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Nelson Technologies
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“Belgas’s superior products and support, partnered with Nelson Technologies’ 34 years of outstanding customer service makes us an unbeatable team.”
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A Technology Revolution
BY RON KIRKWOOD
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BY SEAN MOORES
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A Washington Gas employee is helping families get out of poverty, one piece of furniture at a time.
NEW TECHNOLOGIES ARE BEING INVENTED OR PERFECTED TODAY THAT WILL Usher in a new era of smart energy use—placing natural gas in the key role of providing energy for homes and businesses while also running a significant number of our vehicles, generating power and supporting other forms of renewable energy. BY DAVE McCURDY

American Gas

In the area of Oklahoma that I was privileged to represent for 14 years in the U.S. House of Representatives, you can visit the city of Duncan and see the high-tech research facility where Halliburton was working on perfecting the process of hydraulic fracturing in the 1980s. For those of us who grew up in the oil patch, this process was nothing new. It had been tried for decades, but a man named George P. Mitchell eventually combined hydraulic fracturing and horizontal drilling to successfully produce natural gas from less conventional hydrocarbon reservoirs, unlocking an abundance of natural gas. That potent combination of vision, ingenuity, commitment and advanced technology has transformed an industry, created economic value and ultimately shaped the course of history.

In May, thousands of natural gas utility and transmission company operations managers from across North America and the world gathered in Grapevine, Texas, for the AGA Operations Conference and Biennial Exhibition. This conference is consistently the industry’s premier venue for the sharing of technical knowledge, ideas and practices to promote the safe, reliable and cost-effective delivery of natural gas. We had 218 vendors at our exhibition this year, which was a record.

From pipelines to sensors, many of these companies are offering ways to employ cutting-edge technology to more efficiently and more effectively serve customers, maintain the delivery infrastructure, and protect employees and communities. While each of our member companies makes its own decisions about what technologies are right for its specific system, the biennial exhibition is a testament to the ingenuity and opportunity in the natural gas industry and the many ways that our abundance of this clean energy source is revolutionizing our economy.

In this issue of American Gas, we explore some of the latest technologies using natural gas. Household names like Apple and Wal-Mart are getting into this space, joined by emerging leaders such as Bloom Energy and FuelCell Energy Inc. Energy technology is another growth area alongside manufacturing and the chemical industry, all of which are taking advantage of the abundance and affordability of natural gas.

I frequently paint a vision for the future where natural gas not only provides energy for homes and businesses but runs a significant number of our vehicles, generates power and supports other forms of renewable energy. This vision rests upon more than 2.4 million miles of pipelines that deliver gas throughout the nation, and both ends of those pipelines will employ technology that is being invented or perfected today.

I have seen our members working with renewable gas, small-scale combined heat and power, home vehicle refueling and so many other technologies—technologies that will usher in a new era of smart energy use. Already, combined heat and power is bringing greater affordability and reliability to large facilities. Meanwhile, companies and governments throughout the country are converting their fleets to natural gas, building refueling stations and forming partnerships with local utilities to take advantage of an affordable and environmentally friendly transportation fuel.

We expect that for the next decade and beyond, domestic natural gas supplies will be sufficiently robust to meet growth in demand across all sectors. I am excited to see what else we can invent to harness this incredible resource.
The scariest thing about gas leaks is you don’t know when or where they’ll occur. Itron’s gas AMI network, equipped with pipeline monitoring and remote disconnect technologies, helps utilities lessen the threat and impact of leaks, enhancing safety for employees and customers.

Just one of the ways we’re working to create a safer, more resourceful world.

itron.com/gas
States’ energy needs. Visit us at gas meets almost one-fourth of the United States’ energy needs. More than 72 million U.S. residential, commercial and industrial customers use natural gas; 94 percent—more than 68 million customers—receive their gas from AGA members. Natural gas provides natural gas industry professionals with the information they need to enhance their effectiveness and that of their companies by publishing leading-edge reports on the industry and on American Gas Association activities that offer value to its members. American Gas (ISSN 1043-0462) is published monthly (except for bimonthly August/September and December/January issues) by the American Gas Association, 400 N. Capitol St., N.W., 4th Floor, Washington, D.C. 20001. Phone numbers: advertising, 717/430-2218; editorial, 717/430-2397; circulation, 866/512-3111; fax, 845/267-3478. Statements of fact and opinion herein are the responsibility of the authors and advertisers alone and do not imply an opinion or endorsement on the part of the American Gas Association.
DARE GREATLY

Luxury brand Cadillac turns to CNG

In a first for America’s storied luxury brand, Cadillac has built a stretch limousine fueled solely by compressed natural gas—the result of a collaboration between MGM Resorts International and World CNG.

The vehicle, a Cadillac XTS, produces one-ninth the emissions of MGM’s previous offering, the diesel-powered Lincoln Town Car limousines, according to a press release.

The new CNG limo stretches 22 feet, a total of 70 inches longer than traditional limos. This is just the latest effort by the casino and World CNG, who were the first in the nation to introduce a commercial fleet of CNG-powered Cadillac Escalades in 2013.

There are 31 CNG-fueled limos now servicing guests at hotels and casinos, including the Bellagio Resort & Casino, the MGM Grand Las Vegas, Mandalay Bay Resort and Casino, and ARIA.

The designers didn’t skimp on luxury in favor of an alternative fuel, as each Cadillac XTS has a custom leather interior and other hand-selected amenities. —Adam Folk
**DIGEST**

By 2016, Penn State University will be heated by natural gas and the natural resource will be used for some of the electricity service to the campus. To make the energy-efficient switch, the university is converting the West Campus Steam Power Plant from coal to natural gas. This conversion process is part of the university's energy use plan of reducing emissions by 35 percent by 2020. As of 2013, the university was a little more than halfway there with emissions reduced by 18 percent. “Having a [natural gas] power plant in place is actually very forward looking. It’s much more efficient,” Alex Novak, head of communications at the Sustainability Institute and the Office of Physical Plant, told Penn State’s news publication The Collegian.

At least three railroad companies have told the Federal Railroad Administration that they are interested in the possibility of transporting liquefied natural gas. Alaska, for example, is a prime market for LNG, but access to it is limited in far northern regions. “[R]esidents must rely on extremely expensive fuel oil for heating and power generation, leaving many of them spending more to heat their homes than to own them,” the Alaska Railroad Corp. said in a February letter to the FRA. The railroad is proposing to transport LNG following the regulations that are in place for hazardous material transport. Other interested parties, such as Union Pacific Railroad, are looking to transport LNG by rail to coastal export facilities, where opportunities exist to expand into the international market.

**SCIENCE**

**Liquid Gold**

Researchers have found an easier, less costly way to make LNG

Scientists at the Molecular Foundry nanoscience research facility have created a new material that makes refining natural gas into a liquid much simpler and more cost-effective, paving the way for everyone from automakers to everyday Americans to adopt liquefied natural gas fuels.

According to Dianne Xiao, a graduate student at University of California Berkeley and one of the designers of the material, “Large amounts of natural gas are often recovered as a byproduct in oil wells and other sites. If we can convert this natural gas into liquid fuels and other higher value chemicals, this transforms [these] resources into economic gains.”

Xiao said the low density of natural gas means it requires compression or cryogenic cooling for storage, both of which can be costly. Liquefied natural gas, on the other hand, requires neither for storage, but the conversion process isn’t cost-effective. However, by using a catalyst to selectively turn natural gas into a liquid, this new research could potentially change the cost dynamic.

Traditionally, the conversion process has required high pressure and temperatures of 400 to 600 degrees Fahrenheit, but Xiao and Jeffrey Long, a scientist and professor of chemistry at Berkeley, found a way to bring those temperatures down to 167 degrees. They designed a material called Fe-MOF-74, which is in a class of materials called metal-organic frameworks, or MOF. The tiny MOFs look like a group of cages, which allow them to capture other molecules, according to a press release from the Molecular Foundry. The cages then act like a filter and have the ability to absorb very large amounts of gas or liquid for their weight. The molecules also act like a chemical factor by converting one substance to another, the release said.

“Right now, the catalyst only oxidizes ethane [which is a small component of natural gas] and isn’t stable for long periods of time,” Xiao said. “If we can get the catalyst more stable and also modify the material so it can activate methane as well, then we can see this technology being used in remote locations as a way to convert natural gas.”

**EFFICIENCY**

**Approved!**

On-bill repayment is being piloted in Washington state

Portland has often been called the “Greenest City in America,” and a new energy efficiency program is confirming that title.

A new on-bill repayment program is being piloted in the state by Portland’s NW Natural to make buying energy efficiency upgrades easier for consumers. The program, which is being offered in conjunction with Energy Trust of Oregon and local nonprofit lender Craft3, will provide individual loans of up to $15,000 to allow consumers to install high-efficiency gas equipment.

These include products such as natural gas fireplaces, furnaces and water heaters as well as energy efficiency improvements such as insulation, new windows and air sealing. The effort allows customers to apply for a 15-year loan with a 4.49 percent interest rate and APR, with a maximum of $15,000 and a minimum of $2,500. Once approved, customers make payments on their loans through their monthly energy bills. And they won’t have to pay extra fees, costs or prepayment penalties, according to NW Natural.

Bill Edmonds, NW Natural director of environmental management and sustainability, said the project will help the utility’s customers take advantage of innovations in energy-efficient products, while seeing energy savings from the upgrades.

“Sometimes, homeowners who could benefit the most from lower energy bills aren’t able to afford the money-saving upgrades,” Edmonds said. “We hope to change that by partnering with Energy Trust and Craft3 on this program to make energy efficiency more affordable and accessible.”

NW Natural customers can also take advantage of Energy Trust services and cash incentives for other upgrades.
### Infrastructure Support

New FERC rule helps utilities recover pipeline costs

As the natural gas industry continues to work proactively to upgrade and build infrastructure, the Federal Energy Regulatory Commission has adopted a new policy that will allow the costs of the pipeline work to be recovered.

FERC—which regulates natural gas pipelines across the nation—will help interstate natural gas pipelines to modernize pipeline system infrastructure through surcharges, or "trackers."

At the agency’s April 16 meeting, FERC Chairman Norman C. Bay said as a “general matter” the commission does not favor using trackers, but this policy helped to overcome that by setting up a system to ensure rates will remain reasonable for customers.

“This policy statement is an example of how the commission can help incent the modernization of pipelines, which has important safety and environmental benefits,” Bay said.

According to a FERC statement, the agency will evaluate the surcharges on a case-by-case basis, which is intended to ensure rates are “just and reasonable and protect natural gas consumers from excessive costs.”

FERC will use five criteria to judge the rates, including whether the company protects consumers from cost shifts and whether it allows for periodic FERC review. The criteria were originally outlined in a Jan. 13 order allowing Columbia Gas Transmission LLC to implement a similar surcharge.

FERC said the policy was implemented because of regulatory reforms that will likely require companies to spend large amounts of money to enhance pipeline safety and reliability and because of recent Environmental Protection Agency plans to increase environmental monitoring of pipelines and compliance costs.

At the meeting, David Maranville of the Office of the General Counsel said the plan “recognizes that recent government safety and environmental initiatives have raised the probability that interstate gas pipelines will soon face increased cost to increase the safety and reliability of their systems.”

FERC proposed the new modernization policy in November 2014, and it is set to go into effect on Oct. 1. The policy will bring FERC in line with the majority of states, which have similar programs.

Updates to regulations for shale natural gas flaring might provide an opportunity to harness the gas as an additional energy source. The U.S. Department of the Interior supports regulations that encourage infrastructure updates so energy companies can repurpose flared gas. Officials state to state are also interested in supporting energy companies in the effort. For example, North Dakota state leaders are backing North Dakota LNG in its plans to build a processing facility in Tioga. Flared gas, however, continues to make up only a small percentage of gas produced. For example, in Texas, which allows flaring during early production operations, as little as 1 percent of gas is actually flared, according to the Texas Railroad Commission, the state’s energy regulator.

### An alternative renewable energy source

is in the works in Mexico, where researchers at The Center of Research and Technological Development in Electrochemistry have developed a biogas using waste products from a chicken processing plant in Querétaro and a glass art facility in Xaquixe. A purification process for the biogas was instituted, and the result is a biogas that can replace the natural gas used in the chicken production facility. Researchers intend to expand the use of the biogas into the glass-making industry, generating it from solid wastes such as cow and pig manure. “The process can be assembled at an industrial scale process and become economically self-sustaining. [These] mixtures allow more efficient biogas production because they contain adequate nutrients,” said engineer Arnulfo Terán López, head of the group of alternative energies at The Center.

Continued on page 8
A Renewable Partnership

New solar and gas-fired plant makes low-emissions promise

A Colorado-based energy company is making a $1 billion investment in an innovative combined solar and natural gas-fired power plant in New Mexico. Western Energy Partners LLC recently announced plans to build a 750-MW electric generation project on privately owned land near Farmington, New Mexico. The project is named Clean Path Energy Center LLC, and the energy it generates will help to offset the retirement of a 1,684-MW coal-fired power plant in the area.

Curt Hildebrand, president of Western Energy Partners, said the plant will be good for the environment and meet the energy needs of consumers in the area.

“This uniquely configured project will feature unprecedented operating efficiencies, exceptionally fast ramping rates and will establish new standards for environmental stewardship,” Hildebrand said.

The new plant will generate 680 MW of power from natural gas and another 70 MW from solar. Construction is set to begin in 2017, with the plant scheduled for completion by mid-2019. Clean Path will get its natural gas by connecting to the San Juan Hub through pipelines owned by El Paso Natural Gas Company LLC.

A Western Energy Partners press release said the project is designed to meet stringent air permitting standards, which will make it one of the cleanest natural gas-fired plants in the nation. With its high level of efficiency and solar photovoltaic capacity, the Clean Path Energy Center will have some of the lowest per-kilowatt-hour emissions of CO₂ in North America, according to the company.

“The Clean Path Energy Center project is designed to take full advantage of the recent and dramatic technological advances in modern gas turbine and solar PV technologies,” Hildebrand said. “The 680-MW combined cycle plant will be capable of providing baseload generation around the clock in an exceptionally efficient and flexible manner, thereby enhancing the viability of intermittent renewable technology in the region. Additionally, the renewable 70-MW Solar PV power block will be capable of providing additional renewable peaking generation capacity that is critical during times of higher system loads.”
SAFETY

Safety First

New AGA award recognizes utilities’ work in sharing safety messages

A quick-drawing artist and a pesky armadillo were some of the highlights of the videos submitted for the first American Gas Association Safety Awareness Video Excellence Award, presented during the American Gas Association Operations Conference and Biennial Exhibition. The SAVE award is designed to feature exceptional efforts by natural gas companies in sharing important safety messages.

Atmos Energy Corp. won the award with its submission “Do You Dig It? Always Call Before You Dig.” The video features a man in front of a whiteboard swiftly illustrating the reasons for calling 811. Michael Haefner, executive vice president for Atmos Energy, said his company wants to create engaging content that helps spread this safety message around.

“We are honored to be recognized by our peers and the American Gas Association for our efforts to create engaging content that helps spread this safety message to the public,” Haefner said. “We aim to spread our safety message in creative ways, including on all of our social media channels, to help reach younger audiences through illustration videos such as our whiteboard series.”

CoServ Gas was recognized for receiving the most public votes with “Mr. Diggs Gets the 411 on 811 (The Armadillo Whisperer).” The video stars an armadillo with a penchant for digging around natural gas lines.

“We’re thrilled that Mr. Diggs’ video received the most public votes and helped spread the word about safe digging,” said Paul Kennedy, director of gas operations for CoServ Gas. “And we appreciate the innovative approach that AGA used to highlight safety awareness with this Facebook vote.”

In implementing the award, Lisa O’Leary, manager of digital communications for the American Gas Association, said emphasizing safety is a priority for AGA and its utility members, adding that increasing the public’s awareness about natural gas safety is key to the work they do.

“This award provided an outlet to help share these important safety messages and highlight the successful communications efforts from the natural gas industry,” O’Leary said.

Submissions for the award went through a public voting phase and a review by a panel of three judges, input that helped determine the award recipient.

Anne Lowe, vice president of operations for the National Energy Foundation, participated on that committee. She said sketch videos such as Atmos Energy’s “Do You Dig It? Always Call Before You Dig” are effective for sharing information because viewers are eager to see what will be drawn next. Lowe also said the Atmos Energy video was entertaining and did a good job of explaining the complex network of underground pipes and cables present across the nation.

“To influence behaviors, a utility has to keep the attention of their viewers and share an impactful idea,” Lowe said. “‘Call 811 Before You Dig’ was the clear message of this video, delivered in a memorable way.”

“Tian Miao, a Beijing-based analyst at North Square Blue Oak Ltd., told Bloomberg, “The replacement with natural gas will have a clear impact to reduce emissions. “Most pollutants come from burning coal, so the closure will have a clear impact to reduce emissions,” Tian Miao, a Beijing-based analyst at North Square Blue Oak Ltd., told Bloomberg. “The replacement with natural gas continues on page 10.”

In an effort to curb pollution hazards, China will close its remaining four major coal power plants in Beijing and replace them with gas-based operations. The switch will more than double electricity delivery and eliminate 30 million tons of carbon emissions. “Most pollutants come from burning coal, so the closure will have a clear impact to reduce emissions,” Tian Miao, a Beijing-based analyst at North Square Blue Oak Ltd., told Bloomberg. “The replacement with natural gas...”
INDUSTRY

Getting to Task

New Pennsylvania task force will help better plan for pipelines

Thousands of miles of natural gas pipelines are being planned in Pennsylvania in the coming decade, prompting Gov. Tom Wolf to announce the formation of a task force with the mission of creating a “world-class pipeline infrastructure system” in the commonwealth, according to a press release from the Pennsylvania Department of Environmental Protection.

Called the Pipeline Infrastructure Task Force, or PITF, the committee will seek collaboration between energy companies, nonprofit organizations, municipalities and conservation groups. In recent years, natural gas drilling in Pennsylvania has increased so vigorously that it's outpacing the development of infrastructure to bring the gas to customers.

“Over the next decade, we could see the construction of as many as 25,000 miles of gathering lines,” said John Quigley, acting secretary of the Pennsylvania DEP and chairman of the task force. “These are the lines that connect the wells to the processing stations. We can also expect another 4,000 to 5,000 miles of midstream and transmission pipelines in Pennsylvania. Now is the time for a collaborative conversation among all stakeholders—state, federal and local governments; industry representatives; and environmental and conservation groups.”

The task force will likely make recommendations on locating natural gas pipelines to minimize effects on the environment and communities, the release said. The task force also hopes to engage with the public on a greater basis and create predictable and efficient permitting opportunities for the pipelines. Using construction methods that reduce environmental effects and developing operations and maintenance plans for pipeline safety are also part of the effort.

“We need to work with the industry to make sure that the positive economic benefits of Pennsylvania's rich natural resources can more quickly be realized in a responsible way,” Wolf said. “This task force is part of our commitment to seeing the natural gas industry succeed.”

The PITF will include representatives from the government at all levels, including state agencies, the legislature, and federal and local governments.
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BY THE NUMBERS

It may sound surprising, but owning a home is still a key part of the American Dream for millennials in their 20s and early 30s who are just starting out. But not just any home. They want energy efficiency, and they’re willing to pay more to get it.

MILLENIALS TO PASS BOOMERS THIS YEAR

Millennials (ages 18 to 34 in 2015) will become the nation’s largest living generation this year, according to a December U.S. Census Bureau report. Millennials are projected to number 75.3 million in 2015, surpassing the expected 74.9 million baby boomers (ages 51 to 69). Generation X (ages 35 to 50) is predicted to outnumber boomers by 2028. The Silent Generation shown in the accompanying graph is those born from the mid-1920s to the early 1940s.

Source: Pew Research Center tabulations of U.S. Census Bureau population projections released December 2014

RENT TO OWN

A 2014 survey by Fannie Mae found that 90 percent of young renters are likely to buy a home at some point. Only 7 percent of younger renters reported that they are likely to always rent. Among renters in 2013, the survey found that the top primary reason for renting (26 percent) was to prepare financially for homeownership, though that dropped from 35 percent in 2012.

Source: Fannie Mae National Housing Survey, May 2014

ENERGY EFFICIENCY IS ESSENTIAL

Younger homebuyers want energy efficiency, and 84 percent of them are willing to pay 2 to 3 percent more for it, according to a “What Home Buyers Really Want” survey by the National Association of Home Builders. In fact, energy efficiency took three of the top seven spots on the most wanted list. Energy Star–rated appliances came in No. 1 at 94 percent, an Energy Star rating for the whole home was No. 3 at 91 percent, and Energy Star–rated windows were No. 7 at 89 percent. No. 2, by the way, was a laundry room.

Source: National Association of Home Builders
Ned Farquhar has joined Vermont Gas Systems Inc. as vice president for communications and government. Farquhar has worked for national and Vermont-based conservation organizations, he was senior policy adviser for energy and environment for New Mexico Gov. Bill Richardson, and most recently he served five years in the Obama administration as deputy and acting assistant secretary for land and minerals management in the U.S. Department of the Interior.

CPS Energy has announced several promotions in its operational and enterprise business groups. CPS Energy Vice President and Chief Information Officer Greg Sarich was named senior vice president of enterprise support and CIO to oversee corporate support service functions. Vice President of Energy Supply and Market Operations Frank Almaraz has moved to senior vice president of finance and accounting. John Bonnin has been named interim vice president of energy supply and market operations to oversee CPS Energy’s wholesale power portfolio management after previously serving as senior director of day ahead and real time operations. Lisa Lewis moves to vice president of people and culture from vice president of communications and media relations. And Jenna Saucedo has been named vice president of public affairs and brand management. Saucedo was previously senior director of corporate affairs and policy and chief of staff, and is now responsible for building relations with customers and community stakeholders.

Jeff Murphy has replaced Scott Miller as head of Dominion East Ohio. Miller was named vice president of electric transmission for Dominion Virginia Power.

PG&E Corp. has hired Julie Kane for the newly created position of senior vice president and chief ethics and compliance officer. Previously, Kane served as Avon Products Inc.’s vice president, general counsel and compliance officer.
PLACES

JULY
19–21: AGA Annual Legal Forum, Carlsbad, CA. Contact Theresa Thoman, 202/824-7072, tthoman@aga.org
20: AGA Risk Management Committee Meeting, Nashville, TN. Contact Cindy Johnson, 202/824-7264, cjohnson@aga.org
24–27: AGA/EEI Introduction and Advanced Public Utility Accounting Courses, Washington, DC. Contact Doug Allen, 202/824-7261, dallen@aga.org
23–24: AGA Work Forecasting and Field Resource Management Workshop, Washington, DC. Contact Betsy Tansey, 202/824-7339, btansey@aga.org
28–October 2: AGA Operations Section Fall Committee Meetings, Amelia Island, FL. Contact Debbie Ellis, 202/824-7338, dellis@aga.org

SEPTEMBER
16: Treasurer’s Workshop, New York, NY. Contact Liliana Fonnoll, 202/824-7021, lfonnoll@aga.org
16–18: Finance Committee Meeting, New York, NY. Contact Liliana Fonnoll, 202/824-7021, lfonnoll@aga.org
16–18: AGA/EEI Accounting for Energy Derivatives Workshop and Seminar, Chicago, IL. Contact Joe Martin, 202/824-7255, jmartin@aga.org
17: Mini-Forum, New York, NY. Contact Liliana Fonnoll, 202/824-7021, lfonnoll@aga.org

OCTOBER
1: AGA Quality Management in Gas Operations Workshop, Amelia Island, FL. Contact Betsy Tansey, 202/824-7339, btansey@aga.org
12–14: AGA Gas Utility Operations Roundtable: New Main and Services Construction and Replacement Main & Services Construction, Portland, OR. Contact Mike Bellman, 202/824-7183, mbellman@aga.org
21–22: Small Member Council Meeting, Winchester, KY. Contact Ysabel Suarez, 202/824-7024, ysuarez@aga.org

NOVEMBER
4–6: AGA Operations Best Practices Roundtable: Collection and Maintenance of As-Built Documentation, Plano, TX. Contact Mike Bellman, 202/824-7183, mbellman@aga.org
9–11: AGA/EEI Taxation Committee Meeting, Las Vegas, NV. Contact Joe Martin, 202/824-7255, jmartin@aga.org
15–18: AGA/EEI Fall Accounting Conference, AGA Accounting Services Committee/EEI Corporate Accounting Committee/EEI Property Accounting & Valuation Committee Meeting, Phoenix, AZ. Contact Doug Allen, 202/824-7261, dallen@aga.org

GAS TECHNOLOGY INSTITUTE EVENTS

JULY 20–22
Industrial Steam Systems. Hampton Inn & Suites—Chicago Downtown, Chicago, IL. Susan Robertson, GTI, 847/768-0783; education@gastechnology.org; www.gastechnology.org/training

AUG. 3–7
Gas Transmission Operations. Hampton Inn & Suites—Chicago Downtown, Chicago, IL. Susan Robertson, GTI, 847/768-0783; education@gastechnology.org; www.gastechnology.org/training

AUG. 10–13
External and Internal Corrosion Direct Assessment (ECDA/ICDA). Hampton Inn & Suites—Chicago Downtown, Chicago, IL. Susan Robertson, GTI, 847/768-0783; education@gastechnology.org; www.gastechnology.org/training

natural gas industry TRAINING

www.gastechnology.org/training
“Island” Living

LNG containership is first of its kind

JACKSONVILLE—A first-of-its-kind liquefied natural gas containership that launched in San Diego will reach a port in Jacksonville by October, where it will begin service trading with Puerto Rico.

Built by TOTE Inc., the ship is named Isla Bella, or “Beautiful Island,” and Jacksonville Port Authority officials say it represents the fuel of the future. The first containership in the world to run on LNG, Isla Bella could also help make the environment more beautiful by dramatically reducing emissions: NOx by 98 percent, SOx by 97 percent, carbon dioxide by 72 percent and particulate matter by 60 percent, according to TOTE.

JAXPORT spokeswoman Nancy Rubin told American Gas that LNG is a “cleaner, more efficient, more cost-effective fuel.” The new ships are quite revolutionary, she said, with a “totally new technology.” That includes the world’s first dual-fuel slow speed engine, called an ME-GI engine, developed by General Dynamics’ NASSCO engineers.

JAXPORT CEO Brian Taylor said the launching of the ship—the first of two to be built by TOTE—has “solidified Northeast Florida’s place as a pioneer in the commercial benefits of LNG.”

—Monica von Dobeneck

More than 3,400 gathered when the world’s first liquefied natural gas-powered containership, christened Isla Bella, was launched in San Diego.
Ann Arbor—In the past, forecasting the appropriate energy mix could perhaps be compared to gazing into a crystal ball—not very effective. But a new model developed by the University of Michigan and 5 Lakes Energy could help utilities and states figure out the most cost-effective way to comply with federal clean air regulations.

The U.S. Environmental Protection Agency is developing rules that would require each state to reduce carbon emissions from existing fossil-fueled power plants in order to combat global warming. The EPA wants to give states flexibility in how they achieve those reductions, according to a paper from 5 Lakes Energy, an energy consulting firm based in Lansing.

The model—called the State-based Carbon Rule Analysis for Power Systems—could help states decide if it makes sense to replace retiring coal plants with natural gas or with renewables.

“That choice depends on what you expect future prices to be,” said Douglas Jester of 5 Lakes Energy, lead author of the report “Michigan and the Clean Power Plan: Clarifying the Compliance Options.”

According to the introduction to the report, balancing prices versus the risk of choosing wrong requires “a more sophisticated approach to uncertainty and risk than has been past practice.”

The report summarizes the nature of the “least cost plan” under two scenarios about future fuel prices.

Assuming natural gas remains as inexpensive as it was in 2014, the “least cost plan” to achieve the required carbon emissions would be to build new natural gas-combined cycle plants. Converting to natural gas could also actually be less polluting in the short term than using renewables, according to the paper, because more coal plants would be retired by using natural gas than increasing generation through wind and solar.

“Complying with the Clean Power Plan by replacing coal generation with natural gas leads to the retirement of far more coal generation than does replacing coal generation with renewable generation,” the report says. “This also means that in the near term choosing the natural gas path reduces criteria pollutants and airborne toxins more than the renewables path.”

5 Lakes Energy and the University of Michigan are working on a second model—the State
Tool for Electricity Emissions Reduction—that will build on the earlier model’s findings and add more generation and policy options.

NEW YORK

Advocacy on Overload?

Does the state need another consumer advocate office?

ALBANY—Some legislators in New York believe a utility consumer advocate could help give valuable input as local distribution companies continue to update the state’s pipelines.

New York has 4,300 miles of cast iron and 7,900 miles of unprotected steel pipe that federal regulators say should be replaced. Consolidated Edison Co. of New York alone has estimated it will cost $10 billion to replace all of the utility’s cast iron and unprotected steel infrastructure.

A proposal to create an office of Utility Consumer Advocate has passed the New York State Assembly and is on its way to the Senate. The legislation was introduced by Assemblyman Jeffrey Dinowitz, who said on his website that the new state office would “fight on behalf of utility customers.”

However, utility officials have pointed out that an earlier version of the bill was redundant, according to an SNL Financial story. They called the bill unnecessary, because the offices of consumer policy and consumer services at the Public Service Commission, the state attorney general’s office and the New York State Department of State’s Utility Intervention Unit already advocate on behalf of consumers.

In a statement to American Gas, officials from Con Edison wrote about the latest legislation: “We support and encourage consumer stakeholder representation in the ratemaking process, although we take no position on the creation of a consumer advocate. There are several entities already funded by the state to represent customer interests in utility matters. We also make every effort to hold down costs in the portion of the bill we control, which is the delivery of safe and reliable energy.”

According to a summary of the bill, more than 40 states and the District of Columbia have an independent state agency that represents the interests of residential utility customers.

“New York is one of the few, and by far the largest, without such an independent office,” the proposed bill reads. “In other states where such an office exists, residential consumers have seen drastic savings in comparison to the actual amount of funding that goes to these offices.”
The office of Utility Consumer Advocate would provide residential utility consumers with a representative during state and federal regulatory proceedings involving utility companies that offer natural gas, electric, Internet, cable television, telephone and wireless communication services.

CALIFORNIA

Fast Start

New gas facility meets state’s power needs and supports environmental standards

CARLSBAD—NRG Energy Inc.’s new fast-start gas facility in Carlsbad will be able to power up in just five minutes, providing reliable backup for renewables such as solar and wind.

The plant, scheduled to start operating in 2017, is replacing an old natural gas-fired plant in Southern California. The old Encino plant is being forced to close by 2017 because it uses ocean water to cool, which has been banned by the state. The new plant will be cooled by air.

David Knox, spokesman for NRG Energy, told American Gas that the new plant will be flexible.

It will have several combustion turbines, which can be brought online individually or together, delivering up to 600 megawatts of energy.

“If the renewable generation decreases, we can bring it on very, very quickly to meet demand,” Knox said. “Or as demand increases, we can supplement what the renewables deliver.”

Conversely, as power from the renewables increases, the plant can shut off the turbines. That way, “We make sure the grid has the power it needs,” Knox said.

NRG Energy will sell the power to San Diego Gas & Electric Co.

Knox said NRG Energy, which is based in Princeton, New Jersey, but has a western division, has opened four fast-start gas facilities in California in the past few years.

In contrast to the facilities’ five-minute start-up time, the older units they are replacing took 12 hours to reach full power, he said. The newer plants also have much lower carbon emissions.

The region is also trying to replace the power lost when the San Onofre Nuclear Generating Station closed in 2013.

The new plant is awaiting final approval from the California Public Utilities Commission and the California Energy Commission. Carlsbad officials have said they are pleased with the proposal.
NEW JERSEY

Booster Shot

State’s BPU approves $95 million to boost PSE&G’s energy efficiency programs

NEWARK—Hospital officials have more important things to worry about than their HVAC systems or insulation. That’s one reason Public Service Electric & Gas Co. has invested millions of dollars into helping hospitals become more energy efficient, according to a PSE&G spokesman.

The utility company has spent $170 million to support more than 30 hospitals, spokesman Fran Sullivan told American Gas. With the recent approval by the New Jersey Board of Public Utilities for a new $95 million program, PSE&G can probably help a dozen more, meaning it will have reached pretty much every hospital in its coverage area.

The hospital program is one of three energy efficiency programs operated by the company, including one for multifamily buildings and another for government and nonprofits. The latest round of funding will support all of these. For example, the company has 10,000 apartment units currently in the program, and the extension means it can help another 8,000 to 10,000 units.

“For some of these aging apartment buildings, air-conditioning was an open window,” Sullivan said. “The heat was either cranked up or not on at all.”

It could also benefit small businesses in urban areas and will bring the amount PSE&G will have collectively spent on these programs to $322 million. Estimates show that the additional $95 million investment will save enough electricity to power 7,000 average homes annually and save enough natural gas to supply nearly 3,000 homes every year.

The hospital program starts with an audit to determine what changes would make the most sense and offer the greatest payback, Sullivan said.

PSE&G fronts the cost of the renovations. The hospital will pay back 30 cents on every dollar over the next 10 years, interest free. Generally, the monthly payment equals the energy savings, so the net effect is cash neutral, Sullivan said.

“Hospitals are a public resource and are often cash strapped,” he said. “They make investments to forward their health care mission” and might not otherwise be able to make the investments in energy efficiencies that the utility can provide.

PSE&G started its energy efficiency program in 2009. The Board of Public Utilities encourages utilities to help their customers become more energy efficient, and the utility can recover some of the costs through the societal benefit charge on all bills.

“We have a long tradition of energy efficiency,” Sullivan said. “Our chairman is very big on it. It is a company philosophy.”
Beaming in Beantown

Boston is ranked No. 1 city for energy efficiency

BOSTON—Beantown residents should be proud of their energy efficiency, and so should the city’s natural gas distributors. A study by the American Council for an Energy-Efficient Economy ranked Boston No. 1 out of 51 cities for its efforts to lower energy costs and reduce pollution.

ACEEE ranked the cities in five categories—local government operations, community-wide initiatives, buildings policies, energy and water utilities, and transportation policies. Boston received 82 out of 100 points, the only city to score more than 80.

The energy utility portion included a scorecard for natural gas, and Boston was the only city to get full points in that category. That is largely due to the city’s Renew Boston initiative, introduced in 2009. It offers homeowners and renters free Home Energy Assessments to help them figure out ways to best save on utility costs. It also offers financial incentives for insulation, air sealing and other improvements. Weatherization programs and rebates for heating system upgrades are also included in the plan.

According to the report, Boston paid $86 million toward natural gas efficiency programs in 2013, when the data was collected. That equated to $106 per customer, much higher than the national average. The next highest figure was $76 by Providence, Rhode Island.

Boston’s Building Energy Reporting and Disclosure Ordinance requires large- and medium-size buildings to report their energy and water use and complete an energy assessment every five years.

Community outreach to encourage program involvement is also an important part of the city’s plan.

The ACEEE report commends Boston’s strong partnerships with the utility companies that serve the city.

Analyst David Ribeiro, lead author of the report, said cities “continue to be laboratories of innovation when it comes to energy efficiency, with many pushing the envelope for more energy savings in the last few years.”

In a press release, Boston Mayor Martin Walsh said the city’s goal “is to help Boston residents and businesses save energy and money.”

He added: “Through collaborative efforts with our utility partners, Eversource and National Grid, we are creating a thriving, healthy and innovative Boston.”

Partnerships with utility partners Eversource and National Grid have helped Boston earn its energy efficiency title.
A TECHNOLOGY REVOLUTION

Apple does it. So does Wal-Mart. And your home might be next.

The growing availability of affordable natural gas is spurring technologies from fuel cells to high-efficiency heat pumps to keep the lights on and heat flowing. **BY RON KIRKWOOD**
It’s a little out of this world.

Fuel cells have been around since the 1800s, and NASA used them starting in the 1960s to provide electricity on the Gemini, Apollo and space shuttle missions. It’s an efficient energy, due to a chemical process that converts hydrogen into electricity with no combustion and thus no greenhouse emissions.

With its straight lines and boxy structure, fuel cell technology as a whole would never win any beauty contests. But proponents can look past its appearance and appreciate the beauty in its future.

After all, there’s a lot of technology to be excited about in the world of natural gas these days, from the revitalization of the fuel cell industry to a new natural gas-fired heat pump water heater to even a tomato farm that’s using combined heat and power in a unique way to help fertilize its crop.

**Fuel Cells: How Old Technology Got New Life**

The words “fuel cell industry” and “profits” have never been a match. Fuel cell power was just too expensive. But there have been technology improvements in the last four or five years, pricing is more competitive, federal and state governments are eager to cooperate and offer incentives and the market for clean and reliable energy is strong. After all, fuel cells perform at an average efficiency of 50 to 60 percent compared with the typical 30 percent of the U.S. electrical grid, according to the Department of Energy. And fuel cell efficiency reaches all the way to 90 percent when matched with combined heat and power and its process of recovering waste heat.

As a result, U.S. fuel cell revenues are growing by double-digit percentages each year, according to the U.S. Department of Energy, and worldwide, Navigant Research Inc. reports that total fuel cell revenues rose from $300 million in 2008 to $1.3 billion in 2013.

“It’s a very exciting time to be in the fuel cell industry. We’re seeing more and more Fortune 500 companies adopting fuel cells to power their facilities and data centers, moving materials in their warehouses and manufacturing plants, and consumers are now leasing and buying fuel cell electric vehicles in California,” said Morry Markowitz, president of the Fuel Cell and Hydrogen Energy Association. Much of the excitement is thanks to the wide availability of natural gas, which supplies 95 percent of the hydrogen manufactured in the U.S. and is bountiful and more affordable than ever.

The biggest corporate users of fuel cells are also among the most well-known names in the nation: AT&T, Wal-Mart, eBay, Sheraton, Adobe, Bank of America, Coca-Cola, Microsoft, Lowe’s, Macy’s, UPS and Target. These companies appreciate fuel cells’ reliability and energy efficiency and use them for on-site power distribution at their headquarters, stores, warehouses and data centers as well as for backup power for cellphone towers.

South Korean-based Doosan is one of the big three fuel cell manufacturers in the U.S. along with Bloom Energy and FuelCell Energy Inc., and counts Verizon and CBS among its major customers. But just a year ago, Doosan’s U.S. branch had no employees and a dark Connecticut U.S. headquarters one day after parent company Doosan Corp. purchased the assets of ClearEdge Power. Today, Doosan has risen with the fuel cell tide with more than 200 employees and 100 systems in operation, producing more than 40 megawatts of power.

FuelCell Energy has more than 300 total megawatts installed and in backlog.
globally. Its power plants are used in the largest fuel cell facility in the world, a 59-MW complex in South Korea that became fully operational last year. It is a natural gas and CHP operation.

California-based Bloom Energy is out in front with the most Fortune 500 companies as customers, including one with a familiar apple-shaped logo. When Steve Jobs announced in 2011 that Apple planned to build a 2.8 million square foot, circular, spaceship-like headquarters for 13,000 employees in Cupertino, California, it was said that fuel cells and natural gas would be among its power sources. Apple in fact already uses Bloom Energy Servers with biogas along with solar at its data center in North Carolina, and the new headquarters complete with fuel cells, solar, biogas and other renewables as energy sources is slated to open in 2016 or 2017.

More utility companies are also beginning to integrate large fuel cell systems into the power grid. Big projects include Dominion and FuelCell Energy’s 14.9-MW fuel cell power plant in Connecticut and Exelon Corp. providing equity financing for 21 MW of Bloom Energy fuel cell projects at 75 commercial facilities in California, Connecticut, New Jersey and New York.

“A number of utilities are exploring the use of fuel cells because they provide distributed generation, reducing the load on the grid by providing reliable power right at the source, and are often fueled directly from resilient natural gas pipelines,” said the Fuel Cell and Hydrogen Energy Association’s Markowitz. “There are several megawatt-scale fuel cell installations located right in the middle of neighborhoods. You can’t hear anything from them, and the emissions are really, really minimal.”

Doosan’s Kent McCord, director of marketing strategy, suggests that utilities could also extend gas lines to hospitals or industrial plants with the surety of a substantial base load, then add customers from there. “Our fuel cells can act as an anchor customer to justify the expansion of a distribution line,” he said.

The next big role for natural gas with fuel cells—though how big is to be determined by how the hydrogen is produced—is with fuel cell vehicles, which are about to stream into the market. Hyundai is already leasing the Tucson in California, where the state has subsidized the opening of 28 hydrogen fueling stations. The Toyota Mirai comes out later this year, and Honda’s fuel cell vehicle will be on sale in late 2016 or early 2017. Ford, Daimler and Nissan have also partnered to introduce a fuel cell vehicle in 2017. These electric motor vehicles can travel 300 or more miles on a fuel tank and refuel in less than 10 minutes, producing no tailpipe emissions except water and warm air.

“The abundance of natural gas has been a key driver in the commercialization of these are good days for the fuel cell industry, but they could be even better with greater and more stable demand.

“We have seen positive momentum across the industry over the last several years,” Markowitz said, “and things are reaching a point where we feel confident in saying that the future is now.”

**Coming Clean at Letdown Stations**

As the technology continues to advance, fuel cells are also helping to capture even more energy so it can be used by homes and businesses. One such innovative project is by FuelCell Energy, which has combined a

[Image of a natural gas pipeline and a fuel cell plant]

The biggest fuel cell park in the world is located in South Korea and was built by FuelCell Energy.

**The Direct Fuel Cell-Energy Recovery Generation system is expected to debut by the end of July at a letdown station in Glastonbury, Connecticut, though the energy recovery part of the process won’t begin until 2016 with the installation of...**
the energy recovery generator. FuelCell Energy jointly holds a patent on the technology with Enbridge, and this initial project is being completed in partnership with UIL Holding Corp. and Eversource.

According to FuelCell Energy, the DFC-ERG power plant directs high-pressure gas from the main pipeline through a turbo expander to harvest energy for power generation. The integration of thermal energy off the fuel cell as the heat source for the expander helps deliver 1 megawatt of emissions-free electricity to the electric grid, with the entire CHP process achieving electrical efficiency of 60 percent and higher. In contrast, with today’s letdown station valve technology, when gas pressure is dropped, the energy is lost.

“In some states it’s actually deemed renewable energy so it counts for renewable portfolio standards,” said Chip Bottone, FuelCell Energy president and CEO. “These letdown stations have been there forever, because that’s how you get distribution gas pressure. The new idea is that we can have an integrated system, and as the fuel cells have become more affordable, all of a sudden the economics work. And now that we have proved the concept, now is the time to be out talking to people and saying, ‘Hey, if you have this letdown station, depending upon how much gas is coming across and whatever else, it may make sense to look at this clean and affordable solution.’”

Energy Efficiency Through Innovation

On the West Coast, the prototype for a super-efficient natural gas heat pump water heater is being developed by a collaborative of the Northwest Energy Efficiency Alliance, which includes Avista Utilities, Cascade Natural Gas Corp., Energy Trust of Oregon, Northwest Gas Association, NW Natural and Puget Sound Energy. They have five years, an $18.3 million budget and a goal of advancing the adoption and availability of efficient natural gas technologies in the region.

Holly Meyer of NW Natural in Portland, Oregon, appreciates the changes this innovation will bring about.

Within the next couple of years, the gas heat pump water heater is going to be ready for prime time, it will be the size of today’s water heaters and it will save energy and money for customers by producing hot water at a highly efficient 6,000 Btu an hour.

Compared with today’s industry average of 40,000 Btu an hour, that kind of improved efficiency is encouraging.

“We’re excited,” said Meyer, the energy policy and sustainability manager at NW Natural. “When we look at what it will cost to heat 100 gallons of water for all of the other types of water heaters compared with the gas heat pump, it’s very striking.”

Growing “Greener” Tomatoes

South of Portland, the tomatoes are blooming at Houweling’s Tomatoes in Camarillo, California, and the ruby-red fruit owes its ripeness in part to new natural gas-powered technology.

Houweling’s Tomatoes installed three natural gas General Electric combined heat and power engines with 13.2 MW electrical output at its farm and 10.6 MW of thermal power for heat, providing power for six greenhouses spanning 125 acres, equal to about 94 football fields. And that’s not all: CO$_2$ from the engines’ exhaust is purified and piped into the greenhouse as fertilizer, diverting more than 20,000 tons of CO$_2$ yearly, increasing crop production and nearly eliminating the need to purchase liquid CO$_2$ as fertilizer.

The first combined heat and power co-generation plant to power a greenhouse in the U.S. has worked so well since its implementation in 2012 that it could spawn a new market for capturing carbon dioxide byproduct for plant fertilization in greenhouses.

“The concept of recovered CO$_2$ for greenhouse enhancement is new to California,” said Rodger Schwecke, vice president of customer solutions for Southern California Gas Co., which helped design the project and is supplying the natural gas to Houweling’s. “Now that the system has been commissioned at Houweling’s, SoCalGas and other project partners propose the system as a benchmark CHP for the emerging greenhouse market.”

Added Schwecke, “The project can attract other agricultural customers toward the use of distributed generation/CHP technologies, because the CO$_2$ from combustion emissions is no longer an operational limitation. Unlike traditional DG/CHP applications, agricultural installations may condense the combustion
exhaust to produce CO₂ and positively impact their productivity while complying with local and state air quality regulations.”

The CHP project has allowed Houweling’s to extend its growing season while reducing emissions, costs and energy use. Houweling’s debuted a similar system at its facility in British Columbia in 2014, and by the end of 2015, that installation will export excess power to the grid, as is currently being done in California. Overall, system efficiency has been continuously measured at 85 percent. In addition, a third Houweling’s farm in Utah is located next to a natural gas power plant and uses the plant’s waste energy.

“Onsite generation is more economical,” said Houweling’s Chief Marketing Officer David Bell. “It’s given us a more reliable access to the inputs that we need to promote yield. It changed the way in which we supply the greenhouse.”

And change is the name of the game, particularly where natural gas-fueled technologies are concerned. As natural gas continues to stake its claim to a greater part of the U.S. energy mix, consumers and businesses will be able to rely on this clean and widely available resource in increasingly innovative ways. ♦

HOW WATER HEATERS COMPARE
The NEEA’s prototype gas heat pump water heater uses an ammonia absorption heat pump cycle to heat water. As a result, it uses much less gas to operate and absorbs heat from the surrounding air (much like an electric heat pump) to heat water. The result is much higher efficiency at less cost. Here’s the comparison*:

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Operates at</th>
<th>Estimated annual operating cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prototype gas-fired heat pump water heater</td>
<td>130 percent efficiency</td>
<td>$115</td>
</tr>
<tr>
<td>Gas tank water heater</td>
<td>67 percent efficiency</td>
<td>$222</td>
</tr>
<tr>
<td>Gas tankless water heater (conventional)</td>
<td>82 percent efficiency</td>
<td>$181</td>
</tr>
<tr>
<td>Gas tankless water heater (condensing)</td>
<td>95 percent efficiency</td>
<td>$157</td>
</tr>
<tr>
<td>Standard electric tank</td>
<td>90 percent efficiency</td>
<td>$585</td>
</tr>
<tr>
<td>Heat pump electric tank</td>
<td>240 percent efficiency</td>
<td>$218</td>
</tr>
</tbody>
</table>

*Assuming about 11 cents per kW and 99 cents per therm
Source: Northwest Energy Efficiency Alliance

One of FuelCell Energy Inc.’s CHP operations is located on the California State University East Bay campus. This plant is owned by PG&E.
REAL WORLD SOCIAL MEDIA
As social media becomes more prevalent in our personal lives, businesses are jumping on the bandwagon. But building a social media page and waiting for the followers to come isn’t enough. We talk to the natural gas utilities leading the way as well as the social media mavens who are setting the bar.

BY SEAN MOORES

In 2011, on the same day Dominion launched its Facebook page, an earthquake tripped a unit at one of its nuclear power stations. Two days later, Hurricane Irene struck the East Coast. Two major events in less than a week gave one of the largest utilities in the country a baptism by fire for its fledgling social media efforts. Customers in need of information quickly found the new page, and it immediately became one of the primary ways that Dominion communicated with them.

Most social media launches are not so dramatic, but Dominion Digital Communications Manager Kristen Reese counts “hurriquake week,” as they now refer to it, as a major success story for its social media efforts and one that also taught all of their utilities a lesson in customer interaction. Concerned about the direction that comments might take and their ability to properly moderate them, Dominion’s Digital Communications group initially turned comments off as the hurricane struck. They quickly realized, though, that they were losing an opportunity to be responsive to the needs of their customers, so they turned comments back on mid-event.

Dominion now has more than 70,000 followers spread across several Facebook pages along with multiple Twitter handles, a YouTube channel, an Instagram page, a Pinterest board and a LinkedIn page. It dove headlong into the sometimes scary world of social media and learned that if you can prove to your customers that you truly want to hear from them and value what they have to say, the community will recognize that and appreciate it.

Getting Started
Although natural gas utilities have consistently reached out to their customer base, creating large customer service departments and call centers, there was always a level of control over the conversation even as they made every effort to be responsive to customers’ needs.

The advent of social media changed that. Not only are utilities in much more direct contact with their customers, but that contact is often played out in a very public arena where the control, initially at least, is entirely out of their hands.

As social media exploded in the 2000s, natural gas utilities recognized that their customers were way ahead of them, and they knew they had to catch up. Scott Steele, manager of sponsorships and social media at Avista Utilities, says they saw it.

“There were conversations occurring in the social space regarding our business and we needed to be a part of it,” he said.

Recognizing the problem is one thing, but effectively addressing it when the stakes are so high is another. A common approach taken by many companies when entering the social media realm—whether they are a natural gas utility or not—is to pull together a team to examine industry-specific issues and decide what direction to take.

For example, Dominion formed a committee made up of employees from across the company to evaluate social media networks and gain input.

Other natural gas utilities hired outside help for their initial forays into social media. Pacific Gas and Electric Co., one of the largest combination natural gas and electric utilities in the United States, went with an outside agency that had previous experience with social media launches. Like most utilities, PG&E now has a presence in all major social media channels, including Facebook, Twitter, Instagram, YouTube and LinkedIn. PG&E also took the proactive step of securing its name in social media channels that it doesn’t actively use at the moment.

Not everyone has the time or desire to post to Pinterest or Google+, but a key task of any team is to keep a finger on emerging social media. New channels are popping up constantly. Most will disappear just as quickly, but one could be the next Twitter or Pinterest.

Companies, however, should have a plan before creating new social media channels. Enbridge Gas Distribution Inc. did not want to launch additional channels without a strong reason and the content to keep them going. “It would be better to do one thing really, really well than to spread ourselves too thinly across a lot of channels,” said Jamie Vaughan, communications specialist at Enbridge.

Policies and Legal Issues
The good news is that many natural gas employees are already social media savvy. After all, 74 percent of online U.S. adults use social networks, according to the Pew Research Center—and utilities should take advantage of that.
At the same time, social media policies are necessary so employees know what their companies expect of them in their online lives and how they should present themselves as employees.

These kinds of policies are common in the media realm, which due to the nature of its business has had to be at the social media forefront. According to Communications Council Research Director Julie Dixon with National Journal, a social media policy should be helpful but not restrictive: “Ideally, a social media policy wouldn’t be what you can’t do, but what you can and should be doing within certain parameters.”

Having employees on social media representing the brand is a good thing as long as they are doing it in the right way and making it clear they are not speaking as company spokespeople, she said. Companies should let employees know: “We want you out there; here are some guidelines.”

Legal advice is important while writing social media policies and to help with occasional issues that might arise. In addition, Enbridge’s legal team is much more involved. They approve the key messaging that the social media team uses to create tweets and will be in the room during any gas emergency.

**Interaction**

The news media embraced social media early on as a way to promote stories and drive traffic to its websites. Dixon, however, sees many companies using social media as a one-way channel—giving information, but not focusing as much on interacting with their followers—which is a lost opportunity to connect with customers.

Xfinity by Comcast is an example of a company that has done a good job of responding in real time and using social media as a customer service tool, Dixon said. “They don’t just use social media as a way to get their message out, but also to prove they are actually listening to what is coming in.”

Providing customers with assistance is one of the most positive interactions a company can have on its social media channels. To do so effectively, utilities need to have staff monitoring sites during business hours and as much as possible after hours. At Dominion, its after-hours and crisis-monitoring team is comprised of employees who are already comfortable with the various social media channels, said Kristen Reese.

While it is good practice to respond to as many comments as possible even if it is just “liking” comments that compliment the company, companies must also be prepared for the negative side of social media interaction. Complaints on social media are just the nature of the beast. Don’t take it personally, Dixon advised. Responding even to negative comments can show that a company values its customers’ opinions and can quickly change negative opinions, especially if problems are successfully resolved.

But Dixon said companies should be proactive and establish rules early on for their online conversations, letting followers know what types of comments are subject to moderation and letting the rest stand.

Typically, few comments are removed from utilities’ social media channels. Rick Medefesser said PG&E relies on Facebook auto moderation as a first step to taking care of any bad language, and the company rarely removes comments, even if they are negative.

Just as utilities train for incidents, utilities also offer training to help ensure the social media team is familiar with preferred company interactions. In addition to a Twitter 101 course and regular meetings, employees using Twitter handles at PG&E get at least one month of training where all tweets are inspected before being posted. The main social media team also monitors all accounts daily and has admin rights to delete posts if necessary.

**Content Generation**

But building a social media page and waiting for followers to interact with isn’t enough. Utilities are not just competing against other companies for followers and attention on social media; they are competing against their customers’ friends and family.

Social media teams should ask themselves how their content stacks up against photos and stories from their customers’ loved ones. If posts are overly self-promotional, they will not be as engaging. Instead, tell the company’s story in a way that will resonate on social media, and make it personal and real. Kristen Reese said Dominion uses social media to put a human face on the company by promoting employee volunteers and company projects in the community.

Good visuals also make posts more eye-catching in news feeds, and most posts should include some sort of graphic element. Videos, photos and created graphics all work well. For example, Enbridge worked with an outside agency to shoot stop-action, 6-second, safety-focused videos that were successful on Twitter and won a Canadian Gas Association award for public safety.

“With the growing interest in social media,
we really wanted to keep things as concise and as easy to digest as possible,” said Enbridge's Jamie Vaughan.

Good communication among departments is also important for consistent branding. For example, Dominion's social media team plans content based on an editorial calendar shared throughout its corporate communications department. The planning guide includes monthly themes, which the team can then interpret for the individual audience. This allows for similar messaging across all channels. Meanwhile, Avista's social media strategy includes what type of content to post as well as tone, voice and manner in which to post, all following Avista's branding guidelines.

**Analytics**

You have your social media channels up and running; you monitor the activity, interact with your followers and create informative and appealing posts. Now what?

Translating social media goals and connecting them to company goals can be difficult, Dixon said. Companies can set benchmarks for likes and interaction, but what does that actually translate into as far as driving a business objective? Most companies have trouble defining how social media ties back into their overall organizational strategy.

Rick Medefesser thinks that early on it is important to build followers, but once the customer base reaches a certain size it is more important to focus on using social media accounts efficiently and effectively.

Saurabh Arora agrees. The co-founder and CEO of the social media analysis company Airwoot believes that social media analytics should focus less on community growth and more on community engagement. He told the Business 2 Community website that analytics will be “maturing to evade questions like how many Twitter followers we gained each week in favor of who are those followers? How many of them are our existing customers and potential customers? What are they talking about? What can we learn from them?”

Facebook, Twitter and LinkedIn have built-in analytics that can be helpful for gaining insight into your followers and how they interact on your channel, and there are a plethora of free and paid analytics tools that will follow, dissect and chart every metric that can be gleaned from social media channels. It is a booming business.

For example, social media management tools such as Hootsuite and Buffer allow users to manage multiple channels from one dashboard and come packaged with even more analytics. Meanwhile, such sophisticated listening tools as Sysomos and uberVu can flag company mentions, track positive and negative conversations and come packaged with their own analytics tools.

But analytics will only be as helpful as a company's original definition of what it is trying to accomplish, Dixon said. If a goal is likes or followers, that is easy to measure, but it is hard to bring that back to a broader company goal. If a company wants to drive positive customer experiences or resolutions to customer issues, it is more difficult to connect the dots from a website's Google Analytics to see what tasks or activities were accomplished and tie that back into social media metrics.

Analytics are helpful to the social media team, Dominion's Reese said. They can help if you want to create a monthly scorecard showing reach and growth. When numbers are down one month, analytics can show what happened and why, so the team can adjust its behavior.

It is not so straightforward at the corporate level. Even now, social media is still in the experimental stages. If utilities understand what they want out of social media and how those wants relate to their broader organizational goals, then analytics can help plot a course and gauge its effectiveness. Be realistic, Dixon said, because social media is not an end to itself. Find company goals first and have reasonable expectations.

“You have to be nimble,” added Dominion's Reese, where “hurriquake week” still resonates. “There may be a lot of planning, but some weeks it is all pushed aside because of a change in the weather.”

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**Pinterest**

*Each social media channel has its own personality and uses.*

**Facebook** is perhaps the best for meaningful interaction because the audience is generally larger and more diverse and posts aren’t limited by character count. However, one limiting factor for Facebook is its algorithm, which decides which posts appear in news feeds. Self-promotional posts are not given wide distribution, and time-sensitive posts, such as outage information, might not immediately appear in news feeds. Because Facebook also frequently adjusts its algorithm, social media teams need to continually stay abreast of the changes.

**Twitter** lends itself more readily to the immediacy of releasing outage information because tweets are not subject to an algorithm and will be posted in real time. Also, multiple handles are expected on Twitter and allow utilities to focus at a more local level.

**YouTube** is a streamlined platform for video sharing that has a diverse user base, and videos are easily integrated into websites and blogs.

**Instagram** is one of the fastest-growing social networking channels. Some of Instagram's functionality is limited on a desktop computer, and links cannot be added to posts; however, its photos and videos are easily shared with other social media.

**LinkedIn** is a professional networking channel that is primarily used for recruiting, but many feel it is underutilized. LinkedIn is a more professional platform that can build a lot of internal engagement when using the group functionality and building walled-off communities. —S.M.
The following AGA member companies earned Safety Achievement Awards by experiencing the lowest motor vehicle accident rate for companies of their type.

**LOCAL DISTRIBUTION**
- Citizens Energy Group (Indianapolis, IN)
- South Jersey Gas (Folsom, NJ)
- ENSTAR Natural Gas (Anchorage, AK)
- Eversource Energy (Berlin, CT)

**COMBINATION**
- Alliant Energy (Madison, WI)
- NorthWestern Energy (Butte, MT)

**TRANSMISSION**
- Kinder Morgan (Houston, TX)
- Dow Pipeline Company (Angleton, TX)

**SMALL MEMBER COMPANIES**
- Columbia Gas of Maryland (Cumberland, MD)

* All companies with a fleet mileage less than 1,000,000 miles were considered a small member.

The following AGA member companies have earned Safety Achievement Awards by experiencing the lowest incident rate for the number of days away from work, restricted or transferred (DART) among companies of their size and type, based upon a maximum figure of 1,960 hours worked per employee.

**LOCAL DISTRIBUTION**
- Small
  - Knoxville Utilities Board (Knoxville, TN)
- Medium-Small
  - Columbia Gas of Kentucky (Lexington, KY)
- Medium-Large
  - South Carolina Electric & Gas (Columbia, SC)
- Large
  - Citizens Energy Group (Indianapolis, IN)
- Very Large
  - COMGÁS (São Paulo, Brazil)
- Mega
  - Enbridge Gas Distribution (North York, ON)

**COMBINATION**
- Small
  - City of Rocky Mount (Rocky Mount, NC)
- Medium
  - Alliant Energy (Madison, WI)
- Large
  - NV Energy (Las Vegas, NV)
- Mega
  - Baltimore Gas & Electric (Baltimore, MD)
  - LG&E / KU (Louisville, KY)

**TRANSMISSION**
- Columbia Pipeline Group (Houston, TX)
- Carolina Gas Transmission (Cayce, SC)

The AGA member companies listed below have earned Accident Prevention Certificates by achieving a DART (days away from work, restricted or transferred) incident rate below the industry average for their company type.

**LOCAL DISTRIBUTION COMPANY**
- Small
  - Columbia Gas of Maryland (Cumberland, MD)
  - Greenville Utilities (Greenville, NC)
  - National Gas & Oil Corp. (Newark, OH)
- Medium-Small
  - AltaGas Utilities, Inc. (Leduc, Alberta)
  - Dominion Hope (Clarksburg, WV)
  - ENSTAR Natural Gas (Anchorage, AK)
  - Entergy Gas (New Orleans, LA)
  - Mobile Gas Service, a Sempra company (Mobile, AL)
  - UniSource Energy (Prescott, AZ)
- Medium-Large
  - Columbia Gas of Virginia (Chester, VA)
  - Duke Energy (Cincinnati, OH)
  - Metropolitan Utilities District (Omaha, NE)
  - SEMCO Energy Gas Company (Port Huron, MI)
  - South Carolina Electric & Gas (Columbia, SC)
- Large
  - BlackHills Corporation (Rapid City, SD)
  - Citizens Energy Group (Indianapolis, IN)
  - Columbia Gas of Pennsylvania (Canonsburg, PA)
  - New Jersey Natural Gas (Wall, NJ)
  - New Mexico Natural Gas (Albuquerque, NM)
  - Public Service Co. of NC (Gastonia, NC)
  - Source Gas (Golden, CO)
  - TECO Peoples Gas (Tampa, FL)
  - Columbia Gas of Ohio (Columbus, OH)
  - COMGÁS (Sao Paulo, Brazil)
  - Dominion East Ohio (Cleveland, OH)
  - DTE Gas Company (Detroit, MI)
  - Peoples Natural Gas (Pittsburgh, PA)
  - Questar Gas Company (Salt Lake City, UT)
  - Washington Gas Light (Washington, DC)
  - Xcel Energy (Minneapolis, MN)
- Very Large
  - AGL Resources (Atlanta, GA)
  - Atmos Energy (Dallas, TX)
  - Enbridge Gas Distribution (North York, ON)
  - Piedmont Natural Gas (Charlotte, NC)
  - Public Service Electric & Gas (Newark, NJ)
  - ONE Gas, Inc. (Tulsa, OK)
  - Southwest Gas (Las Vegas, NV)
  - Union Gas Limited (Chatham, ON)
- Mega
  - AGI Resources (Atlanta, GA)
  - Atmos Energy (Dallas, TX)
  - Enbridge Gas Distribution (North York, ON)
  - Piedmont Natural Gas (Charlotte, NC)
  - Public Service Electric & Gas (Newark, NJ)
  - ONE Gas, Inc. (Tulsa, OK)
  - Southwest Gas (Las Vegas, NV)
  - Union Gas Limited (Chatham, ON)

**COMBINATION COMPANIES**
- Small
  - Alliant Energy (Madison, WI)
  - City of Rocky Mount (Rocky Mount, NC)
  - Gainesville Regional Utilities (Gainesville, FL)
  - NorthWestern Energy (Butte, MT)
- Medium
  - Montana-Dakota Utilities Co. (Bismarck, ND)
  - NVEnergy (Las Vegas, NV)
  - Orange & Rockland Utilities (Pearl River, NY)
- Large
  - Ameren Corporation (St. Louis, IL)
  - Baltimore Gas & Electric (Baltimore, MD)
  - LG&E / KU (Louisville, KY)
  - MidAmerican Energy (Des Moines, IA)
  - Northern Indiana Public Service Co. (Merrillville, IN)
  - Pacific Gas & Electric (San Francisco, CA)
  - San Diego Gas & Electric (San Diego, CA)

**TRANSMISSION COMPANIES**
- Carolina Gas Transmission (Cayce, SC)
- Columbia Pipeline Group (Houston, TX)
- Dow Pipeline Company (Angleton, TX)
- Eastern Shore Natural Gas (Dover, DE)
- Enable Midstream (Oklahoma City, OK)
- ONEOK Pipeline Co. (Tulsa, OK)
- Questar Pipeline Co. (Salt Lake City, UT)
- Southern Star Central Gas Pipeline (Owensboro, KY)
- SpectraEnergy (Houston, TX)
- TransCanada (Calgary, Alberta)
- Presented at the 2015 2014 SAFETY ACHIEVEMENT AWARDS
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**Medium-Large**
- Columbia Gas of Virginia [Chester, VA]
- Duke Energy [Cincinnati, OH]
- Metropolitan Utilities District [Omaha, NE]
- SEMCO Energy Gas Company [Port Huron, MI]
- South Carolina Electric & Gas [Columbia, SC]
- The Gas Company, LLC [Honolulu, HI]

**Medium**
- Black Hills Corporation [Rapid City, SD]
- Columbia Gas of Massachusetts [Westborough, MA]
- Citizens Energy Group [Indianapolis, IN]
- Columbia Gas of Pennsylvania [Canonsburg, PA]
- New Jersey Natural Gas [Wall, NJ]
- New Mexico Natural Gas [Albuquerque, NM]
- Public Service Co. of NC [Gastonia, NC]
- SourceGas [Golden, CO]
- TECO Peoples Gas [Tampa, FL]

**Very Large**
- Columbia Gas of Ohio [Columbus, OH]
- COMGÁS [Sao Paulo, Brazil]
- Dominion East Ohio [Cleveland, OH]
- DTE Gas Company [Detroit, MI]
- Peoples Natural Gas [Pittsburgh, PA]
- Questar Gas Company [Salt Lake City, UT]
- Washington Gas Light [Washington, DC]
- Xcel Energy [Minneapolis, MN]

**Large**
- AGL Resources [Atlanta, GA]
- Atmos Energy [Dallas, TX]
- Enbridge Gas Distribution [North York, ON]
- Piedmont Natural Gas [Charlotte, NC]
- Public Service Electric & Gas [Newark, NJ]
- ONE Gas, Inc. [Tulsa, OK]
- Southwest Gas [Las Vegas, NV]
- Union Gas Limited [Chatham, ON]

**COMBINATION COMPANIES**

**Small**
- Alliant Energy [Madison, WI]
- City of Rocky Mount [Rocky Mount, NC]
- Gainesville Regional Utilities [Gainesville, FL]
- NorthWestern Energy [Butte, MT]

**Medium**
- Montana-Dakota Utilities Co. [Bismarck, ND]
- NV Energy [Las Vegas, NV]
- Orange & Rockland Utilities [Pearl River, NY]
- PECO Energy [Philadelphia, PA]
- Puget Sound Energy [Bellevue, WA]
- Vectren Corporation [Evansville, IN]

**Large**
- Ameren Corporation [St. Louis, IL]
- Baltimore Gas & Electric [Baltimore, MD]
- LG&E / KU [Louisville, KY]
- MidAmerican Energy [Des Moines, IA]
- Northern Indiana Public Service Co. [Merrillville, IN]
- Pacific Gas & Electric [San Francisco, CA]
- San Diego Gas & Electric [San Diego, CA]

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- Questar Pipeline Co. [Salt Lake City, UT]
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TO SUBMIT A LISTING TO JOBS, PLEASE VISIT www.AGA.ORG.
Here’s a quandary: How can you continue to grow when many of your workers are planning to retire in the next few years? Try implementing a strategic workforce plan. **BY LORI TRAWEK**

**MIND THE EMPLOYMENT GAP**

Today, the median age of a skilled utility worker is 47—much higher than the median of 42 for all American workers. At the same time, natural gas distribution jobs enjoyed 3 percent growth between 2007 and 2012 while sectors such as hydroelectric, fossil fuel and electric power generation saw double-digit declines.

As baby boomers retire in waves over the next five to 10 years, new utility workers will need to take over those positions. And the gap that already exists between employment demands and employees is expected to grow.

However, by implementing a strategic workforce plan, natural gas utilities can combat these industry changes and be prepared for the labor market ahead. The payoff can be monumental: By addressing employment shortcomings now and down the road, your company can remain fully staffed and ready to meet its business objectives.

Here are four steps to start a strategic workforce plan and how to make it work for you:

1. **MAKE STRATEGIC WORKFORCE PLANNING A PRIORITY**

   This might sound like a simple first step, but a strategic workforce plan demands that a company has an appetite for it. Implementing and maintaining a plan is hard work and needs to be developed, managed and administered. Unless your management team is dedicating time and resources to this plan, it won’t be effective in helping your company identify and rectify employee shortages.

2. **UNDERSTAND YOUR WORKFORCE**

   You need to understand your current labor field to know where your employment gaps are and where they will be.

   Crucial information for a strategic workforce plan includes asking the following questions about your company and its workforce:
   - What are projected retirement ages?
   - What is your normal attrition rate?
   - How do your company’s medical and pension plans impact retirement projections?

   Another important planning component is thinking through how you will transfer knowledge from soon-to-be-retired employees to new workers. In some cases, companies can overlap on a position, bringing in a younger employee to work side by side with a soon-to-retire employee for a short period of time. However, for AGA members which are regulated, proposals to overlap resources might not gain rate approval.

   An alternative to this kind of worker overlap is to have someone at your company interview soon-to-retire employees about their experience, creating videos or documents that parse that knowledge into a format that can be shared with new employees.

3. **UNDERSTAND WHERE NEW WORKERS WILL COME FROM AND WHEN THEY WILL BE NEEDED**

   Reach out to community colleges, career and technical education programs and trade schools. Some schools might not have much more information than enrollment numbers, but knowing how many graduates are expected in targeted programs and how they are performing is key information for a robust strategic workforce development plan.

   Natural gas utility companies must also broaden their search for employees. The Center for Energy Workforce Development helps its members with strategies to build career awareness for energy jobs among women, low-income adults and veterans. CEWD offers toolkits to help companies answer critical questions, including: How will you attract different demographics of workers? What do you need to do to smooth the transition of a more diverse workforce into your company?

   Sometimes, additional training is needed to prepare some groups of workers for natural gas jobs, and that gap needs to be included in your timeline. This is why it’s important to understand how many retiring workers are going to be replaced and when.

**BY IMPLEMENTING A STRATEGIC WORKFORCE PLAN, NATURAL GAS UTILITIES CAN COMBAT INDUSTRY CHANGES AND BE PREPARED FOR THE LABOR MARKET AHEAD. AND THE PAYOFF CAN BE MONUMENTAL.**
Changes in technology are impacting many energy jobs, which also impacts the types of skills needed in replacement workers. To that end, CEWD has developed a natural gas boot camp—a condensed training that can be offered at community colleges or through other venues to provide the additional skills needed to work in the gas utility field.

One important potential pool of workers is veterans. CEWD’s troopstoenergyjobs.com is designed to help veterans make a successful transition into the energy industry, in part by helping employers and veterans translate military experience to energy job requirements. If you are a CEWD member and post jobs on your company website, make sure these jobs are also appearing on troopstoenergyjobs.com and getintoenergy.com, another CEWD website.

4. CONNECT YOUR STRATEGIC WORKFORCE DEVELOPMENT GOALS TO YOUR COMPANY’S STRATEGY

A strategic workforce development plan is best implemented as part of a company’s overall strategic plan—which should define the company’s long-term mission and objectives. It’s difficult to develop a workforce plan if companies don’t have a well defined and understood strategy, which is why it often helps to do both kinds of planning at the same time.

Our industry is growing quickly as more consumers and businesses turn to natural gas. A strategic workforce development plan ensures that we can attract and retain the right employees as we grow.

Lori Traweek is a senior vice president and chief operating officer of the American Gas Association and serves on the CEWD Executive Council.

CEWD offers toolkits and resources to help you develop a plan to ramp up your workforce development process. For more information, go to www.CEWD.org.

NEXT MONTH

WORKFORCE DEVELOPMENT
How do you attract and retain talent in an increasingly competitive environment? We talk to natural gas utilities that are meeting the challenge with innovative programs focused on developing leaders, supporting the needs of millennial workers and leveraging outside-the-box solutions to attract new workers to the natural gas industry.

ENERGY EFFICIENCY
We all know that energy efficiency programs are good for us, but is that message striking home for consumers and businesses? To change behaviors, utilities are making an effort to engage customers directly in their homes and communities.

BURNER TIPS: OPERATIONS
Safety education as it pertains to utility operations is a major focus at any local distribution company. Culver Company’s Brennan Culver shares his insights on how you can create a successful safety outreach program that goes beyond regulatory compliance.
The nonprofit A Wider Circle in Silver Spring, Maryland, helps thousands of families get out of poverty each year with furniture donations, job training and long-term support—and Kelly Gibson Caplan (left), Washington Gas community outreach manager, has her helping hands behind that aid. Caplan is on A Wider Circle’s board, she organizes the donation center and she also works with families individually, even helping them pick out and load furniture and other items. “Kelly is energetic and compassionate,” said Mark Bergel (right), founder and executive director of A Wider Circle. “She’s just a person who’s a really good friend to a lot of people. I’ve been around this work for a couple of decades, and there is no better person in any industry.” Washington Gas Vice President Marcellous P. Frye Jr., said, “Kelly is just one shining example of the hundreds of employees who annually volunteer their time and effort to support and bring our communities together.”

Are your employees or company making a difference in your community? Contact Tracy Burleson at tburleson@aga.org to submit your ideas.
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