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FutureReady

WHERE THE SMART GRID IS HEADING

Utilities Respond to the Rise of Solar

Paying it Forward

Getting Ahead of Prepay Can Pay Off for Utilities

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Educating Consumers on Smart Grid Value

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Opens the Door to Better
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Great Expectations

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Where **consumer engagement** and the **smart grid** meet

A MESSAGE FROM PRASANNA VENKATESAN

The relationship between utilities and consumers is changing. Over the years, the utility's place as a regulated monopoly limited the need for target marketing or product choice. But with the rise of distributed generation, some utilities are facing new challenges that require a fresh look at consumer engagement.

In this issue of *FutureReady*, we look at how consumer marketing and smart grid technology intersect as utilities become more sophisticated in outreach efforts. Growing solar adoption is driving much of this change, and we look at how utilities are responding to the challenges of maintaining market share, balancing loads and static rate structures.

Demand response programs offer utilities an opportunity to fine tune consumer marketing efforts. You'll read how data-driven target marketing enabled Colorado Spring Utilities to segment, attract and retain customers that best helped them meet the goals of a capital deferral program.

Flexible payment programs, such as prepay, also offer consumer engagement potential. While they are still meeting some resistance with regulators, consumers on these programs are benefiting from a greater awareness of energy use and more control over their utility bill.

The ongoing challenge of educating consumers about smart grid technology and programs is ever present, as research from the Smart Grid Consumer Collaborative shows. Although consumer pushback against advanced metering has slowed, keeping consumers informed about the benefits created by smarter grids touches every part of the future customer relationship.

Utilities are facing competition in areas not seen before. But with consumer-focused programs, they are still in a great position to leverage existing customer relationships and expand their market presence in the days ahead.

Prasanna Venkatesan

Landis+Gyr, Executive Vice President, Americas

Falling costs for rooftop solar photovoltaic (PV) systems, tax incentives and other factors are speeding up the growth of PV installations in many parts of the country.

According to a new report from the [Smart Grid Research Consortium \(SGRC\)](#) at Texas A&M University, nationwide residential solar PV installations are expected to grow to 1.3

million by the end of 2016. That number reflects a 60 percent increase between July 2015 and the end of 2016—a span of just a year and a half.¹

This unprecedented growth is creating significant new challenges for utilities and is already impacting not only revenues and relationships with customers, but also challenging the traditional utility business model.

Following are some of the top challenges utilities must face and solve in the months and years ahead.

Utilities Respond to the Rise of Solar

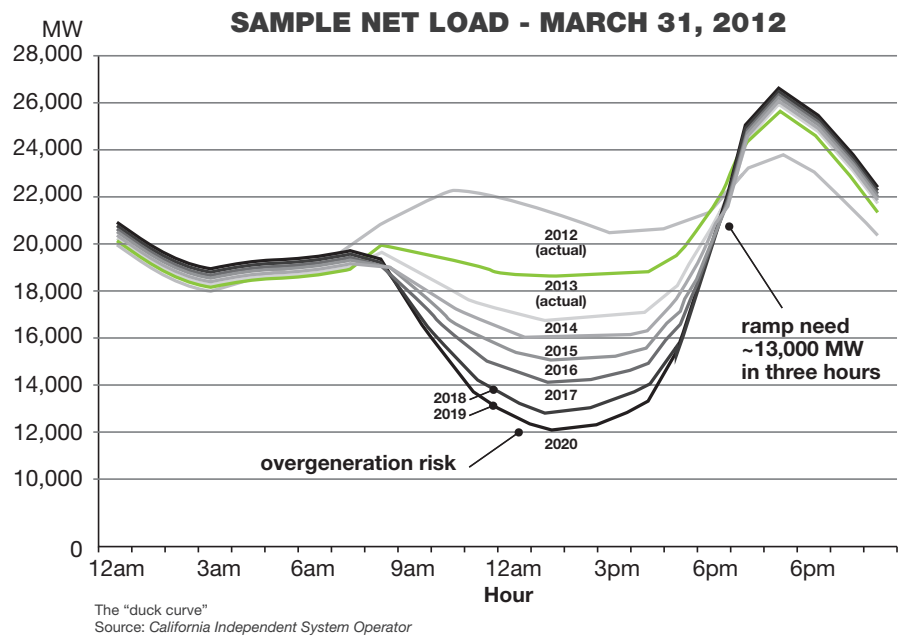


CHALLENGE

#1

THE GROWTH OF SOLAR WILL HAVE A DISRUPTIVE IMPACT ON THE GRID.

The increased flow of solar-generated electricity from residential customers onto a power grid has already created power quality issues in areas of high PV saturation, such as Hawaii, California, Arizona and New Jersey. The often-unpredictable shifts in load can stress equipment, create voltage imbalances and lead to sharper peak demand curves. In California, for example, the famous “duck curve” was developed by the California Independent System Operator to illustrate the dramatic late afternoon ramp-up of power generation as energy contributions from solar panels drops and energy demand rises. Even though considered by many to be exaggerated,



it does illustrate the need for utilities to begin developing curve-flattening strategies.

As U.S. solar installations continue, utilities must consider modifications to their distribution systems to address these new issues and continue to consistently deliver reliable service. The SGRC report warns utilities that, “these planning issues should be considered with some urgency

to ... prepare for dealing with concentrations of PV systems on certain portions of distribution systems.”² SGRC is one of many organizations developing statistical models for utility use in forecasting solar PV system installations, load impacts, and costs and benefits. SGRC forecasts are available for distribution feeders, substations, zip code areas, as well as entire utility service areas.

CHALLENGE

#2

WITH THE GROWTH OF SOLAR, THE DEMAND FOR ELECTRICITY IS SOFTENING.

Declining costs—and the subsequent growth—of solar PV are dramatically affecting

the ability of utilities to capture all new demand. While solar power currently accounts for only a small percentage of the overall U.S. energy supply, the threat of its future impact on utility economics is real. Key concerns include reduced availability of capital and negative impact on future smart grid investment.

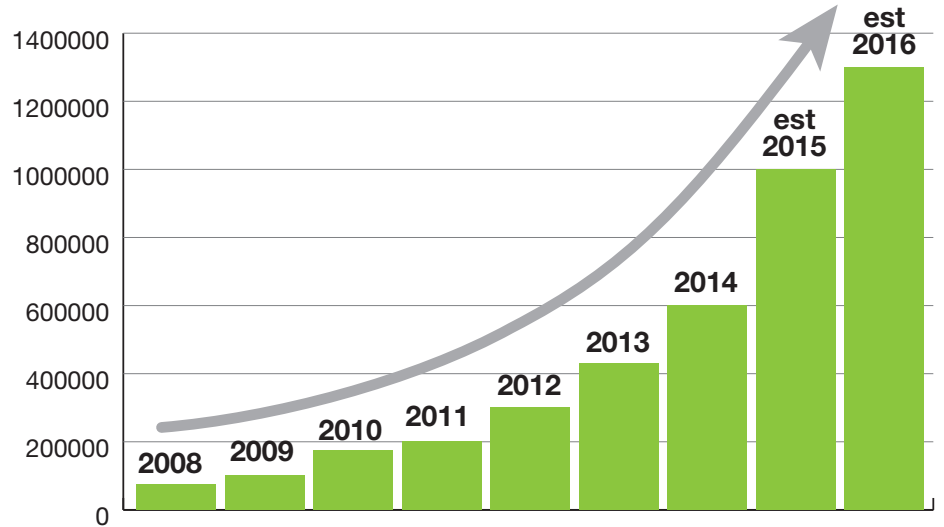
Some utilities in high PV-penetration areas are already taking steps to tip the balance in their favor. Salt River Project in Arizona, for example, recently approved new monthly service charges for customers who install rooftop solar. Hawaii has the nation’s highest proportion of residential solar customers.

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In 2013, Hawaiian Electric began barring rooftop solar installations due to financial and technical challenges. (A state commission has since ordered the utility to resume installations after a study showed that grid upgrades would enable the utility to take on more solar than originally thought.)

The Edison Electric Institute (EEI), an association representing investor-owned utilities, warns in its “Disruptive Challenges” paper about the impact of high levels of rooftop PV on utility economics

U.S. RESIDENTIAL SOLAR PV INSTALLATIONS



Projected growth in solar PV adoption. Source: SGRC.

and encourages utilities to investigate new business models that “can add value to

customers and investors by providing new services.”³

CHALLENGE

#3

WITH SO MANY CUSTOMERS GENERATING THEIR OWN POWER, RATE STRUCTURES NEED TO CHANGE.

Across the country, residential customers who have installed rooftop PV are using less energy and some are actually generating excess energy. However, they must still rely on utility services and remain connected to the grid. Current rates, based on traditional regulatory structures, will not work for this new paradigm.

has been one supportive policy in many states. It compensates customers for distributed PV generation at the full retail electricity price. The EEI “Disruptive Challenges” paper recommends “a monthly customer service charge... to recover fixed costs.”

In recent years, there’s been a great deal of concern expressed over increased retail prices and rates that could result from accelerated PV adoption. Net metering

Other perspectives, such as the one expressed by [Black and Veatch](#),⁴ include recommendations for unbundling, and charging customers only for the utility services they choose to use. These “smart rates” would be designed to recognize and appropriately bill for a variety of utility service options.



CHALLENGE

#4

**UTILITIES
NEED TO MAKE
A MOVE TO
HOLD ON TO
MARKET SHARE.**

With so many customers making or considering generating their own energy with rooftop PV, the future impact looks negative for utilities. However, [a recent survey by Swiss Re](#), a reinsurance company based in Zurich, indicates that of utility customers considering purchasing renewable resources, more would be willing to purchase this energy from their utility

than to generate their own if competitively priced.⁵

And why not? A recent report prepared for First Solar with support from EEI, contends that U.S. utility-scale PV systems are more cost-effective than rooftop PV systems. Comparing megawatt-hour (MWh) customer supply costs of PV panels with output from utility-scale solar power plants, the study found the generation cost of utility-scale to be approximately one-half that of residential-scale systems (on the Xcel Colorado system), while also reducing carbon emissions by approximately 50 percent.

Utilities that turn their focus toward solar and energy efficiency can also benefit customers—and the utility, too. Ralph Izzo, CEO of the utility Public Service Enterprise Group (PSEG), plans to [lower consumer costs and raise value to shareholders by reducing fuel cost](#). As Izzo describes it, “It’s a business opportunity ... I’m not in the fuel business, so if I can get customers to use less fuel, I can lower their bills and lower my cost.”⁶ In the end, Izzo believes new carbon-emission standards and the increase in solar use will help them come out ahead.

Utilities Responding

Utilities are making creative efforts to overcome these challenges. Some are working to leverage long-standing customer relationships as they enter the rooftop solar market. CPS Energy in San Antonio, for example, recently solicited solar installer partners to join in developing projects for that utility’s customers.

Duke Energy, which serves electric customers in six states in the Southeast and the

Midwest, recently purchased REC Solar, a large-scale solar installer, as part of the utility’s long-term strategy to add distributed energy services to its capabilities portfolio. Another similar move is NextEra Energy Resources’ acquisition of Smart Energy Capital, a commercial solar project developer. PSEG in New Jersey, on the other hand, is developing its own solar capacity. Future plans include directly connecting that solar to the grid and offering consumer loans to help fund

their solar systems. This year, Arizona Public Service entered the rooftop solar business, offering to install free solar panels on the homes of customers who would not be able to afford it otherwise.

Also in Arizona, Tucson Electric Power (TEP) has proposed a plan to purchase excess solar output from rooftop systems at the same price it pays for output from large solar arrays—with bill credits that would enable customers who move to solar to continue paying

[\(continued on the next page\)](#)

the same price for energy supplied by TEP. It's a new net metering plan designed to ensure that the cost of energy for solar customers and other customers is equitable. The utility is also proposing a metropolitan microgrid of solar energy.

Solar and Storage: A Step Beyond

Adding storage to residential solar power systems is receiving greater interest and attention, especially with the recent Elon Musk announcement about the future lower-than-anticipated costs of its lithium-ion battery storage units. Integrating storage to a PV system enables homeowners to use

70 percent more of the energy produced by the solar panels than a standalone PV system. While payback for residential applications of battery storage is up for debate, large-scale use by utilities promises significant cost and operational advantages.

Landis+Gyr

It's clear that with growing solar adoption, utilities will need to manage sizeable solar penetration on their distribution systems. This will require capabilities to balance load and track power flows. On the software side, Landis+Gyr provides energy management and analytics software for planning, prediction and real-time decision making

integration. Hardware solutions include versatile battery energy storage, intelligent line sensors and load management switches to help with frequency balancing, micro-grid management and instantaneous monitoring of power flows to maintain power quality and reliability. ■

¹² SGRC, "It's time for utilities to plan for disruptive solar PV impacts," July 28, 2015. Find at: <http://www.smartgridresearchconsortium.org/utilitypv.pdf>

³ Edison Electric Institute, "Disruptive challenges: Financial implications and strategic responses to a changing retail electric business," 2013. Find at: <http://www.eei.org/ourissues/finance/Documents/disruptivechallenges.pdf>

⁴ *Breaking Energy*, "Smart rates for smart utilities will require the adoption of unbundling," April 23, 2015. Find at: <http://breakingenergy.com/2015/04/23/smart-rates-for-smart-utilities-will-require-the-adoption-of-unbundling/>

⁵ *Greentechsolar*: "Consumers want green energy from the utility if the price is right," November 19, 2013. Find at: <http://www.greentechmedia.com/articles/read/Consumers-Want-Green-Energy-From-the-Utility-If-the-Price-is-Right>

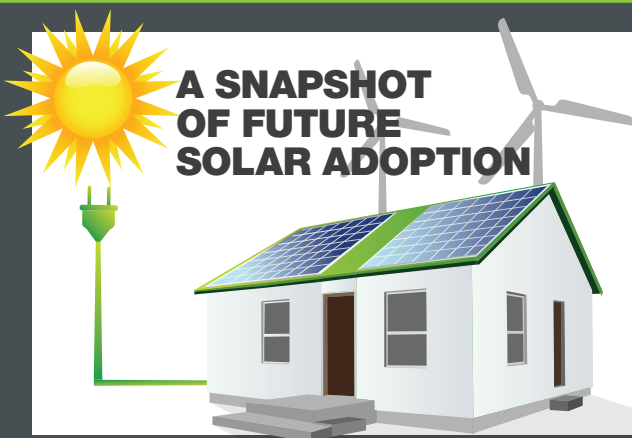
⁶ Utility company makes room for carbon emission rules." *Marketplace*. American Public Media. WOSU, Columbus. August 12, 2015. Radio.

National Clean Energy Summit:

At the National Clean Energy Summit in August, President Obama announced new measures designed to advance the adoption of solar.

- \$1 billion in loan guarantees for innovative new projects with an emphasis on distributed energy
- FHA guidelines enabling home buyers to use FHA financing for solar projects in underserved areas

In addition, four housing providers have pledged to install a total of 233 MW of solar PV on military bases.



Great Expectations

THE KEYS TO IMPROVING CUSTOMER SATISFACTION

Are customers happy with the service from their utilities? According to the latest edition of the [J.D. Power Electric Utility Residential Customer Satisfaction Study](#), the answer is a qualified “yes.” While satisfaction improved for more than 80 percent of utilities included in the study, the results indicate that nearly 30 percent of utility customers are considering adding residential solar in the next two years.

So, what do customers want? They want more than just outage alerts from their utilities. They want to feel in control. They want choices and options. And, of course, price is one of their top concerns.

Engaging consumers

In today’s fast-changing marketplace, utilities need to use new digital tools and technologies to more fully engage with their customers. For example, the J.D. Power study demonstrated that when communications with customers during power outages include critical information—such as cause of the outage, who is affected

and accurate estimates of when power will be restored—satisfaction improves.

Changing communication channels

Smart grid technologies deliver more information about how utility customers use energy,

enabling personalized communications, programs and offers. At the same time, the communication channels themselves are changing, making it essential for utilities to meet the current and growing demand for digital, multichannel and mobile communications. ■



COMMUNICATION

The most successful utilities are reaching out beyond outage messages with proactive communication via direct channels like emails, texts and social media—even in-person visits—to provide customers with relevant information and rewards for lowering their usage during high-demand periods. This empowers consumers to gain control over energy consumption and their monthly bills.



CHOICE

Customers want options. [The Reforming the Energy Vision proposal](#) in New York, which calls for the redefinition of the distribution utility to a “Distributed Service Platform Provider” (DSPP), is exploring how utilities might deliver more value by understanding customer needs and tailoring products and programs to meet those needs. Utilities are previewing a future in which the new DSPP would offer customers a menu of services, ranging from basic to premium, for all classes of customers.¹



COST

When you consider that electricity price indexes hit all-time highs in 2014,² long-term efforts to control costs through resource planning, investments in energy efficiency programs, and implementation of demand management programs to decrease load are more important than ever.


¹ greentechmedia, “Utility of the future: Think Uber, not AT&T,” March 12, 2015. Find at: <http://www.greentechmedia.com/articles/read/utility-of-the-future-think-uber-not-att>

² cnsnews.com, “Price of electricity hit record high in 2014,” January 16, 2015. Find at: <http://cnsnews.com/news/article/terence-p-jeffrey/price-electricity-hit-record-high-us-2014>



Paying It Forward

Getting Ahead of Prepaid Can Pay Off for Utilities



In a recent *National Geographic* article,¹ two utility customers described their experiences with their prepay electric service plans.

For one customer of Polk-Burnett Cooperative in Wisconsin, the plan turned out to be an effective tool for controlling her energy usage. Another customer in

suburban Dallas was not so fortunate. In fact, he was greeted by an unpleasant surprise when his prepay account balance ran low; his power had been unexpectedly cut off on a particularly sweltering summer day.

These examples demonstrate the double-edged sword of prepay and its effect on utilities and their customers.

The State of Prepay

Considering the prepaid card market continues to grow—with more players entering every year—the prepay concept appears popular and well understood by most consumers. It follows that it would be a viable payment option to the traditional monthly electric bill. Yet, the U.S. is far behind the rest of the world when it comes to adoption. In fact, fewer than 300 utilities (out of a total of 3,269 providers²) offer prepay. And, of those that do offer, participation generally tracks at less than 10 percent of the population.

“One reason is that prepay in the U.S. has not been part of our landscape from day one,” says Brent Welch, Product Manager of Prepaid Solutions at Landis+Gyr. “In the U.K., it’s 15 percent. That’s because in the U.K. they’ve had prepay for electric since the beginning.”

In the U.S. today, utilities that offer prepay as an option to their customers are mostly municipals and cooperatives. According to the Prepaid Energy Hub, the active prepay programs in 34 states (see map) include programs at 170 cooperatives.

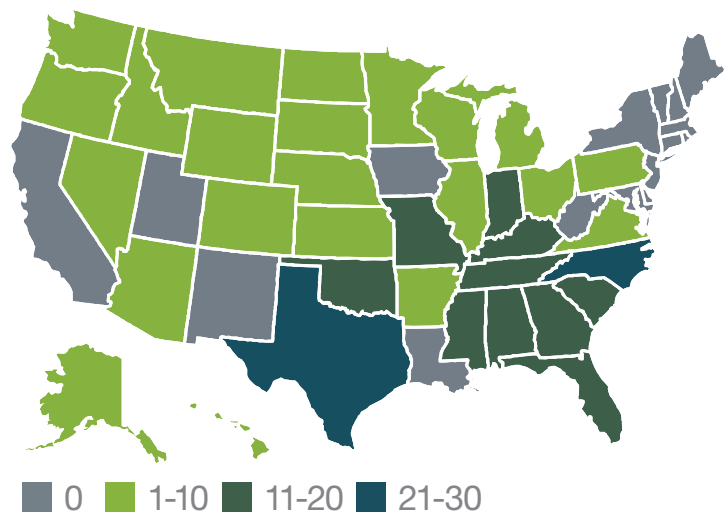
Welch predicts prepay adoption rates in the U.S. could reach as high as 10 percent, but it will take more than 10 years and require adoption by some of the larger investor-owned utilities. Why so long? “It all comes down to politics, regulations and consumer advocates,” says Welch. For example, regulators in New York and Iowa have disallowed prepay programs.

In many states, the most vocal opponents of prepay are consumer advocates who consider the programs to be punitive measures. [The National Consumer Law](#)

Center, a nonprofit that advocates for low-income and disadvantaged consumers, contends that prepay programs are the cause of more frequent service disconnections or interruptions and prepay customers pay higher rates than they would with traditional credit-based service.³



AMI PREPAY ELECTRIC PILOTS AND DEPLOYMENTS IN THE U.S.



Source: Prepaid Energy Hub

Other groups, such as Sierra Club and the Texas Ratepayers’ Organization to Save Energy, consider prepay to be an issue of economic justice, creating a class of citizens forced to choose between prepaid electricity and no electricity.

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Consumer Benefits

Why would a utility customer choose to go the prepay route? “Prepay customers tend to be self-service customers,” Welch says. It’s all part of a trend toward automated self-service solutions that enable consumers to answer questions and solve problems on their own. They take ownership of their account, so they’re less likely to contact the utility. “When the lights go out, they take responsibility and they know what to do,” says Welch.

The prepay option offers an attractive solution for consumers in a wide range of circumstances. For some, it lowers the barrier to entry by offering a way to set up utility service without the need to pay a hefty security deposit. For others who have racked up significant energy debt, prepay offers a

way to pay it off over time. At Salt River Project (SRP) in Arizona, for example, customers with accounts in arrears can set their former debt aside and allocate a percentage of each payment toward paying down their debt. “Even after their arrears have been paid off, they tend to stay on the prepay program,” says Welch.

Seeing a more direct connection between energy costs and usage, prepay customers also are more engaged with their energy use on a daily basis. As a result, they tend to be more energy efficient than those paying bills after the energy is consumed. It is not uncommon for prepay customers to use 10-15 percent less energy than before they enrolled in a prepay program, showing that awareness does make a difference.

Utility Benefits

It’s not just consumers who benefit from prepay programs. Utilities realize benefits that can improve revenue and cash flow. With the upfront payment and immediate receipt of funds, utilities improve cash flow and are better positioned to manage service costs and make new investments. And, if and when customers leave without notice, the utility is not left with days or weeks of usage they may need to write off.

In addition, when prepay customers are empowered to control their energy usage—

and, as a result, their energy costs—customer satisfaction improves. Then, utility staff spends less time dealing with customer service issues.

Even with all the benefits prepay offers, most utilities are still not actively promoting these programs, hiding related information in hard-to-find sections on their websites. “Yet, what we see in the industry is, those utilities actively promoting a prepay program have a much higher adoption rate,” says Welch.

¹ “Prepay plans for electricity offer alternative to the usual monthly power bill,” *National Geographic*, June 6, 2014. Find at: <http://news.nationalgeographic.com/news/energy/2014/06/140604-pre-paid-electricity-billing-plans-help-or-hurt-consumers/>

² U.S. electric utility industry statistics, American Public Power Association. <https://www.publicpower.org/files/PDFs/NumberofElectricProvidersCustomers.pdf>

³ Rethinking prepaid utility service,” National Consumer Law Center, 2012. Find at: https://www.nclc.org/images/pdf/energy_utility_telecom/

[consumer_protection_and_regulatory_issues/report_prepaid_utility_executive_summary.pdf](https://www.consumerprotectionandregulatoryissues.com/report-prepaid-utility-executive-summary.pdf)

⁴ “Millennials give prepaid debit cards a boost,” CNBC, April 6, 2015. Find at: <http://www.cnbc.com/2015/04/06/prepaid-debit-cards-on-rise-thanks-to-millennials.html>

⁵ “Survey: Customers want prepaid utility options,” Utility Dive, April 6, 2015. Find at: <http://www.utilitydive.com/news/survey-customers-want-prepaid-utility-options/383216/>

Promoting Prepay

So, what can utilities do to promote their prepay programs? As with any other proposition, market segmentation is a critical tool. Millennials, for example, are apt to be much more receptive to the prepay option. [A recent survey conducted by TD Bank](#) found that one-third of Americans ages 18-34 have used a reloadable prepaid debit card, compared to one-quarter of Americans overall.⁴ Older customers, on the other hand, may need more targeted marketing efforts.

It's not just customers dealing with debt who are good prospects. Frequent movers, like college students who move in and out of student housing, are prime candidates because many prepay programs offer lower deposits for new move-ins.

Once customers opt in, utilities can help them benefit from the prepay plans with the many information channels available today. Using data from smart metering, utilities can develop multichannel communication strategies that leverage text messaging, smartphone apps and web portals to provide information that empowers customers to manage their energy consumption.

What's ahead?

Whether prepay will take off is still an open question. Consumers say they want it. According to a [survey of 1,000 consumers by Distributed Energy Financial Group](#), a management consulting firm specializing in energy, about 17 percent of respondents indicated a high level of interest in prepay options as an "alternative to high security deposits and cumbersome payment arrangements."⁵

Yet, consumer advocacy groups continue to represent the biggest hurdle for prepay programs. "It's going to take education," says Welch. "Consumer advocacy often fights advanced metering infrastructure because they see it as giving utilities the ability to shut off a customer's power at any point. They may not be focusing on the control it gives the consumer as well."

Cooperatives remain the likeliest growth segment for prepay, as they encounter fewer regulatory hurdles and respond quickly to trends that can benefit their members. "I think we'll see the majority of that growth in states where there is not a large barrier to entry," says Welch.

One thing that would truly move the needle is if the major IOUs entered the market. "The public utility segments and IOUs are watching the situation very carefully right now and are starting to make movements that indicate they are very interested," says Welch. "Georgia Power just came on. And PG&E is considering prepay. That would be huge."

According to Welch, much of the new interest in prepay is being driven by the success of the M-Power program at SRP. Landis+Gyr provides SRP with in-home displays that provide real-time data about account balances for its prepay customers, helping them make decisions about their power usage.

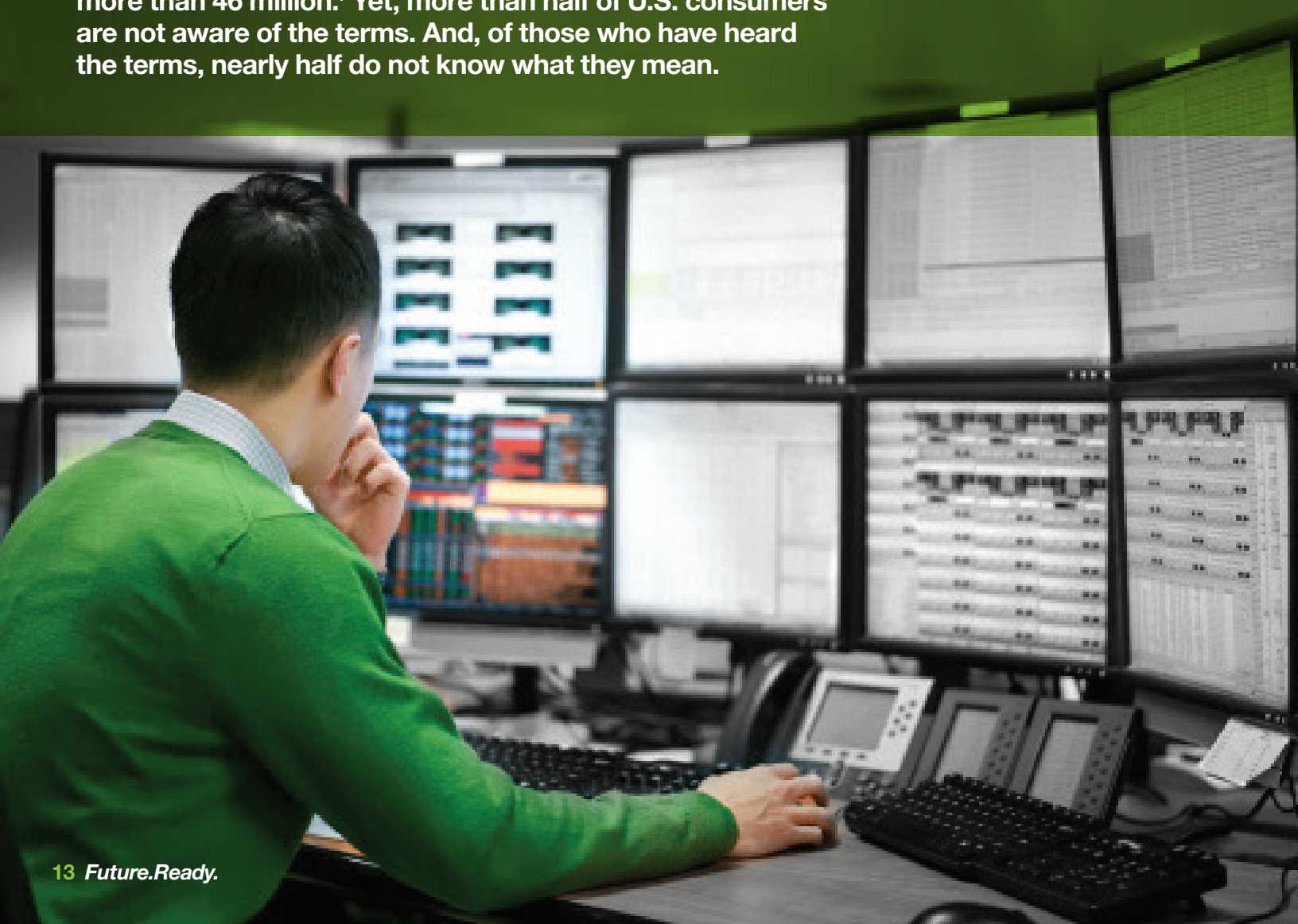
As a member of the Prepaid Energy Working Group, Landis+Gyr also works with industry partners to understand the marketplace and help utilities implement strategies for improving acceptance of prepay and streamlining prepay operations. ■



WHAT'S IN IT FOR ME

EDUCATING CONSUMERS ON SMART GRID VALUE

“Smart grid” and “smart meter” are common industry terms that predate the passage of the Energy Independence and Security Act of 2007. During that time, the number of homes with smart meters has grown to more than 46 million.¹ Yet, more than half of U.S. consumers are not aware of the terms. And, of those who have heard the terms, nearly half do not know what they mean.



That's according to the most recent *Consumer Pulse* research conducted by the Smart Grid Consumer Collaborative (SGCC). An organization dedicated to, among other things, tracking and advancing awareness of smart grid, SGCC is also taking steps to improve the situation. Its most recent effort is "*Next Innovation*," an infographic that illustrates smart grid and smart meters as the next innovation for homes and society. The infographic is designed to be used by utilities as a creative and educational tool for bringing the smart grid story to their customers.²

The SGCC continues to refine a consumer value proposition focusing on the economic, environmental and reliability benefits consumers receive from intelligent grid infrastructure. The goal is to provide utilities with effective messages that answer the "what's in it for me?" question from the average consumer.

According to SGCC Executive Director Patty Durand, the infographic is just one example of the SGCC's efforts to educate consumers on the direct benefits of smart grid. Once they understand what smart grid is all about, she contends, they'll gain interest to engage and take advantage of new technologies to lower energy costs and contribute to a cleaner environment.

Focus on Education

Despite low awareness of "smart grid," the number of consumers realizing its benefits grows every day. At the same time, utilities

acknowledge the need to move away from their traditional, one-way customer relationships and leverage digital media platforms to build closer, two-way relationships that are critical in today's competitive marketplace.

When it comes to educating consumers about smart grid, a number of organizations are taking action. For example, the consumer website managed by SGCC whatissmartgrid.org is filled with information, including learning tools for children, parents and teachers, videos, white papers and many other resources designed to communicate how consumers can participate in the benefits of smart grid.

The Smart Grid Customer Education Symposium is an annual event that brings together industry leaders to share best practices in smart grid customer education. The Trustworthy Cyber Infrastructure for the Power Grid (TGICP), a program at the University of Illinois, is dedicated to smart grid education and engagement. These are just a few of the initiatives moving the needle in raising smart grid awareness.

Landis+Gyr understands the importance of providing utilities with tools for increasing consumer engagement and awareness. The commitment is ongoing to further automate and fine-tune the processes and decision-making required for utilities to deliver the best customer service. ■

¹ EIA, FAQs, How many smart meters are installed in the United States, <http://www.eia.gov/tools/faqs/faqs.cfm?id=108&t=3>

² A downloadable pdf of the infographic is available at: <http://smartgridcc.org/sgcc-resources/the-next-innovation-infographic/>

THE NEXT INNOVATION

Smart Grid and smart meters are the next advancement in the history of electricity and human innovation. But what exactly does that mean?

Had contemporaries rejected the idea of the light bulb because it was new and different, we might be without every subsequent innovation, from traffic signs to energy-efficient bulbs to the light that comes out of your iPad. See how innovation has changed our daily lives and what comes next.

TRANSPORTATION

What would life look like now if we still walked or rode a horse everywhere? The answer would be the way we used to travel: slower, less safe and more costly.

The steam engine and automobile ushered in a new generation of traveling. Now we're seeing hybrid and electric vehicles and looking forward to fully smart vehicles, a way to be smart about when we're going with the ability to take longer routes to clear traffic on the way we want to go, and the time needed to complete charging.

1886 INVENTION OF THE AUTOMOBILE

COMMUNICATION

Would we all be as connected today if we were still chomping out telegraphs or waiting patiently for the telegraph signal, sure to come in any language?

Forward thinkers developed the alphabet that paved the way for the telegraph, but even that became obsolete as it moved to our e-mail. How excited would Alexander Graham Bell be to call the cord on our parents' old phone while trying up his first e-mail?

Now your smart phone will make your life easier in almost every aspect of your daily life.

BANKING

In a way, we still battle for basic survival needs like food and shelter but how we pay money, create it, store it, borrow and invest. Banks and credit cards have created convenient access through online networks but have made it more difficult to have to battle traffic to make it to your bank during business hours instead of just depositing checks on your phone?

11.5
Billions of mobile-connected devices by 2019

COMPUTERS

You may still count on your fingers but when was the last time you picked up an abacus?

Modern math birthed the development of computers but not until the 20th century. Now we can barely even get out of doors without ready access through our smartphones. You've probably never reading this on a computer.

Still more changes are developing with cloud computing and smaller devices.

ENERGY

How often do you rely on your driveway to heat your house? Probably not often. We've developed large scale power generation through electricity and used locally, ready stored housing on energy efficiency and renewable energy.

A smart grid would form the entire skeleton of a modern electricity system, allowing us to efficiently move large amounts of electricity over long distances in a network that is integrated, continuously monitored, and resistant to failure.

HOME

Inside your home is where you notice the changes the most. Candles are making your dog growl instead of keeping away the dark. Our quality of life has drastically improved from just the ability to afford electricity to all appliances and air conditioners running smoothly and safely at home.

The integration of a smart meter along with 100,000 smart appliances, lighting and other devices will conveniently change the way your family interacts with energy consumption.

43% American homes already with Smart Meters

CONCLUSION

If previous societies did not take chances and had not experimented with developing technologies, daily life would be much more difficult.

Smart grid and smart meters are not only the next innovation for our society but for your home.



Target Marketing Opens the Door to Better Customer Recruitment

Disruptive changes in how electric power is generated, distributed and consumed are making utilities rethink consumer interaction.

Outside of deregulated markets, utility experience with residential customer recruitment has been primarily limited to demand response and efficiency programs. But interactions related to the growing adoption of rooftop solar, energy storage, EV charging and smart home technology are already beginning to rise.

While the energy market continues to evolve, so too does the utility's ability to target customers. Smart grid data from multiple points across the distribution system is a powerful tool for utilities to use in understanding load patterns on each circuit, from the service transformer to the substation. Combined with other available customer data, this information gives utilities the ability to focus recruitment on factors like consumer behavior, location and impact on the circuit.

"Utilities will have to become more involved in consumer marketing and prepare ourselves for competition in areas we haven't seen competition in before," said John Romero, General Manager of Energy Acquisition and Engineering Planning at Colorado Springs Utilities. "It's crucial to be able to target and foresee where problems [from distributed generation] can occur, rather than trying to react after issues show up on the network."



Colorado Springs Utilities

It's how we're all connected

Colorado Springs Utilities (CSU) has gained valuable marketing experience through its circuit-level approach to demand response. The utility began implementing load management on select circuits in 2014 as a capital deferment strategy. Because the desired outcome of such a program is reduced load on distribution assets during peak, it was important for the utility to be able to recruit consumers located on the targeted circuit who would offer the best potential for peak load shedding.

Defining the Market

The first step was determining the desired customer profile. For this program, CSU recruited residential homeowners who had central air conditioning. Using data from multiple sources including metering data, CSU was able to select customers located on the selected circuits with 1.1 kWh of load cycling potential.

Armed with a list of 4,000 eligible customers, the utility then used traditional direct mail and telemarketing,

(continued on the next page)

along with social media, to educate and recruit customers for the program.

Gabe Caunt, a Senior Project Engineer at CSU, relates that target marketing helps focus customer attention on a specific utility offer, while greatly reducing the need to manage inquiries from customers outside the target profile.

During the rollout of the utility's demand response program, a customer who was part of a broader focus group learned about the program for the first time and remarked that it must not have been widely advertised. "I explained that if you weren't living on one of the four circuits we were targeting, or if we couldn't tell if you used your air conditioning, you probably didn't hear from us [about the program]," Caunt says.

CSU achieved response rates of about 10 percent from their initial marketing efforts. That is typical for opt-in programs offered by utilities, according to results from [studies on customer behavior conducted by the U.S. Department of Energy \(DOE\)](#).

As part of the Smart Grid Investment Grant program, the DOE conducted studies of utility customer behavior related to time-based rates. In its analysis of enrollment patterns, the DOE found that opt-in programs requiring consumers to affirm participation averaged a success rate of 11 percent. Whereas, opt-out programs that automatically enroll customers who take no action saw rates as high as 84 percent.

The DOE also reported that the right communication approach – in particular, using language that effectively describes the purpose and benefit of the program – can boost success rates.

"Many utilities found focus groups, surveys and other research on customer preferences to be vital components for test marketing the terms and concepts for attracting customer interest and engaging them to participate," the DOE observed.

The Next Campaign

While load management is still the most likely reason a utility will engage in target marketing, related grid management issues, such as renewable integration, are not far behind.

Utilities are playing catch up and looking at ways to address customer/revenue retention, load balancing and other effects of third-party renewable energy applications. CSU is proactively forming relationships with solar installers and meeting with customers regularly to stay informed and build trust.

"Many utilities found focus groups, surveys and other research on customer preferences to be vital components for test marketing the terms and concepts for attracting customer interest and engaging them to participate"

Department of Energy report on the Smart Grid Investment Grant Program.

"We have a solar developer team that works with developers in the city and lets them know in advance what our plans are. It also gives us feedback on how customers will react to back-up charges or rate changes in advance."

Being proactive not only ensures better customer relations, but also helps the utility explain to customers the side effects indiscriminate solar connections can have on

the utility's ability to maintain reliability and power quality.

"You see by looking around the country what can happen when rooftop solar tariffs or other rules are implemented. You need to be able to communicate in advance what you're doing and why, to limit pushback," Romero says.

Speaking on behalf of investor-owned utilities, the Edison Electric Institute (EEI) is advocating more direct involvement with consumers behind the meter. EEI envisions this will take the form of utilities marketing rooftop solar, microgrids, energy storage and demand management directly to consumers to compete directly with installers.

Utilities such as Arizona Public Service (APS) are already taking this approach. With its Solar Partner Program, APS provides financial incentives for customers who allow the utility to install solar panels on west-facing rooftops. Designing the program this way not only helps the utility capture more solar energy during peak hours, but also allows the utility to control power flows and maintain the customer relationship.

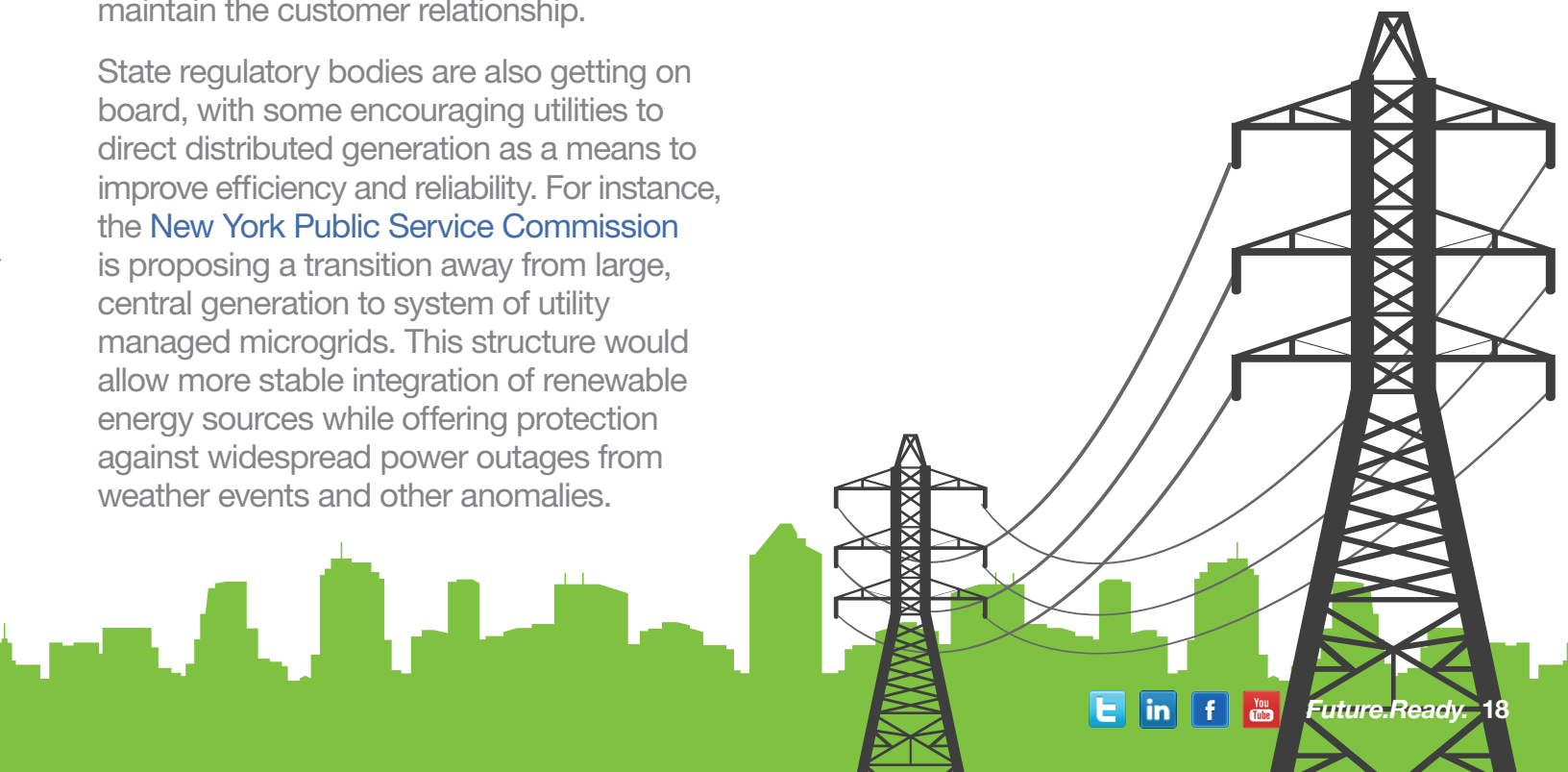
State regulatory bodies are also getting on board, with some encouraging utilities to direct distributed generation as a means to improve efficiency and reliability. For instance, the [New York Public Service Commission](#) is proposing a transition away from large, central generation to system of utility managed microgrids. This structure would allow more stable integration of renewable energy sources while offering protection against widespread power outages from weather events and other anomalies.

How the future grid takes shape and how fast change comes are questions still awaiting answers. But for certain, utilities will need to take advantage of their current position, and the new information they have at their disposal, to engage with consumers in a proactive and targeted way.

"There are technical, financial and relationship issues involved with any change to the distribution system," says Romero. "If you maintain the customer relationship, you can better explain the technical or financial reasons for what you're proposing and have greater success." ■

"Utilities will have to be more involved with consumers, and prepared for competition from distributed generation developers."

John Romero, General Manager of Energy Acquisition and Engineering Planning, Colorado Springs Utilities



MDMS Testing with Oracle Confirms Scalability and Performance

Landis+Gyr Achieves Oracle Exadata Optimized and SuperCluster Optimized Status

Landis+Gyr was recently shortlisted as one of the

25 MOST POWERFUL

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Landis+Gyr recently demonstrated that its meter data management system has been tested and tuned on Oracle Exadata Database Machine and Oracle SuperCluster to deliver speed, scalability and reliability to customers.



The testing certifies that utility customers running Landis+Gyr's MDMS

on Oracle Exadata Database Machine or Oracle SuperCluster will experience improved performance consuming, validating and processing high volumes of metering data. Landis+Gyr is a Gold Member of Oracle PartnerNetwork.

“Oracle Exastack Optimized recognizes partners who have optimized their solutions on a complete, integrated and cloud-ready infrastructure in order to help them accelerate innovation, unlock new features and functionality and deliver superior value to users,” said David Hicks, Vice President, Worldwide ISV, OEM and Java Business Development, Oracle.

Nominated organizations are helping their customers to better adapt to Oracle solutions and going a step further by developing products and services to make this move easier. ■



Smart Cities Initiative Launched at White House

Landis+Gyr Sponsoring Envision America in Support of Technology Vision

Landis+Gyr was represented at a recent Smart Cities Forum hosted at the White House on Sept. 14 that launched a nationwide Smart Cities initiative. In support of this initiative, the company is sponsoring Envision America, a new nationwide nonprofit, that has announced a campaign to accelerate deployment of innovative technologies for energy, water, waste and air challenges.

“Together with our parent company Toshiba, Landis+Gyr is actively involved in helping communities worldwide implement efficient distribution and energy management solutions.”

The White House Smart Cities Forum featured a number of panel discussions where the topics ranged from the role of sensor networks to distributed intelligence and renewable

integration. The value of sensors was discussed in relation to monitoring water consumption, air quality, traffic flow, temperature and waste water flow.

Envision America will hold a workshop in Charlotte, North Carolina in January 2016 for experts from industry and academia to diagnose needs, discover solutions and develop new smart initiatives. Leaders from 10 urban communities will be invited to participate in this first event. ■

“We are pleased to participate in a coordinated effort to help cities address energy and resource challenges.”

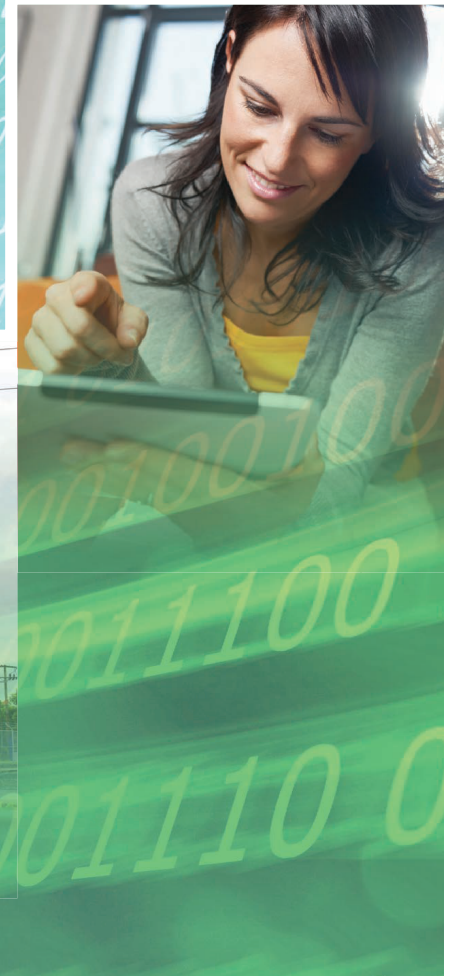
Prasanna Venkatesan, Executive Vice President, Americas, Landis+Gyr



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