INNOVATION OUTLOOK

The 2016 State Of Energy Efficiency

BROUGHT TO YOU BY CLEAResult

INTRODUCTION

What started with Thomas Edison's incandescent bulb has evolved into a $6 trillion global market according to SelectUSA, part of the International Trade Administration of the United States Department of Commerce. Energy is essential to modern life, but we need to change how we produce, deliver, and consume these resources.

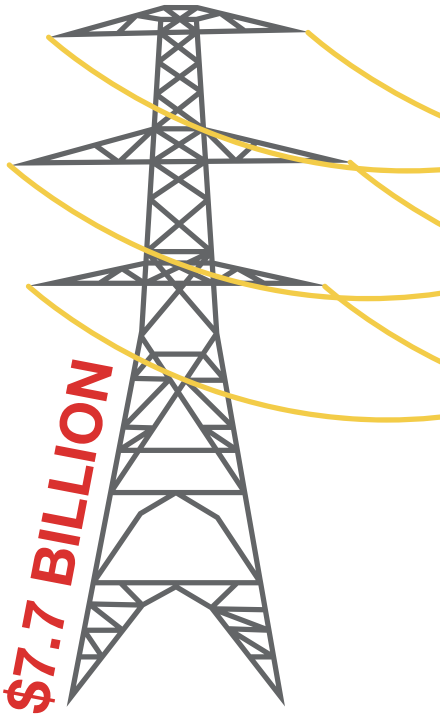
"Food, clothing, shelter, none of this is really possible in today's society without energy," says CLEAResult Chief Operating Officer, Gino Porazzo. "Our industry is the foundation for every part of our economy. It's what separates wealthy nations from impoverished nations. It's the foundation of what created the greatest economic boom. There may be some challenges ahead, but there are so many positive elements to build from."

"Energy is the foundation for every part of our economy. There may be some challenges ahead, but there are so many positive elements to build from."
Gino Porazzo

In the United States, utility companies face mounting pressure from customers as well as federal and state government to lower energy costs and transition to cleaner, greener energy sources. Energy efficiency programs have proven to be the most effective method to generate monetary and energy savings. These programs are critical as our growing population consumes more energy.

The American Council for an Energy-Efficient Economy (ACEEE) reports that total electricity use is forecasted to increase across all sectors by about 28 percent from 2008 to 2035. In response, utilities invested $7.7 billion on energy efficiency programs in 2014, up from $1.5 billion in 2004.

Customers favor energy efficiency because lower consumption means lower energy bills.



how much utilities invested in energy efficiency programs in 2014

Because customers value energy efficiency, utility companies can increase customer engagement, build trust in their brand, and increase profitability.

For all of the benefits, energy efficiency programs don't come without challenges. Fewer kilowatt-hours and therms used has led to stagnating sales. This lack of revenue increase, coupled with aging infrastructure and tighter environmental regulations, has prompted industry experts to predict a utility "death spiral." ACEEE projects that electricity sales will decline about 10 percent over the next 30 years: not exactly a death spiral, but a challenge that utility companies must address.

As utility companies stand at the brink of transformation, they have to throw out existing business models and devise new plans. These plans must be customer-driven, make use of technology such as smart devices and

Big Data analytics, and incorporate the new collaborative economy.

Programs must grab and hold customers' attention at a time when information bombards them from every direction. For the first time, many customers have a choice in utilities, including customers that take part in the collaborative economy. Utility companies have to up their game if they want to gain and retain these customers.

"Once upon a time, our main communication with customers was through a paper bill," says Brattle Group Principal Peter Fox-Penner, author of "Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities." "Now, we interact with customers through Twitter, a smart meter, texts … We have constant back and forth feedback."

In addition to customer priorities, utility companies must also keep myriad regulatory demands in mind. Most notably, the Clean Power Plan, which the EPA finalized in October 2015, sets national standards to address carbon pollution from existing power plants. Based on the EPA's targets to reduce carbon dioxide (CO_2) emissions by 32 percent by 2030, some utility companies will have to cut emissions by more than 50 percent to reach that goal. As of February 9, 2016, the U.S. Supreme Court issued a stay against the EPA's Clean Power Plan, halting the implementation while it considers the issue.

But for all of the challenges, a wealth of opportunity lies ahead for our industry. Many companies have devised demand response (DR) and Strategic Energy Management (SEM) programs that have saved thousands of kWh and therms. Natural gas companies have worked to bring clean energy to low-income housing. Groups like the Tennessee Valley Authority have created innovative energy rebate programs that dramatically increase customer spending and field capacity and improve customer experience.

PROGRAM DESIGN

With the prevalence of state-mandated energy efficiency programs, stagnant sales, and rapidly shifting technology, it's time for utilities to get creative with program design.

"Utilities can no longer rely on the growth of kilowatt-hour sales to finance their systems," says Fox-Penner. "We're in the midst of a tectonic shift away from the rates that Samuel Insull developed in the early 1900s. To address that challenge, we need to create new business models."

In response to this challenge, a growing number of utility companies have partnered with energy efficiency alliances and other organizations to expand energy efficiency programs. Successful efforts incorporate home efficiency ratings systems, power usage benchmarks, and energy rebate programs.

On the regulatory front, climate change has prompted a number of rules. Regulations designed by President Barack Obama in his Clean Power Plan, under the jurisdiction of the Clean Air Act, have prompted utilities to rethink program design and look at their own generation portfolios in states that are still vertically integrated.

Policy and Market Mechanisms

Policy and market mechanisms—which include performance incentives, decoupling, and third-party markets—play an important role in energy efficiency program proliferation.

As part of their monopoly agreement, utilities are entitled to earn a reasonable rate of return, and they pass these rewards on to shareholders. When it comes to implementing energy efficiency programs, utilities face an interesting conundrum: Utilities typically earn revenue based on kWh or therms sold. However, regulators demand that utilities help customers save energy through efficiency programs, which leads to lower sales. Performance incentives, decoupling programs, and third-party market mechanisms provide ways for utility companies to generate profits even as customers become more energy efficient.

Performance Incentives

To encourage utilities to adopt energy efficiency programs, many states offer monetary incentives when utility companies hit certain benchmarks: 80 percent, 90 percent, or 100-plus percent of the state's energy efficiency targets, for example.

ACEEE reports that in 2015, 27 states had adopted performance incentives based on the cost-effective achievement of energy savings targets, up from 20 in 2011. "The ability to assign a dollar value to efficiency investments significantly contributes to utility management's commitment to pursuing energy efficiency," the nonprofit states.

Performance incentives fall into four categories:

- *Performance target incentives.* State agencies reward utilities for meeting savings targets by returning a percentage of the program costs to them. Some states issue penalties for failing to meet minimum targets.

- *Multifactor incentives.* State agencies calculate performance incentive amounts based on energy savings, as well as demand savings, job creation, customer service quality, and other metrics.

- *Rate of return incentives.* Utilities earn a rate of return that equals the return on supply-side investments. This type of incentive works for investor-owned utilities because of their

responsibility to shareholders.

• ***Shared savings incentives.*** Utilities share a portion of the net benefits of a successful energy efficiency program with ratepayers.

Decoupling

Many states use revenue decoupling as a way to motivate utility companies to undertake energy efficiency programs. Traditionally, revenues are directly tied to the throughput of electricity and/or gas sold; therefore, many utility companies are not "incentivized" by energy efficiency. To counter this disincentive, many states have adopted alternative approaches such as decoupling.

Decoupling, as defined by the National Association of Regulatory Utility Commissioners, is "a rate adjustment mechanism that separates an electric or gas utility's fixed cost recovery from the amount of electricity or gas it sells." With decoupling, revenue should not increase or decrease with sales.

"If the rate is based on the total amount of money a utility needs to make divided by the total amount of kWh its customers need, and if it can sell the power for less than it costs through traditional methods, then that differential becomes profit," says Alek Antczak, Senior Consultant for CLEAResult. "With decoupling, utilities want to do as much energy efficiency as they can because that increases the differential."

Market Mechanisms

Some states work through a third-party market to help utility companies generate revenue in tandem with energy efficiency programs. Independent System Operators (ISOs) manage the transmission grid to allow open and equal access to all electricity buyers and sellers. ISOs also ensure that the lights stay on 24/7.

California ISO, for example, collaborates with state and federal agencies, policymakers, stakeholders, and end-user groups to align environmental and energy goals. It also helps remove barriers and creates opportunities for distributed energy resources (energy storage, plug-in electric vehicles, demand response) to provide grid services. "As the utility engages in energy efficiency, it can imbed those resources into the market and compete on the same footing as those resources," says Antczak.

Through policy or market mechanisms, or some combination thereof, 43 states have some sort of incentive that drives utilities to invest in energy efficiency as a resource according to Melissa Culbertson, Senior Manager for ADM Associates. "The incentive mechanism varies from state to state, but those that tend to make more robust energy efficiency investments also tend to have more comprehensive mechanisms for utilities to earn a return."

Demand Response

Successful program design incorporates demand response. What started in the 1970s with then-President Jimmy Carter to help manage conservation has evolved into a diverse initiative powered by a "smart" spectrum of consumer devices and renewable energy solutions.

In a 2014 survey by Utility Dive of more than 500 utility professionals and staff, 81 percent of respondents said their utility plans to grow its demand response programs over the next five years.

According to CLEAResult Practice Director Dain Nestel, utility companies have traditionally offered two basic types of demand response programs:

• ***Direct load control.*** Utilities install devices that control targeted appliances—air conditioners, water heaters, and pool pumps, for example—during peak demand periods and critical events.

• ***Dynamic pricing.*** Customers shift load based on pricing signals sent by the utility. Residential customers can program devices to operate during off-peak hours and adjust consumption in response to price signals.

With both programs, utility companies frequently use remote technology to automate and simplify customer involvement and to manage renewable energy integration. However, some industry experts consider connected devices a "disruptor" in the demand response space.

Nest, a "self-learning" WiFi-enabled thermostat, allows customers to control home temperature from anywhere. Apps such as SmartThings and Wink allow customers to control their thermostat, electricity, security system, and other devices to create a smart home.

At the CLEAResult Energy Forum, Nestel said that his colleagues conducted a market assessment of connected home devices. In only four months, the number of devices available in the market increased from 200 to 244.

This rise of the connected home creates a disparity between customer engagement and utility market opportunities. Utility companies no longer have an exclusive relationship with customers, nor exclusive control of their energy.

To lessen the divide, utility companies have partnered with technology companies to integrate smart devices into demand response programs. "Through demand response systems and communication protocols like OpenADR 2.0, we can speak to every one of those connected devices," says Nestel. "We can turn them on, off, or down as needed to adjust to peaks."

Utilities can also combine customer engagement and advanced data analytics to offer behavioral demand response. Behavioral demand response leverages customers' smart meter data to deliver personalized energy insights and advice that helps them save energy during peak events. "This is a voluntary, device-less DR program that delivers predictable load shed with enhanced customer engagement," says Nestel.

20%

expected increase in natural gas use between 2012 and 2040

A greater emphasis on demand response equates to improved opportunities to engage customers, manage the grid, and address resilience, with a lowered risk of brownouts and blackouts. "Identify the right solution for your market," says Nestel. "Identify future demand response opportunities in a market that's going to see more disruption."

Transformation in Natural Gas

The natural gas industry faces unique challenges in terms of energy efficiency and customer retention. Fracking has led to an increase in supply, which has lowered prices, making it an attractive energy source for commercial customers. In the residential space, the natural gas industry works to retain customers as they move to alternative suppliers or discontinue service altogether.

Energy Information Administration projections from its 2014 reference case show natural gas use will increase by 20 percent between 2012 and 2040, mainly in the transportation, industrial, power, and commercial sectors. The agency predicts a decline in residential use.

The natural gas industry must look beyond rebates to retain customers. It must design comprehensive programs that educate customers on natural gas benefits and empower them to make informed decisions.

"The natural gas industry must look beyond rebates to retain customers."

Some Arkansas Oklahoma Gas Corp. (AOG) customers considered gas a nonessential service—one more bill to pay and not enough money to pay it.

"We recognize it's cheaper to keep a customer than connect a new one," says AOG Director of Energy Efficiency Programs John Ware. "For us, energy efficiency is a mandate by the state Public Service Commission as well as a way to keep our [burner] tips in homes."

AOG's residential energy efficiency program includes a free weatherization program, water conservation kits, and rebates for furnaces and water heaters. Since 2010, AOG has issued 1,350 equipment rebates and retained 225 burner tips per year.

Through the program, AOG customers saw the company as a trusted advisor, and AOG developed a deeper relationship with its customers. "We need to communicate not just that we are experts, but also that the customer is smart for participating," says CLEAResult Chief Marketing Officer Colleen Langevin. "If we can shift the customer experience so that the customer feels empowered, they are more likely to associate themselves with your brand. That brings increased satisfaction, more word of mouth, and happy customers

who are more likely to implement program recommendations."

SourceGas Arkansas saved a canning company 730,000 therms and more than $300,000 in cash incentives over the course of a few years. SourceGas worked with the company through bankruptcy and an ownership change to make improvements to its steam system. It is also working to assist them in the installation of an economizer system that will tie the company's boiler systems together. SourceGas helped the company save money, the company stayed in Arkansas, and 425 employees, including 250 SourceGas customers, kept their jobs.

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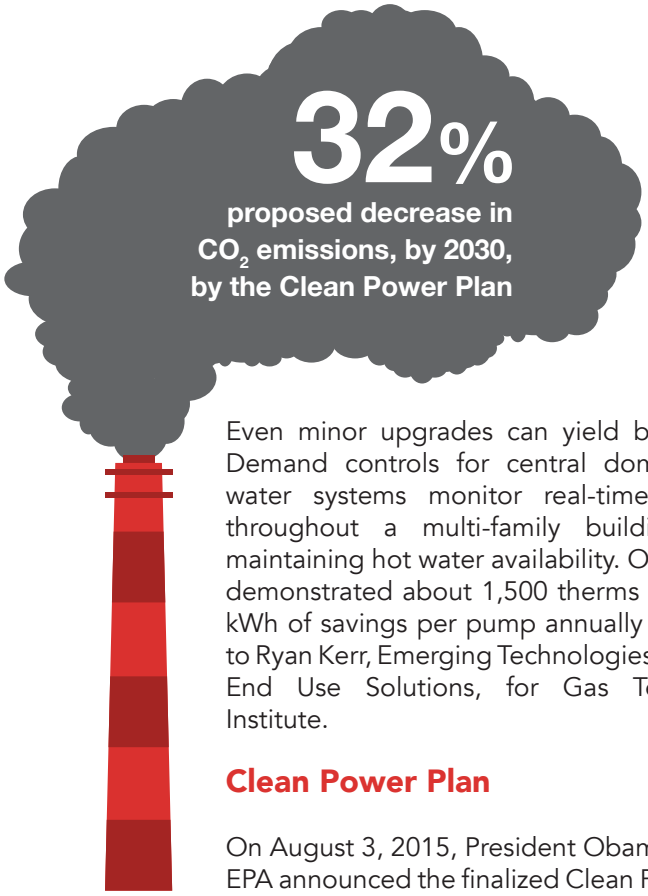


Even minor upgrades can yield big results. Demand controls for central domestic hot water systems monitor real-time demand throughout a multi-family building while maintaining hot water availability. One project demonstrated about 1,500 therms and 1,250 kWh of savings per pump annually according to Ryan Kerr, Emerging Technologies Manager, End Use Solutions, for Gas Technology Institute.

Clean Power Plan

On August 3, 2015, President Obama and the EPA announced the finalized Clean Power Plan (CPP), the first national standards to address carbon pollution from existing power plants.

Under the authority of Section 111(d) of the Clean Power Plan, the Final Rule, published October 23, 2015, proposes to reduce carbon dioxide (CO_2) emissions by 32 percent by 2030. States and utilities will have substantial flexibility in designing their implementation plans to achieve those reductions.

Under the CPP, the EPA established CO_2 emission performance rates for fossil fuel-fired electric steam generating units and stationary combustion turbines. The EPA also established state-specific rate- and mass-based goals based on current performance rates and affected electric generating units. While the EPA did not use energy efficiency to calculate state pollution reduction targets, energy efficiency is widely considered a cost-effective compliance tool. ACEEE argues that it remains states' "cheapest and most readily available option for achieving substantial and reliable emission reductions."

The impact of the CPP on utilities depends on their generation portfolio and experience in clean energy initiatives. Based on the EPA's proposed emission reduction targets, some utilities will have to reduce emissions by more than 50 percent to reach the goal, while others are already at or below the state target. Final reduction requirements will be established at a state-by-state level.

Not every state supports the CPP, especially those that rely heavily on coal generation. Under the rule, in states where utilities own generation and are not deregulated, the utilities may have to make operational changes to meet emissions goals. CLEAResult stands ready to contribute to that process on behalf of its clients across the country. Stay up to date with the latest on the CPP at clearesult.com.

As of February 9, 2016, the U.S. Supreme Court issued a stay against the EPA's Clean Power Plan, blocking progress on emissions regulations while the Court considers the plan.

Strategic Energy Management

Energy is a major expense for any business, especially industrials and those with large campuses or complex energy systems. With a Strategic Energy Management (SEM) process, businesses and large institutions can better manage their energy consumption to save money now and in the years to come.

SEM program staff provide training to a business's production, engineering, and/or facilities teams to engage employees and improve operations. Facility teams learn to optimize controls and identify operations and maintenance changes—many of them simple and low cost—that can make a big impact on a facility's energy use. Utilities not only realize cost-effective energy savings, but also provide an excellent service to large and important key account customers.

By incorporating incentives, demand response, and Strategic Energy Management into program design, utility companies have much to work with when designing energy efficiency programs. With strategic partnerships, a customer-centric focus, and ingenuity, utility companies can create programs that meet customers' needs and improve energy and operational efficiency.

"Industrials are the big winners if they participate. Industrial projects have an eight to one benefit to cost, or better."
Guru Kalyanraman

CUSTOMER EXPERIENCE

"One-way communication doesn't exist anymore."

Deanie Elsner, President of Kellogg Company's snacks business unit and former Kraft Foods Group CMO, made a strong but valid statement during the CLEAResult Energy Forum. Elsner cautioned that the utilities that don't adopt a new, customer-centric marketing model risk disruption.

"The consumer has become the new CEO."

Again, Elsner made her point. Consumers have as much or more say in what a business offers. This applies to utilities just as it applies to a snack company.

"We recognize it's cheaper to keep a customer than connect a new one."
John Ware

In today's marketing model, customer experience must take priority. Communications strategies must target the consumer and focus on engagement and relationships.

Today's consumer expects a quality brand from a reputable company with a strong community. The third part of the equation, community, is paramount in our increasingly mobile, sharable society. In a marriage of art and science, today's utility must integrate marketing strategies with IT capabilities to create personal messages on a wide range of channels: from blogs to video to social media.

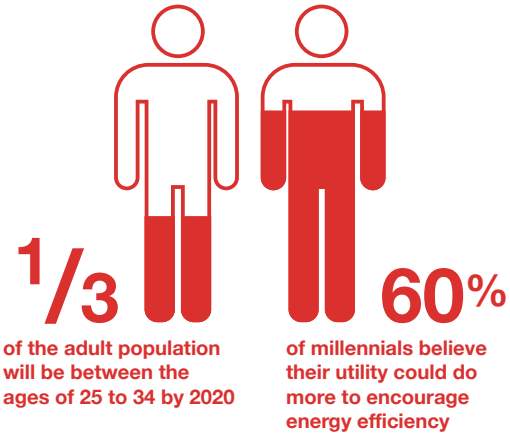
To increase engagement, utility companies can work within existing mediums, such as websites and newsletters, but must also respond to customers on social media to build stronger relations.

We know how to give customers light and heat. Now, we must also provide real-time information to help them use energy efficiently and feel safe when emergency strikes.

New Customer, New Expectations

Millennials, which have eclipsed even the baby boomers in scope, want to have a conversation with your company.

This generation has a lot of say. Adults age 25 to 34 will account for one-third of the adult population by 2020. In 10 years, they will make up 75 percent of the workforce. And according to marketing firm KSV, 60 percent of millennials believe their utility could do more to encourage energy efficiency.



For utilities not tuned into the millennial market, it's time to get to know them. This generation is more familiar with the Internet and social media than any other, and thus makes decisions differently. "They expect you to be on call and communicate with them online or by text," says Elsner.

The underserved but growing Latino market also deserves attention. According to Elsner, experts predict 75 percent growth in this market over the next 20 years. Like the millennials, they will comprise a significant portion

of residential purchasing, but they receive information differently.

According to a 2012 Nielsen report, Latinos spend 68 percent more time watching video on the Internet and 20 percent more time watching it on mobile phones.

Today's customer wants an interactive experience. They want relevant, sharable content. They want to engage with your brand and build a relationship. Therefore, utility companies have to understand their customers: from the millennials and Latinos to Gen X parents and retiring baby boomers.

Here are a few ways to enhance customer relations:

• Mine and harvest the vast amounts of data that your company collects to learn how customers engage in certain topics.

• Armed with information, recalibrate your marketing plan to incorporate content that engages with the customer.

• Instead of "selling" the company or one of its services, consider articles and social media posts with safety tips or positive customer stories. For example, on Halloween, California's Pacific Gas & Electric Company (PG&E) posted an infographic about always-on "vampire appliances."

The Importance of Customer Experience

The better you know your customer, the better the odds of retaining and ideally increasing your market share.

Successful engagement in the utility sector means reducing customer anxiety and helping people feel in control of their energy usage. Advance warnings of high bills could not only increase customer satisfaction, but also reduce the number of customer service complaints, which could lead to significant net benefits.

Programs that help customers understand how to conserve energy build trust and lead to greater energy efficiency: a win-win for utilities.

Utility Moment: Tennessee Valley Authority

Tennessee Valley Authority's (TVA) energy efficiency group wanted more consumer-friendly and accessible programming. They received just that with eScore, an energy rebate program offered through local power companies.

TVA, which provides electricity for business customers and local power distributors in parts of seven southeastern states, had three primary goals for its energy efficiency program:

• Lower the cost of saved energy. The Tennessee Valley has no energy efficiency mandate. "We compete against other suppliers," says Frank Rapley, Senior Manager of TVA EnergyRight Solutions. "Being cost-effective in how we deliver a kilowatt hour determines whether I have a program."

• Increase stakeholder experience. TVA wanted high-quality interactions and a customer service touchpoint for the power companies it serves.

• A fully integrated end-to-end program/platform solution. TVA lowered its administrative costs by bringing its 155 local utilities onto one platform.

TVA and CLEAResult analyzed mountains of data, consulted with comparable power companies, and conducted extensive internal and external research to develop eScore. "What we ended up with was a cost-effective, customer-centric program that's contractor-driven, with enhanced technology, and with an end-to-end platform," says Rapley.

The result? Customer spending increased by 31 percent. Field capacity increased by 45 percent. TVA advisers scored 4.9 out of 5 in homeowner satisfaction.

With eScore, TVA personalized the homeowner experience and achieved impressive results. "At the end of the day, it's the human interaction that creates customer satisfaction," says Rapley. "That and making it easy."

Utility Moment: Pacific Gas & Electric

PG&E, one of the largest investor-owned utility companies in the United States, partnered with select cities to create the Step Up and Power Down campaign. The program advises local businesses and homeowners to take simple steps each day to reduce energy waste, such as turning off conference room lights after a meeting or powering down computers. Cities set enrollee and kilowatt hours-saved goals. If the city reaches that goal, PG&E will donate

$1 million to local sustainability projects.

With clever, assertive marketing, PG&E's program enrolled over 600 businesses in 2015 and is now positioned to achieve ambitious energy saving goals in 2016.

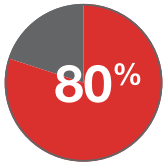
Both of these programs show how a customer-centered program can reap tangible results. "If you know your customers better than you know yourself, you can design communication to meet their needs," says Elsner. "Customers will respond in a way that works for you."

"At the end of the day, it's the human interaction that creates customer satisfaction."
Frank Rapley

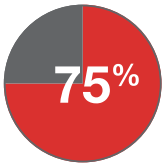
DRIVING DECISIONS WITH DATA

Like many industries, the utility sector has amassed vast amounts of data from customer interactions. Utility companies can use this "Big Data" in numerous ways to increase customer satisfaction and design more customized energy efficiency programs.

Despite the opportunities Big Data provides, utility companies are slow to put it to use. According to a recent survey by Capgemini Consulting, 80 percent of utility decision makers see Big Data analytics as a source of new business opportunities, and 75 percent see it as crucial for future success. However, only 20 percent of utilities have already implemented Big Data analytics.



80% of utility decision makers agree big data analytics = source of business opportunities



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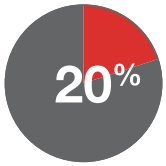


20% of utilities have implemented big data analytics

Source: Capgemini Consulting

As technology companies develop more user-friendly data management tools, and utility companies find ways to upgrade IT infrastructure to improve data management, Big Data's potential to advance the industry is "virtually" limitless.

Why Big Data

The U.S. Energy Information Administration reports that in 2013, utilities had installed more than 51 million smart meters, which generate about 25 petabytes of data per year. (A petabyte equals 1 million gigabytes. For reference, a MacBook Pro contains between 4 and 16 gigabytes of memory.) Consumer devices and internal company equipment also generate potentially useful data. As IT research firm Gartner says, information is everywhere—in volume, variety, and velocity—and it keeps growing.

By uncovering patterns in this data, utility companies can increase operational efficiency and improve customer experience—both crucial to future success. On the operational side, utility companies can use Big Data analytics to help match power generation with expected demand, manage peak load (peak shaving) through variable pricing, and optimize the integration of decentralized energy generation. Utilities can use predictive analytics to help increase equipment's asset life and performance, which keeps maintenance costs down.

For improved customer experience, Big Data can help utilities understand customers' consumption patterns. They can use this information to create customized tips and tools for energy savings. Companies can use predictive analytics to minimize power outages and alert customers to usage spikes and potential high bills.

"We have the opportunity to walk down the same aisle as our customers, watch them, and have a conversation with them," says CLEAResult Chief Technology Officer Dave McCann.

Data Is Everywhere

You don't have to look far to find data sources. Smart meters, smart devices, home

appliances, social media, real estate sales, and GPS devices all generate data. On the operational and commercial fronts, construction, sales, rebates, and infrastructure all generate data.

Although utility companies have access to oceans of data, barriers stand between data and extracting information. The high cost of data storage and manipulation, as well as the complexity involved in accessing and harvesting data, account for much of this barrier.

Spending on smart grid infrastructure, which includes data centers, is already expected to grow substantially over the next 20 years. Additional data from smart meters and their connected devices, as well as Home Energy Management Systems and other sources, will only increase storage needs.

Advances in technology help to crumble those barriers with solutions that are gradually becoming more user-friendly and cost-effective. To process and manage data, platforms such as Hadoop, Spark, and Amazon Web Services have advanced processing capabilities to filter and condense large data sets faster than ever before. On-demand data analytics tools provide data management at a lower price point.

However, the data scientists required to analyze this data don't come cheap. And data scientists don't understand customer needs as well as utility company management. For data to be most effective, it must reach the hands of the decision makers. But can the CMO navigate Hadoop? Without an engineering background or extensive training, probably not.

Fortunately, visualization tools such as Tableau, Spotfire, and QlikView have started to make this possible with data analytics tools that the entire team can use.

"The information that we get on [Tableau] heat maps has changed a lot of our strategies in terms of where and how we deploy our resources," says PG&E Supervisor Tim Michel. "It enables us to study certain communities and have richer, better conversations with our customers and with the local government."

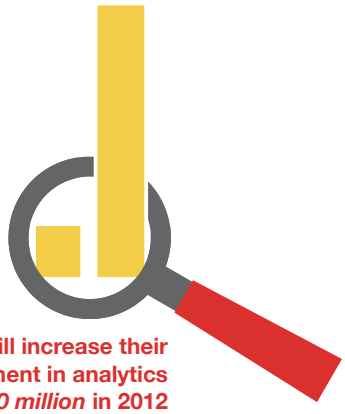
Data and Customer Experience

As mentioned, utility companies can analyze customer usage behaviors with intelligent devices and smart grids to deliver customized recommendations. Whether those tips come with an energy rebate offer, a coupon, or just expert advice, these extras provide the personalized, interactive experience that today's consumers seek.

For example, when a customer visits a utility's website, he may be able to log in and see his energy usage for the year, compare it to last year, view his account history, and pay his bill. With the power of analytics, he would see a recommendation to purchase LED bulbs with a link to a coupon. He may see a note that reads, "save up to $45 per month by replacing your old water heater," with a link to product ratings. The site may also integrate data to show, in the form of a graph, how these changes would impact his home energy costs.

Because data comes from multiple devices, the utility company could also leverage information from smart devices to provide tips on the best times to run certain appliances. Soil and weather data could lead to lawn watering recommendations.

Some tech-savvy utilities have incorporated text mining, which is the process of analyzing customers' writings and other documents to uncover trends and insights, in hopes of improving customer attrition. Utility companies can analyze customer comments, Twitter data, articles from influencers, and internal communication platforms to unlock clues to potential problems.



utilities will increase their investment in analytics from *$700 million* in 2012 to *$3.8 billion* in 2020

Next Steps

The Institution of Engineering & Technology predicts that utilities will increase their investment in analytics from $700 million in 2012 to $3.8 billion in 2020. To ensure success with these investments, take a structured approach and start small. Develop a plan that covers where and how you want to leverage data.

Prioritize one or two opportunities. Launch a pilot program. Incremental success can lead to big results.

"For utilities, the low-hanging fruit is gone," says McCann. "We are required to think strategically about how we approach our programs and our customers. With data, we can make better decisions."

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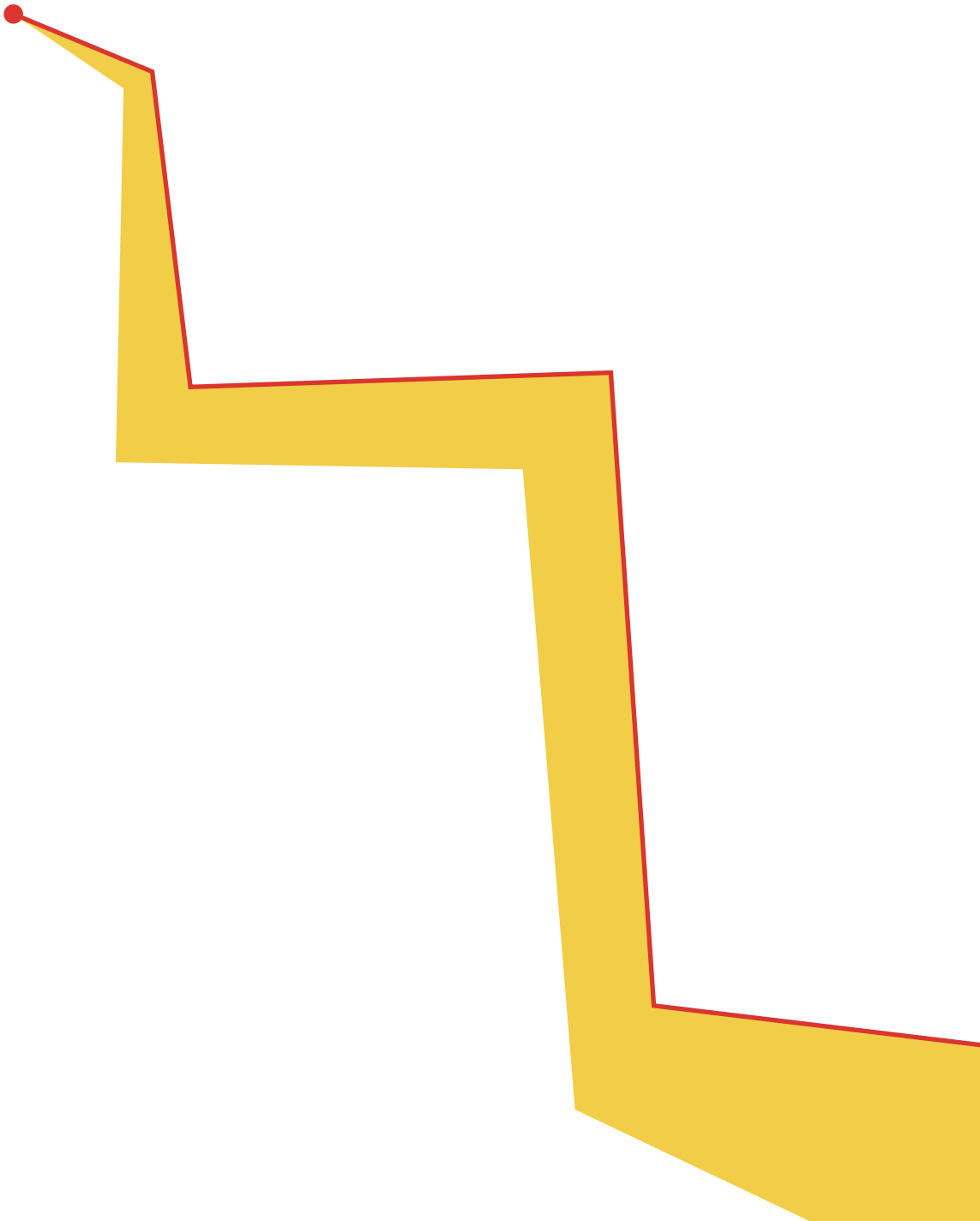

COLLABORATIVE ECONOMY

Mobile technology, the rise of the millennials, and myriad other factors have led to a shift in how the U.S. and even global economies operate. In addition to a traditional consumer-based economy, we have a rising collaborative economy.

Analyst Jeremiah Owyang describes the collaborative economy as "an economic movement where common technologies enable people to get what they need from each other."

People use technology to share cars, homes, and tools, among other resources, which disrupts entire industries. Consider Uber. The rideshare company offered 140 million rides in 2014 and does not own a single car. The seven-year-old company, valued at about $50 billion, threatens the taxicab industry with its modern, easy-to-use app and swift, personal service.

Young, technology-driven companies drive the collaborative economy. These companies usually don't own assets and have a high transaction rate and valuation. But if forward-thinking startups drive this new economy, the individuals provide the engine. These customers or consumers now act as microentrepreneurs. Owyang simply calls them "empowered people."

Utility companies must pay close attention to the collaborative economy and its empowered people. Over the next 10 years, professional services firm PricewaterhouseCoopers predicts the collaborative economy will grow from $15 billion to $335 billion in revenue.

This trend is already affecting the energy industry on a small scale and will continue to expand. The utility companies that want to remain relevant in 2025 will find innovative ways to collaborate with their customers.

Collaborative Influences

Many factors contribute to the collaborative economy's rise. Customers want products or services delivered quickly. They want to order online and receive a competitive price. Technology, including smartphones, mobile applications, the cloud, and social networks has made communicating and sharing online convenient and commonplace. The sharing community tends to value experience over physical ownership and has a strong commitment to sustainability—an advantage for our industry.

Of the most popular reasons for using sharing services, price, convenience, and quality top the list. Customers, especially millennials, will switch from purchasing to sharing if it means they can save 25 percent. As Owyang and coauthor Alexandra Samuel explain in their report, "The New Rules of the Collaborative Economy," "once they make that switch, you may never get them back."

To compete with sharing sites such as Airbnb,

Netflix, and Simplist, some large companies have created peer-to-peer (P2P) marketplaces. Ford encourages new car buyers to rent their vehicles on Getaround, a P2P marketplace, to offset the cost of car ownership. Home Depot offers a tool rental service, and Walmart created an aftermarket for electronics and video games called Trade-In.

For established companies, it's hard to compete with collaborative startups on convenience. Many of these online services offer next-day delivery, on-demand access to goods, and free pickup and delivery.

Corporations that partner with sharing companies have found success in this brand-as-a-service model. Whole Foods partnered with Instacart for one-hour delivery in some cities. Nordstrom resells goods from Etsy in its retail stores. Home Depot partnered with Uber to deliver its Christmas trees to New York customers. Owyang said that when explaining BMW's DriveNow program, which offers luxury cars as a membership model, BMW said that instead of selling 1,000 more cars, it wants to sell one car 1,000 times.

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The Maker movement—the tech-influenced DIY community that MAKE magazine inspired in 2005—spawned another facet of the collaborative economy. Makerspaces offer access to industrial tools and shared workspaces. Corporations such as General Electric, Ford, and Hasbro, as well as universities, have started collaborating with Makerspaces or building their own.

Collaborative Impact on Utility Companies

The collaborative economy has already crept into the energy sector, and will likely continue to do so.

Mosaic, founded in 2010 in Oakland, California, uses crowdfunding to fund solar power projects. The company started with businesses, nonprofits, and affordable housing and plans to expand into the residential market.

Austin, Texas-based Gridmates aims to create the "world's first cloud platform that enables peer-to-peer energy sharing and crowdfunding of energy," according to its website. Individuals can select a tax-deductible dollar or energy amount to give to those in need.

Yeloha, a solar sharing network, allows for the sharing of energy between solar power hosts and partners. The company installs solar panels for free on hosts' roofs. Hosts keep a portion of the solar energy generated, while solar partners can purchase clean energy.

Vandebron, a Dutch startup, created a trading platform that connects consumers with windmill owners and other energy producers. Tesla has partnered with Airbnb to offer charging stations to select homes along the California coast. Tesla donates and installs the chargers to qualified Airbnb homes. It plans to add more properties in other destinations.

Municipalities have also gotten into the collaborative economy. MuniRent, currently operating in Michigan and Oregon, allows public agencies to share heavy-duty equipment internally and with other agencies. Yard Club connects contractors with other contractors to rent high quality equipment. Similar services could easily expand into the energy sector.

Telecom, a close cousin to the utility industry, has also seen disruption from sharing sites. Fon, a global WiFi network, allows members to share their home WiFi via a Fon WiFi router. P2P social networks such as San Francisco-based Open Garden have developed mobile applications that enable P2P mobile Internet connection sharing.

As the collaborative economy gains force, the energy industry could very well have its own P2P platform. Companies such as Yeloha and Mosaic show that customers recognize and value an opportunity to share, sell, or buy energy.

Utilities should consider ways to retool their business models to incorporate a marketplace or brand-as-a-service component. Utility companies that tap into the crowd will remain resilient, Owyang advises. Those that don't will risk disruption. "Help these empowered people to be more energy efficient in their own lives."

CONCLUSION

Utility companies have seemingly conflicting goals: increase energy efficiency, combat stagnant sales, replace or enhance aging infrastructure, and abide by state and federal regulations. CLEAResult COO Gino Porazzo advises, "don't hit the panic button."

Americans depend on electricity and natural gas. That hasn't changed. But the companies that supply these necessary resources must change to meet consumer and technological demands. The smart grid will require radical changes to infrastructure. Mobile applications, smartphones, smart devices, and the Internet of Things require utilities to rethink marketing strategies and demand response programs.

As tech-savvy millennials eclipse baby boomers as the dominant age demographic, utility companies have to shift customer experience models to incorporate relatable content delivered in real time. Storytelling and 24/7 communication take priority over straightforward sales. The companies that don't build relationships with customers will find themselves without.

Customers have more decision-making power and choices than ever before. If they don't find what they need from large companies, they can easily find it through their peers. Utility companies don't need to compete with this rising collaborative economy. They need to join it to stay relevant.

As we move through this transformation, keep sight of the essential mission: How can we help customers feel more comfortable in their homes? How can we make their office space more enjoyable? How can we help companies save energy to become more competitive?

With the customer at the forefront, we can transform today's challenges into tomorrow's opportunities.

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