no material impact to gas prices.



2018 saw continued growth in renewables and natural gas power generation, stagnation in electric load growth....again...., customers wanting more choice in their power supply sources and SPP West likely fading away

Demand destruction and the decoupling of electric load growth from macroeconomic indicators (e.g., gross domestic product) first seen after the Great Recession, continued in 2018 and appears to be here to stay. Utilities may see growth in the number of customers, but little to no aggregate load growth, which further constrains financial performance and investments in infrastructure. This stagnant growth and continued penetration of distributed energy resources (DER) drove utilities to further review revenue issues such as fixed cost recovery, standby rates, and optimizing funding for required reinvestment in the system. The trend of customer's taking more control of their own energy supply was also reflected in corporate customers procuring renewable contracts in the market to support their corporate or sustainability related goals. Several utilities began offering a wheeling and scheduling rate for these larger corporate customers such as Google, Facebook, or AT&T, which directly contracted with third-party power producers for renewable generation and asked the local utility to wheel the power to the end-user.

Finally, while the power generation mix continues to change across the United States and more renewables come online, transmission and wholesale markets are increasingly integral to optimizing generation and transmission assets. The Mountain West Transmission Group initiative to develop "SPP West" began in 2017 to address one of the last areas of the United States without a formalized wholesale energy market. However, that effort essentially ended in April 2018 with Xcel's withdrawal from the group. While other participants still pursued a more integrated transmission market in the West, the efforts appear on life support, if not dead, with others announcing they would not pursue membership in Southwest Power Pool (SPP) late in the year.

In 2019, recyclables will continue to be an issue for local governments as they deal with volatile markets, and recyclable commodity prices remain at historic lows

2019 OUTLOOK

Electric load does not appear to be returning anytime soon as demand destruction continues. Efforts such as those in California to require solar on all new homes starting January 1, 2020 further this trend. While we continue to see demand destruction, will states with legalized marijuana and elective vehicles save the day? It is unlikely, but 10 states now have legal recreational marijuana, and utilities in those states and communities that allow it, may see increases in load due to energy intensive marijuana grow operations. Electric vehicle penetration will increase, but managing the timing of that load growth will be important if the incremental electric vehicle energy sales revenue is not to be offset by new costs driven by the utility's need for capacity investment to serve the new load. Our research shows minimal total energy sales growth due to relatively short commutes for most people (~2,400 kWh/year); however, with an increased prevalence of fast-charging stations and the corresponding higher peak demand, incentivizing electric vehicle charging to occur in the off-peak hours will be critical or it could increase peak demand, and amplify issues such as the duck curve.

2019 should see more of the same in the markets and power supply, but it will likely be amplified. Even as the Investment Tax Credit begins to sunset in 2020, the prices for solar continue to decline and drive investment without them. Several recent IRPs signal even more investment in solar and renewables despite such planned decreases in tax credits. Renewable construction and energy production are expected to eventually exceed all current state renewable portfolio standard goals and requirements. As renewables, distributed generation and unintended consequences like the duck curve in California change how utilities generate power and incentivize consumption (changing time-of-use (TOU) signals to low prices in the middle of the day and high at night) will it drive investment in batteries and grid management, and yet another iteration of TOU or other pricing signals? As rate design, renewables, DERs, and other issues converge, the growing question on many utilities minds is "are batteries for real?" The latest market report for 2018 from Bloomberg New Energy Finance sites a 35% reduction in the levelized cost of battery storage¹. 2019 should continue to shed light on battery technology viability and economics.

Some of the questions that we hope to answer in 2019 include are electric vehicles and marijuana going to provide some boost to flat load growth? Will batteries take a large step in adoption or broader scale use? Will PG&E's bankruptcy lead to a changing landscape of smaller, municipal utilities in California?

Remember when we fretted that natural gas cannot ever stay "this cheap?" The fear of exporting our natural gas resources is not being realized and previously less economic supplies and new resources are now viable due to continued technology improvements. Prior to 2018, there was only one large LNG export terminal in the United States, by the end of 2019, there will likely be four, an additional terminal nearly doubling in size, and several more facilities expected to be completed by 2022. This exponential increase in export capacity is not expected to materially affect prices. Natural gas continues as the low cost fuel in power markets, as the United States Energy Information Administration projects prices to remain near current levels for 10+ years. Only in the direst of scenarios does gas exceed \$5/MMBtu in the next 7-10 years.

Finally, while the long-held conventional wisdom is 'how do muni's survive or stave off suitors,' the bankruptcy filing in early 2019 of Pacific Gas and Electric Company coupled with more communities in California controlling their power supply through Community Choice Aggregation, may lead to a wave of municipalizations. The City of San Francisco is already starting to evaluate their options for municipalization.

As was the case in 2018, 2019 looks to be a year in which the electric utility industry continues to evolve. As customers seek greater control over their power supply, load stagnates, a host of new technologies mature, and as wholesale energy and natural gas markets evolve, the importance of scenario and sensitivity analysis has never been higher to utilities attempting to optimally plan for the future and ensure their financial sustainability.

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¹ <https://about.bnef.com/blog/battery-powers-latest-plunge-costs-threatens-coal-gas/>



PROJECT HIGHLIGHTS

WATER, WASTEWATER, AND STORMWATER PROJECT HIGHLIGHT

Water / Wastewater Rate Consulting City of Rockdale, Texas

In October 2018, NewGen was engaged by the City of Rockdale, Texas (Rockdale) to assess water and wastewater rate increase options to fund major water quality and wastewater collection/treatment needs. Rockdale had approximately 2,200 customers in 2018 with low growth expectations. In addition, the City is facing over \$63 million in critical water and wastewater infrastructure costs in just the next five years. The City has had significant red water problems, low pressure, elevated iron and manganese levels, and infiltration and inflow issues throughout the utility.

NewGen helped calculate rates sufficient to meet the pledge requirements for both the TWDB's Drinking Water and Clean Water State Revolving Funds over the next five years. In addition, NewGen was asked to help lead a public education outreach to explain the significant demands and need for substantial rate increases. As part of this effort, NewGen prepared an educational flyer for publication, created an online bill calculator to compare existing to new rate changes at a customer level and led the discussion at three public, Town-hall style meetings at various locations around the City.

Ultimately, NewGen presented the proposed rates needed for Fiscal Year 2019 to meet TWDB standards for Council consideration, which were approved unanimously.

SOLID WASTE AND RECYCLING PROJECT HIGHLIGHT

Development of a MSW Services Questionnaire City of Bartlesville, Oklahoma

NewGen is currently working with the City of Bartlesville, Oklahoma to develop a municipal solid waste and recycling services questionnaire for its citizens. The purpose of the survey is to determine the level of interest the citizens have in a variety of new services, as well as potentially an expansion in current services. Examples include expanding from providing recycling via a drop-off program, to also offering a curbside collection program; as well as potentially higher

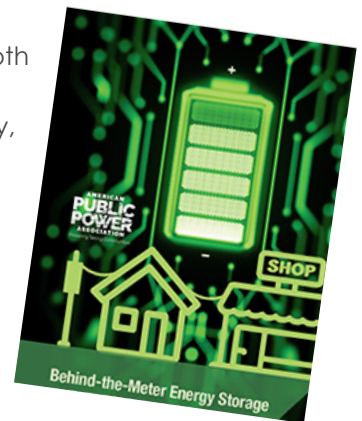
levels of service with regard to yard waste and bulky collection programs (i.e. more frequent collection, curbside collection, etc.). The survey will also include a range of prices that each of these services would cost, to determine whether the citizens would be willing to see an increase in their monthly solid waste user fee to pay for the service, or additional fees for call-in bulky collection services, etc. The survey and the summary of its findings are expected to be completed by mid-June 2019.

ENERGY PROJECT HIGHLIGHT

Energy Storage and Behind-the-Meter Storage Reports

America Public Power Association

NewGen assisted America Public Power Association (APPA) in developing two white papers on the energy storage market, one published in 2018 and the other in 2019. Respectively, the papers focused on the state of the energy storage market for both utility-scale storage owned and/or operated by the utility, and storage located behind the retail customer's meter. Both papers focused on the state of energy storage technologies, use cases, cost trends, and value streams of installing energy storage.



The recently completed *Behind-the-Meter Energy Storage: What Utilities Should Know* report can be found at <https://ebiz.publicpower.org/APPAEbiz/ProductCatalog/Product.aspx?ID=8683>.



NEWGEN NEW HIRES

Becky Schafer, Executive Consultant (Richardson, TX)

Becky Schafer joined NewGen's Environmental Practice as an Executive Consultant in September 2018. Becky has provided professional consulting services to municipal and private water, wastewater, solid waste, reclaimed water, and stormwater utilities in the Southwest for over 15 years. Her primary areas of expertise include working with local government clients on wholesale and retail cost of service and rate design studies, wholesale contract analysis, utility cost

NewGen New Hires (cont.)

allocations, financial feasibility analysis, and ordinance review and development. Becky is a member of AWWA, TAWWA, WEAT, and GFOAT.

Michael Armour, Analyst (Austin, TX)

NewGen welcomed Michael Armour to our team in January 2019. Michael joins us as an Analyst and is a graduate of the University of Texas McCombs School of Business.

Karim Virani, Analyst (Richardson, TX)

NewGen welcomed Karim Virani to our team in February 2019. Karim joins us as an Analyst and has prior experience as a Pricing & Strategy Analyst for JCPenney. He is a graduate of the University of Texas McCombs School of Business.

Jenn Stowe, Administrative Assistant (Austin, TX)

Jenn Stowe joined our team as an Administrative Assistant in February 2019. Jenn works with Dave Yanke, Environmental Practice President, and provides support to NewGen's Austin office. Jenn has a Master's in Social Work from the University of Texas at Austin, and was previously the Director of Operations at Health Alliance for Austin Musicians.



GFOAT Spring Institute (April 14-16, 2019)

Hosted by Government Finance Officers Association of Texas (GFOAT)

Matthew Garrett and Becky Schafer will be attending the GFOAT Spring Institute in Austin April 14th through the 16th.

GFOA Annual Conference (May 19-22, 2019)

Hosted by Government Finance Officers Association (GFOA)

NewGen will be attending and will be a sponsor of GFOA's 2019 Annual Conference being held in Los Angeles, California on May 19-22, 2019.

APPA National Conference (June 7-12, 2019)

Hosted by American Public Power Association (APPA)

NewGen is a Platinum Sponsor of APPA's 2019 National Conference being held in Austin, Texas on June 7-12, 2019.

NewGen will also be leading a pre-conference seminar on Saturday, June 8th titled *Distributed Energy Resources: Overview of Financial Risk and Opportunities*.

TMUA Utility Leadership and Management Conference (June 19-21, 2019)

Hosted by Texas Municipal Utilities Association (TMUA)

NewGen is a Silver Sponsor of TMUA's 2019 Utility Leadership and Management Conference being held in Irving, Texas on June 19-21, 2019.

TCMA Annual Conference (June 27-30, 2019)

Hosted by Texas City Management Association (TCMA)

NewGen will be attending and will be a sponsor of TCMA's 2019 Annual Conference being held in Fort Worth, Texas on June 27-30, 2019.