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Technological innovations are moving our industry forward. At the same time, there are greater risks. We must remain vigilant and continue to plan for our future and our place in it.
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An Atlanta Gas Light lead crewman boasts an impressive 43 years on the job without a single incident—and is serving as a mentor to new employees.
Few things contribute more to the quality of life that we enjoy in the United States than the way in which technological innovations grow and adapt to meet our needs for comfort and convenience. We are pioneers by nature, and our vision of the future is frequently tied to a more proficient and enjoyable way of life thanks to these technological advances.

I have always been fascinated by the intersection of policy, economics and technology—it has been the hallmark of my career. In Congress, I served on the Committee on Science, Space and Technology; afterward I served for eight years as president and CEO of the Electronic Industries Alliance, and then I led the Alliance of Automobile Manufacturers. I have always been engaged in guiding the research, development and implementation of the equipment that supports Americans and the policy discussion that surrounds it. While delivering essential energy from deep within our earth’s surface to homes and businesses might seem to some like a far cry from that world, it certainly is not.

Everything we do relies on energy. Our lives and our livelihoods depend on harnessing our natural resources and on effectively and efficiently delivering energy to our increasingly ubiquitous devices and appliances—fueling our lives. Like the companies that are constantly innovating to make your commute faster or your smartphone smarter, natural gas utilities are also always working to improve their products and services. This effort touches every facet of the business, from replacing pipelines that are no longer fit for service with ones made from more modern materials, to developing mobile applications that enable customers to track their energy use and become more efficient.

In this issue of American Gas, we explore some cutting-edge technological innovations that are moving our industry forward. Detroit-based DTE Energy is working on a program to use virtual reality to train some of its employees to handle potentially dangerous situations. Chesapeake Utilities and Florida Public Utilities worked together on a combined heat and power plant fueled by natural gas, which generates 20 megawatts of power for customers on Amelia Island in Florida. Southern California Gas Co. has a power-to-gas system demonstration project—a first in the United States. It converts electricity into gaseous energy and could provide North America with a large-scale, cost-effective solution for storing excess energy produced from renewable sources. This is a story that we must tell. Natural gas supports other forms of renewable energy, and the companies that deliver it continue to push the envelope in order to forge new energy horizons. Not only are we modernizing our systems and service offerings, we are a key part of a low-carbon future.

Of course, our increasingly wired world puts us all at greater risk of cyberattack—a topic we also cover in this issue. This has always been the flip side to my career pushing technological innovation. Protecting our companies and our customers has been a shared goal of everyone in AGA’s leadership for many years now, and natural gas utilities are leading on cybersecurity. The Downstream Natural Gas Information Sharing and Analysis Center that we created in 2015 is up and running, sharing critical cybersecurity information with the rest of the natural gas industry, electric utilities and necessary law enforcement entities. We must always remain vigilant and understand that cyberattacks are inevitable. It is how these attacks are handled that will determine the safety of our systems and our industry in the future.

I have heard several AGA chairmen use the phrase, “We do not rest on our laurels.” It is true. The affordable price of natural gas—another product of technological innovation—means that more homes and businesses use natural gas today than ever before, and the numbers continue to increase. We will continue to plan for the future and our place in it by exploring more efficient and effective ways to meet our customers’ needs.

Technological innovations are moving our industry forward. At the same time, there are greater risks. We must remain vigilant and continue to plan for our future and our place in it. **By Dave McCurdy**

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Children from the Rainey Institute were all smiles after receiving new bikes courtesy of Dominion East Ohio and the American Gas Association at the Republican National Convention.

**POLITICS AND PHILANTHROPY**

**Children receive bikes during conventions**

Some children far too young to vote benefitted from this year’s Republican and Democratic national conventions when they received new bikes courtesy of the American Gas Association and local gas utilities.

During the Republican National Convention in Cleveland, Ohio, six teams of bike builders, representing Dominion East Ohio and AGA, assembled 30 bicycles out of kits from Bikes for Goodness Sake, a nonprofit organization that sponsors charity bike building events for underprivileged children. AGA and Public Service Electric & Gas Co. held a similar event in Camden, New Jersey, during the Democratic National Convention.

“The children were extremely excited to receive the bikes. For some, they were the very first bikes that they owned,” Tracy Oliver, director, media and local affairs at Dominion East Ohio, told *American Gas*. “It was gratifying to see the smiles on all of their faces.”

Dominion and AGA partnered with Rainey Institute, a Cleveland cultural arts education organization, to identify children to receive bikes. In Camden, recipients were children in the Whitman Park Little League.

“We’re here to give back to the community as the face of the natural gas and energy industries in our communities,” said Dave McCurdy, AGA president and CEO. —Carolyn Kimmel
Hawaiian Electric has canceled its agreement with the Canadian subsidiary of Fortis Inc. that would have imported liquefied natural gas to the island state beginning in 2021. As part of the agreement, NextEra Energy Inc. needed regulatory approval to acquire Hawaiian Electric. The acquisition was not approved by the Hawaiian Public Utilities Commission, and NextEra announced it would no longer pursue the purchase of the utility. “We’ll continue to evaluate all options to modernize generation using a cleaner fuel to bring price stability and support adding renewable energy for our customers,” said Ron Cox, vice president of power supply for Hawaiian Electric.

The Laborers International Union of North America launched its Clean Power Progress campaign to promote natural gas as a way to meet emission-reduction standards established in the Clean Power Plan and close energy gaps left by the reduction in coal. A study put forth by the organization focuses its attention on Pennsylvania, where the combination of coal, nuclear, natural gas and renewable energy production won’t be enough to meet the state’s energy needs, projecting a 22 percent gap by 2030. “It’s time to take a hard look at our energy needs and start bridging the gap with a commonsense energy policy that includes natural gas,” said LIUNA General President Terry O’Sullivan.

New Jersey Natural Gas recently received the green light from the New Jersey Public Utilities Commission to extend its SAVEGREEN Project through 2018. The program offers incentives and rebates for customers to reduce their energy consumption and promote energy efficiency. Since there is no syngas in the PCH process, it does not have the challenges related to impurities, process complexity and expensive equipment costs that are associated with the syngas approach, he said.

The G4 technology is particularly attractive for power and gas utility applications because it offers a large-scale and economic supply of RNG, Ng said. “The G4 RNG can be used in natural gas combined-cycle power plants to generate dispatchable power at a lower cost than wind and solar alternatives, and the G4 PCH process can be used for power-to-gas applications,” he said.

“For those applications, excess renewable power from intermittent sources like wind and solar can be used with electrolyzers to generate hydrogen. The external supply of hydrogen doubles the RNG output and offers 400 to 600 megawatts of power storage.” The RNG will also be injected into the pipeline grid to end users.

Martin Imbleau, vice president, development and renewable energies at Gaz Métro, said the pilot project is well aligned with the spirit of Québec’s 2030 Energy Policy. “It’s one more tangible example of our determination to leverage our expertise and leadership for the sake of energy innovation and transition,” he said.

Recently, Ontario announced a C$1 billion (US$778 million) investment in natural gas and in energy retrofits in residential apartments, part of Ontario’s Climate Change Action Plan.

**RENEWABLES**

**First of its Kind**

Pilot program converts forest waste into second-generation renewable natural gas

Gaz Métro recently demonstrated a thermochemical process known as PyroCatalytic Hydrogenation to transform wood waste from Québec into renewable natural gas—a worldwide first, according to Edson Ng, principal of G4 Insights Inc., the British Columbia-based technology developer.

Unlike the competing thermochemical approach to convert biomass into methane, which involves gasification of biomass at very high temperatures to produce “syngas” that is then converted to methane, the new G4 PCH process uses a low-temperature fast pyrolysis technique to vaporize biomass into a volatile mixture of molecular fragments called pyrolysis gas, Ng told American Gas.

“A catalyst is used to combine the pyrolysis gas with hydrogen to form methane. The methane is purified to pipeline-grade natural gas specifications [98 percent or higher methane purity], and some of the methane is used in a steam methane reforming process to generate the hydrogen required for the process,” Ng said. “The G4 process has 70 percent energy conversion efficiency—calculated as energy available in the biomass divided by the energy of the renewable gas product—and does not require external supply of heat, water, power or hydrogen. The G4 RNG can be used in any unmodified natural gas-fueled vehicle, furnace, power plant, appliance and industrial process.”

Since there is no syngas in the PCH process, it does not have the challenges related to impurities, process complexity and expensive equipment costs that are associated with the syngas approach, he said.

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**EMISSIONS**

**Reality Check**

New study shows true cost to reduce emissions

A new analysis of what it costs to reduce methane emissions from natural gas systems shows the price is higher than previously reported, but that’s not a surprise to the industry that remains committed to methane abatement.

“This study is a collective, holistic piece that validates what we thought—that the cost is higher—but now that we know that, how can we best proceed to meet our goals of methane reduction?” said Richard Hyde, executive director...
of ONE Future Coalition. The coalition is comprised of a group of natural gas companies focused on methane abatement, and it commissioned the study conducted by ICF International.

A 2014 study by the Environmental Defense Fund put the cost of methane emission reduction at $0.66/thousand cubic feet, but the current ICF study found it is actually much higher at $3.35/Mcf, Hyde said. The ICF study used the same model as the EDF study but with updated cost and emission reduction data based on the direct experience of ONE Future member companies.

“We asked, ‘From our real-world experience based on different technologies out there to do leak detection and leak repair, what does it really cost us?’” Hyde told American Gas. “And we took into account that there is really only one place in the natural gas stream where you can monetize the emissions you capture, and that’s at the production site.”

So while results show the current gas price is actually lower than the cost to reduce emissions, Hyde said the results are about much more than economics.

“Yes, economically it’s not worth the cost to do this, but we want to get down to the 1 percent emission rate,” he said. Factoring in that methane has a higher short-term impact on climate than does CO₂, companies want to drive down emissions in order to drive down societal impact, he said.

Also important, potential investors look for companies that are good stewards of the environment, Hyde said. “It’s good for our investors, our employees, our customers and the environment—it’s just the right thing to do,” he said.

The study also includes information on the cost of methane control technologies and practices and the ability of the industry to monetize recovered gas.

“This laundry list of technologies and costs will help our member companies say, ‘Where can I deploy my capital in order to get the biggest bang for my buck?’” Hyde said.

to NJNG customers who pursue energy efficiency upgrades, including appliance purchases and home improvements. Incentives offered through the program include a zero-percent-interest repayment plan on qualifying purchases, rebates toward energy-efficient appliances and a Home Performance with Energy Star energy efficiency analysis after upgrades are complete. “SAVEGREEN continues to provide our customers with affordable, energy-efficient options to help them implement home energy improvements and offset energy costs, while helping them reduce their carbon footprint,” said Laurence M. Downes, NJNG chairman and CEO.
HOUSING

It’s Worth It

Homebuyers are willing to pay more for natural gas

People in the market for a new home are willing to pay $50,000 more for a house that has all natural gas appliances, a new study finds.

Earlier this year, NW Natural commissioned a study by Market Strategies International that surveyed consumers who recently bought or planned to buy single-family detached homes in NW Natural’s service territory in Portland and Salem, Oregon, and Vancouver, Washington.

Homebuyers strongly preferred natural gas versus electric service and equipment at all home values, but particularly as the price of the home increased, the study found.

“What this research tells us is that homebuyers clearly prefer natural gas over electricity and are willing to pay a premium for a home with all natural gas appliances,” said Tammy Linver, senior director, strategic planning and market intelligence at NW Natural. “And the more that people invest in a home, the more they want premium natural gas amenities.”

Overall, 87 percent of the consumers surveyed who recently bought or plan to buy a house rated natural gas as “important” to them, NW Natural reported. And, given the choice between two otherwise identical single-family homes offered at the same selling price, 9 of 10 said they would pick the home with all natural gas appliances compared to the home with all electric equipment.

Natural gas is so important, in fact, that 88 percent of homebuyers said they would choose the all natural gas home even if they had to pay $50,000 more for it than for a comparable, all electric home at an average price of $381,000.

At home values of $600,000 or more, 96 percent of homebuyers said they would spend an extra $50,000 on a home with premium natural gas amenities.

Homebuyers cited the affordability of natural gas as a top reason why they would choose it. They also said natural gas is better for cooking, offers superior home heating and is a more efficient source of energy, according to NW Natural.

Builders who saw study results said they weren’t surprised.

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Nancy Haskin, custom homes regional director for Pahlisch Homes, told NW Natural, “All of the clients I have worked with prefer natural gas versus electric heat for the comfort of their home and, hands down, prefer to cook with gas.”

**TRAINING**

**Welcome to the ‘Neighborhood’**

Simulated scenarios highlight the next generation of gas training centers

The next generation of natural gas utility workers is learning the ropes in innovative, interactive ways, thanks to state-of-the-art training centers that include mock neighborhoods in which to practice their skills.

Peoples Gas and North Shore Gas recently broke ground on a $20 million, 100,000-square-foot training center featuring the largest mock city training site in Illinois.

The outdoor “Gas City” will feature 20 buildings with a simulated natural gas delivery system pressurized by compressed air. It’s designed to help trainees become proficient more quickly thanks to real-life scenarios including old and new furnaces, mock pipe leaks and more, Lori Flores Rolfson, vice president of operations and maintenance at Peoples Gas and North Shore Gas, told *American Gas*. The facility also features a commercial driver’s license training area, collaborative fire prevention and first responders training with the Chicago Fire Department and an area to train employees in excavation and directional drilling.

On the East Coast, Columbia Gas of Pennsylvania, a subsidiary of NiSource Inc., recently opened a modern training facility that also features an outdoor mock neighborhood of mini-homes and businesses complete with underground utilities and meters, which it’s calling “Emergency Response Safety Town.”

The $10 million center, which spans more than 220,000 square feet, will be used for coordinated training with invited local emergency responders to practice responding to natural gas emergencies. It will also train new employees, employees transitioning to higher-skilled positions and those interested in enhancing their skills.

The facility includes a simulator area (including a slip-and-fall simulator to teach employees how to avoid falls, a leading cause of lost-time injuries at NiSource and other utilities), hands-on labs, demonstration areas, an excavator school and fire safety training area. NiSource plans to build similar training facilities in its service territories of Ohio, Massachusetts and Virginia by 2018.

Both companies cite an anticipated wave of retirements from the ranks of their most experienced workers as one reason for the expanded training efforts.

“With an aging workforce and changing technology, training the utility worker of today is much different than training was just a few...”

In a $1.47 billion deal, Southern Co. will purchase half of the Southern Natural Gas pipeline system from Kinder Morgan Inc. The 7,600-mile pipeline system distributes natural gas to a large area of the southeastern United States, which is a high-demand area for natural gas, according to Kinder Morgan.

“This transaction is consistent with the infrastructure development strategy we have discussed for well over a year,” said Southern Co. CEO Thomas A. Fanning. Kinder Morgan will continue to operate Southern Natural Gas, but the companies intend to collaborate on growth opportunities. According to a recent report by Fitch Ratings, master limited partnerships and utilities co-owning pipeline systems are low-risk investments with diverse development opportunities.

According to the 2016 International Index of Energy Security Risk, the United States has broken into the top five of most energy-secure nations, coming in at number four behind New Zealand, Mexico and Norway. The report credits U.S. shale production and liquefied natural gas as a contributor to the country’s increase in energy security. The country’s energy security score, gauged against an average developed by the Organisation for Economic Cooperation and Development, has improved 23 percent since 1980, the first year data was collected.

The Valley Expansion Project, an initiative of WBI Energy, plans to connect the Viking Gas...
Transmission Co. is expanding its longtime partnership with Chicago Public Schools. "When this new facility opens its doors, that partnership also will include vocational education right here," said Charles Matthews, president and CEO of Peoples Gas and North Shore Gas. "Students fully enrolled in the program will be able to prepare for potential jobs as project workers with Peoples Gas and gas worker jobs with North Shore Gas."

The training center comes at a crucial time since the utility is embarking on an extensive modernization program to replace 2,000 miles of gas infrastructure, Flores Rolfson said.

Continued from page 11

Transmission Co. pipeline in western Minnesota to an existing WBI Energy pipeline in eastern North Dakota. The 38-mile pipeline project would increase natural gas access to industrial and commercial sectors in the region. "A project like the Valley Expansion is, frankly, a long time coming, and I congratulate WBI Energy for its commitment to making it happen. This project will encourage continued growth in eastern North Dakota," said North Dakota Gov. Jack Dalrymple. Pending permits and regulatory approval, the project could break ground in early 2018.

years ago,” said NiSource President and CEO Joseph Hamrock.

“With about half of our ‘boots on the ground’ employees set to retire over the next five years, we are concerned about the level of knowledge needing to be replaced,” Flores Rolfson said. “The training we have now is good, but it doesn’t have the opportunities for all the hands-on simulation, ‘real world’ training that this has.”

As part of the project, Peoples Gas and North Shore Gas is expanding its longtime partnership with Chicago Public Schools. “When this new facility opens its doors, that partnership also will include vocational education right here,” said Charles Matthews, president and CEO of Peoples Gas and North Shore Gas. “Students fully enrolled in the program will be able to prepare for potential jobs as project workers with Peoples Gas and gas worker jobs with North Shore Gas.”

The training center comes at a crucial time since the utility is embarking on an extensive modernization program to replace 2,000 miles of gas infrastructure, Flores Rolfson said.

INDUSTRY

Trust-Building

Survey shows customer trust is rising

What’s the best way to create engaged utility customers? Become a trusted adviser. That’s one of the takeaway messages from this year’s Cogent Reports study by Market Strategies International on Residential Utility Trusted Brand & Customer Engagement.

The study showed an eight-point increase in brand trust over last year with an average score of 693 on a 1,000-point scale. A higher number of utilities—77—have also increased brand trust this year compared to those whose scores decreased—48. Meanwhile, operational satisfaction is at a high of 763, the study found.

“Our study shows that customer relationships are being redefined. Customers expect utilities to keep service flowing and answer their phones but also want them to provide additional value. Utilities that don’t answer that call will
be left behind,” said Chris Oberle, senior vice president at Market Strategies.

The utility business model has become more retail-focused and encourages the use of innovative products, programs and pricing structures. However, only trusted brands can influence customer purchase decisions, he said.

The study revealed that efforts to increase trust should be aimed at Generation Xers and late boomers while the silent generation, early boomers and, surprisingly, millennials already place higher levels of trust in their utilities.

The top five natural gas utilities with Most Trusted Brand designations are TECO Peoples Gas, Virginia Natural Gas, Columbia Gas – South, Alagasco and CenterPoint Energy – South.

Market Strategies developed the Brand Trust Index by surveying customers on six factors that score emotional attachment and management performance.

For the study, Cogent Reports conducted surveys among 54,693 residential electric, natural gas and combination utility customers of the 129 largest U.S. utility companies (based on residential customer counts).

**COGENERATION**

**Major Investment**

**BGE and U.S. Army partner for efficiency**

BGE’s Smart Energy Savers incentive program recently made its largest investment possible to a project: $2.5 million to the U.S. Army.

The check was presented at the official opening of the new $40 million combined heat and power plant on the Edgewood Area of Aberdeen Proving Ground, an Army installation in southern Harford County, Maryland.

Smart Energy Savers is part of BGE’s Combined Heat and Power Program. It provides incentives to industrial and commercial customers who install an onsite CHP system, which is a clean and efficient approach to generating power and thermal energy from a single fuel source.

The CHP plant, which replaces the capabilities of the local waste-to-energy plant, will generate high-quality electricity and steam for Edgewood, far exceeding traditional equipment in terms of energy efficiency and emission reductions, according to Installation Energy Manager Devon Rock.

“One of the most critical roles of Army Energy Managers is to develop the most economic and sustainable solutions possible to ensure mission readiness,” Rock said. “The electricity and steam from this CHP plant will be used throughout the Edgewood area to provide state-of-the-art laboratories with specific temperature and humidity controls for Army research and development organizations.”

Maj. Gen. Bruce T. Crawford, APG senior leader and commander of U.S. Army Communications-Electronics Command, said the project should translate into overall savings of more than $25 million over the next several years. “It’s not just a passion for saving money, it’s not just a passion for energy, but a passion for things like innovation,” he said.

In presenting the $2.5 million check, Wayne Harbaugh, BGE director of energy efficiency, said, “A combined heat and power facility turning what might otherwise be waste heat into power is innovative. Thank you for being a partner in energy innovation and for inspiring all of us to follow your lead.”

Crawford further applauded the collective effort, saying it will be a far-reaching model.

“There’s a sense of pride and accomplishment because they’ve created something that’s going to benefit the great state of Maryland and the U.S. Army, but ultimately it’s going to become a model that’s going to benefit the nation,” he said.

International market research company Technavio recently released a report that forecasts the global gas meter market to grow by 10.5 percent by 2020. Three factors were found to initiate growth: the benefits of smart meters; increased industrial natural gas usage; and government regulations and initiatives. Among the benefits, the report cited better energy use management, report personalization and billing accuracy. “Smart meters and smart energy monitors allow customers to keep track of their energy use in real time and help them make better choices regarding prudent gas use, thus enabling monetary savings,” said Gaurav Mohindru, lead analyst of tools and components research at Technavio.

The 2016 CNG from Sea to Shining Sea Road Rally kicked off on Memorial Day in Long Beach, California, and concluded two weeks and 3,143 miles later in Washington, D.C. The eight-vehicle caravan—all running on CNG, of course—made 13 stops to promote the benefits of CNG as an alternative vehicle fuel. According to a news release from NGV America, 136 gasoline-gallon equivalents of CNG were used for the cross-country trip, costing just $251.60. The average price of CNG for the trip was $1.85. “This rally was a great symbol of the ease of what’s possible when traveling across the country in a natural gas vehicle,” said NGV America President Matthew Godlewski.
**BY THE NUMBERS**

Want to create closer relationships with customers and build bridges to local lawmakers and administrators? Results from the International City/County Management Association survey of local governments suggest that partnering with local officials on energy efficiency plans and community engagement initiatives may be the key.

---

### Better Help for Consumers
Natural gas utilities recognize the importance of energy efficiency—both to lower costs and decrease environmental impact—but consumers aren’t getting much help from the government. Collaborating with local governments could be an opportunity to further promote the industry’s leadership in this area.

#### Which of the following energy actions has your jurisdiction taken in the last five years? (CHECK ALL THAT APPLY) (N=1,899)

<table>
<thead>
<tr>
<th>Action</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Energy audits for individual residences</td>
<td>16.7%</td>
</tr>
<tr>
<td>Weatherization for individual residences</td>
<td>24.1%</td>
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<tr>
<td>Heating/air conditioning upgrades for individual residences</td>
<td>12.4%</td>
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<tr>
<td>Energy audits for businesses</td>
<td>11.7%</td>
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<tr>
<td>Heating/air conditioning upgrades for businesses</td>
<td>6.7%</td>
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<tr>
<td>Weatherization for businesses after energy audits for businesses</td>
<td>7.7%</td>
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</tbody>
</table>

### Lack of Programming Creates Opportunity
While utilities have invested hundreds of millions of dollars in energy efficiency programs, many local governments have no official program in place for reducing energy use in their own operations or within their communities.

#### Please indicate the sources of funding for each kind of sustainability policy or program (CHECK ALL THAT APPLY) (N=1,899)

<table>
<thead>
<tr>
<th>Source of Funding</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL GOVT.</td>
<td>33.7%</td>
</tr>
<tr>
<td>STATE/FED GOVT.</td>
<td>19.1%</td>
</tr>
<tr>
<td>UTILITY</td>
<td>18.4%</td>
</tr>
<tr>
<td>PRIVATE GRANT</td>
<td>2.8%</td>
</tr>
<tr>
<td>OTHER</td>
<td>1.4%</td>
</tr>
<tr>
<td>NO PROGRAM</td>
<td>38.8%</td>
</tr>
</tbody>
</table>

### A Matter of Impact
Economic impact is both a strong motivating factor and a hindrance for sustainability efforts. Natural gas utilities can look for willing partners in local governments and an opportunity to promote the inherent efficiency of natural gas.

#### How significant is the potential for fiscal savings in motivating sustainability efforts by your local government?

<table>
<thead>
<tr>
<th>Significance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY SIGNIFICANT</td>
<td>46.0%</td>
</tr>
<tr>
<td>SIGNIFICANT</td>
<td>38.2%</td>
</tr>
</tbody>
</table>

#### How significant is lack of funding in hindering sustainability efforts by your local government?

<table>
<thead>
<tr>
<th>Significance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY SIGNIFICANT</td>
<td>61.8%</td>
</tr>
<tr>
<td>SIGNIFICANT</td>
<td>26.1%</td>
</tr>
</tbody>
</table>

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At Chesapeake Utilities, Greg Robinson has joined the company as director of corporate security. In this role, he is responsible for the direction and planning of corporate security, physical security systems, government intelligence coordination and coordination of business continuity programs.

Patricia Poppe is now president and CEO and John Russell continues as chairman of the board at CMS Energy.

At WEC Energy Group, Kevin Fletcher is now president, We Energies and Wisconsin Public Service, and Patrick Keyes is executive vice president, strategy and president, Minnesota & Michigan.

Southern Co. Gas has appointed Jim Kibler to the role of president of Virginia Natural Gas. Kibler has served as senior vice president of external affairs and public policy at Southern Co. Gas since 2012. In his new role, he is responsible for the delivery of safe and reliable natural gas to more than 290,000 customers in southeastern Virginia. Kibler succeeds Robert Duvall, who will lead nationwide customer operations of Southern Co. Gas.
PLACES

OCTOBER

2: AGA Leadership Council Meeting, San Diego, CA. Contact Gary Gardner, 202/824-7270, ggardner@aga.org

2–3: AGA Executive Conference, San Diego, CA. Contact Gary Gardner, 202/824-7270, ggardner@aga.org

4: AGA Board of Directors Meeting, San Diego, CA. Contact Gary Gardner, 202/824-7270, ggardner@aga.org

17–18: Technical Training Workshop, Henderson, NV. Contact Mike Bellman, 202/824-7183, mbellman@aga.org


19–20: AGA Small Member Council, Amelia Island, FL. Contact Ysabel Suarez, 202/824-7024, ysuarez@aga.org

27–28: AGA Compression & Transmission Roundtable, San Ramon, CA. Contact Erin Kurilla, 202/824-7328, ekurilla@aga.org

NOVEMBER

7–9: Gas Piping Technology Committee (GPTC) Meeting, San Francisco, CA. Contact Mike Bellman, 202/824-7183, mbellman@aga.org

13–16: AGA/EEI Fall Accounting Conference, AGA Accounting Services Committee/EEI Corporate Accounting Committee/EEI Property Accounting & Valuation Committee Meeting, Clearwater Beach, FL. Contact Doug Allen, 202/824-7261, dallen@aga.org

13–16: AGA/EEI Taxation Committee Meeting, Arlington, VA. Contact Joe Martin, 202/824-7255, jmartin@aga.org

GAS TECHNOLOGY INSTITUTE EVENTS

OCTOBER 3–7

NOVEMBER 14–18

For course descriptions, visit www.gastechnology.org/training. Please contact Susan Robertson, GTI, 847/768-0783; education@gastechnology.org
Welcome Home

Natural gas fuels mini residential power plant

TRAVERSE CITY—The “future of home comfort technology” debuted at a Parade of Homes event in Traverse City in June: The miniature power plant installed by DTE Energy and fueled by natural gas provides the home with all its heating, air conditioning, hot water and back-up electric needs.

The first of its kind in the state attracted more than 1,200 people to an open house, easily the most popular choice during the annual event, according to a DTE spokesman. Such miniature power plants have become increasingly common in the industry, but this was the first time one was installed at a home in Michigan and the first outside of Texas.

“What used to be an industrialized system is downsized for a home,” Peter Ternes, communication manager for DTE, told American Gas. Many people who toured the Parade of Homes asked specifically about the unit, he said.

The unit is called a PowerAire and is manufactured by Houston-based M-TriGen. It costs about $27,000, and the company is working on a smaller unit that would price out at about $18,000. The house was built by Pathway Homes.

The home also has a conventional furnace and water heater and is connected to the grid for its electricity, but it will be completely self-sufficient in case of an outage. The PowerAire unit can be configured to feed power back into the grid, much like solar and wind units. —Monica von Dobeneck
PALEMYNIIA

Taking Flight

Airport gets into the natural gas business

PITTSBURGH—Natural gas is now flowing into pipelines from the Marcellus Shale formation beneath Pittsburgh International Airport, and that means more and cheaper flights for passengers and an economic boon for the facility.

The Allegheny County Airport Authority entered into an agreement in 2013 with Consol Energy, a Pittsburgh-based energy producer and one of the nation’s largest independent natural gas exploration, development and production companies. Consol leased 9,200 acres at the airport to develop up to 45 wells on six pads. Consol began drilling in August 2014 after holding public hearings and securing local, state and federal permits. This July, all six wells on pad 2 began flowing natural gas into the MarkWest midstream infrastructure system.

“The deal allowed us to lower charges to airlines and put more money into capital projects,” airport spokesman Bob Kerlik told American Gas.

In the past two years, the Airport Authority was able to reduce costs to airlines from $14.66 per passenger to $12.88 per passenger, Kerlik said. That, in turn, increased the number of nonstop destinations from 37 to 58 as of early August. Five new airlines have also started operations at Pittsburgh International, including low-cost carriers Allegiant and Frontier.

“Since the initial lease was signed and upfront payment received, we have reduced fees to airlines to their lowest rate in eight years,” Airport Authority CEO Christina Cassotis said in a news release. “Innovative partnerships like this with a local, world-class company like Consol are key in helping attract air service.”

Consol initially paid the authority $46 million for the lease, and it will hand over 18 percent in royalties on the natural gas it pumps.

Local leaders congratulated Consol for being a good and responsive neighbor throughout the initial phases of the project, according to a news release.

“As a company that has called this region home for 152 years, we are very proud to have been selected to develop this flagship project,” Consol Energy COO Tim Dugan said. “Consol takes our responsibility in terms of safety and protecting the environment very seriously.”

OHIO VALLEY

Ripe for Investment

Low natural gas prices draw manufacturers

MARIETTA—A corner of Ohio and West Virginia has some of the cheapest natural gas in the industrialized world, and a group of area business leaders are using that fact in a marketing plan to attract more manufacturing.

The group calls itself Shale Crescent USA and bills itself as “an economic development initiative to encourage growth in the Mid-Ohio Valley based on low natural gas prices that allow manufacturers to operate more efficiently while producing products more economically.”

Its website says that portion of the country is “an economic powerhouse” but also “a well-kept secret.”

Jerry James, president of Artex Oil Co. in Marietta, Ohio, said the area sits over the Utica and Marcellus shale formations. Natural gas costs 20 to 25 percent less than the averages at the Henry Hub and 75 percent less than overseas, he told American Gas. Many businesses in the area now buy gas from a hub called Dominion South Point.

“About 32 percent of our natural gas now comes from the Northeast, which is a shocking change from what it used to be,” James said. Many companies still consider the Gulf Coast the best area for inexpensive energy, he said.
The area is also next to the navigable Ohio River, has plenty of water, a skilled workforce and is within a day's drive of half the country's population, Wally Kandel, senior vice president of a Solvay polymers plant in Marietta, told American Gas.

Kandel said the group has met with existing area companies that might be considering expansions, and their marketing plea has been well received.

The business leaders are also targeting international companies known for high energy use. "Most petrochemical companies in the world are looking toward America because of cost," James said. "Traditionally they looked at the Gulf Coast … [but] our wellhead prices are 60 to 70 cents below. I think we'll always be at least 50 cents less."

Shale Crescent USA is made up of business leaders, regional economic development partners, nonprofit and nongovernmental agencies, area chambers of commerce, utilities, and financial and educational organizations.

IOWA

Rural Replacement

Privately owned farm pipelines may soon have new ownership

DES MOINES—Black Hills Energy wants to make privately owned farm pipelines safer, so it has proposed a plan to make changes to the services it provides to farm tap customers.

The customer-owned fuel lines from the interstate pipeline to the premises often do not meet the same safety criteria as company-owned lines, according to officials with Black Hills Energy. The natural gas distributor is proposing to replace substandard consumer-owned pipelines. There are about 1,500 farm tap customers in Iowa, and the company would test the lines and replace those that are not up to standard. The company would then continue to own, operate and—importantly—maintain all farm tap lines.

"Black Hills Energy has safety standards, maintenance records and pipeline location data and can access all company-owned main and service lines," community affairs manager Laura Roussell told American Gas. "These important guidelines do not currently apply to customer-owned farm tap lines. This can create safety issues for customers, our employees and the public when we can't mark line locations, perform complete leak surveys or identify obsolete fuel lines."

Black Hills Energy has proposed two plans to replace the customer-owned lines. Under one plan, the farm customers pay no upfront costs, and under the second plan they would share the cost of replacement, with the company paying for the first 1,000 feet of pipeline and the customer paying for the remainder. The replacement program would take place over five years.

"The focus of this farm tap safety plan is to assure continued safe delivery of natural gas service," Roussell said.

COLORADO

It’s a Breakthrough

State university receives mega-grant for methane detection

FORT COLLINS—A planned test site at Colorado State University has the ambitious goal of vastly reducing the cost of detecting methane leaks, supporting vital technologies for reducing greenhouse gases and increasing safety, according to university researchers.

Daniel Zimmerle, senior research associate at Colorado State University, told American Gas that the $3.5 million test site will provide a platform for companies that are developing new technologies in methane detection. He said the university is building what he called "Hollywood well sites," mock-ups of well pads where methane can be leaked at controlled rates.

The goal is to reduce the cost of detecting leaks to $3,000 per year or less per well pad. Instruments to detect leaks now cost from $20,000 to $100,000, he said. Companies are attempting to develop small detectors, which could be mounted on pads to continuously check for leaks, for a cost of only hundreds of dollars each. More sophisticated detectors costing several thousands of dollars could scan several well pads.

"These technologies represent breakthroughs in what's possible in methane sensing. Some of
the solutions are the equivalent of a $20,000 instrument reduced to a $500 package,” Zimmerle said. “We want to get the price so low they can frequently or continuously monitor. That way they can fix it quickly.”

Many of the technologies could also be applicable to pipelines and compressor stations, Zimmerle said. Studies have shown that most leaks come from a small percentage of these devices.

The U.S. Department of Energy’s Advanced Research Projects Agency-Energy is awarding the university team $3.5 million over three years to operate the facility. The Colorado School of Mines is also helping to develop, design, build and operate the facility on Colorado State University property near Fort Collins.

The testing site should be online by February. “Our job is to assist in bringing these technologies to market,” Zimmerle said. “We’ll help companies prove out solutions in a controlled environment prior to deployment in the field.”

ARKANSAS

Economic Boost

A natural gas-to-diesel plant promises to be a game changer

JEFFERSON COUNTY—Once completed, a proposed plant to convert natural gas to diesel would become the largest project ever in the state of Arkansas, according to Lou Ann Nisbett, president and CEO of the Economic Development Alliance for Jefferson County.

The $10 billion facility being developed by Little Rock-based Energy Security Partners would bring 2,500 construction jobs and 225 full-time jobs paying an average of $40 an hour, Nisbett told American Gas. The project could support an additional 5,000 related jobs within the state and $333 million in annual income statewide, according to an economic income analysis. The construction jobs are not short-term, either; construction is likely to continue for 10 years.

“This is a high-poverty, high-unemployment area,” Nisbett said. “This will be a game changer.” County officials are already working with area schools and colleges to provide the training needed for the high-paying jobs, she said.

Nisbett said it will take another two years for Energy Security Partners to obtain all the necessary permits before construction can start, and the company is finalizing efforts to secure the last parcels of land it needs for the 1,200-acre site. The plant plans to open its first $3.7 billion phase within five years, with two additional phases later. It will produce 33,000 barrels of diesel and naphtha a day.

Nisbett said the proposed location is perfect for the plant because a natural gas pipeline already runs through the site, which is near a major highway, the navigable Arkansas River and a rail line. It is also close to Little Rock and its ample labor force.

To entice the company, the county offered incentives of $3.9 million, which will be used to purchase the land, prepare the site and support infrastructure. The money was raised through a three-eighths cent sales tax that voters approved in 2011 for economic development.

“Jefferson County welcomes this project with open arms,” Nisbett said. “Our economic development team has worked with Energy Security Partners over the past three years. Our hope is that this offer will instill the confidence that Jefferson County, Arkansas, is open for business, and we are prepared to compete for the big projects.”

CALIFORNIA

Teach the Children

Study reinforces benefit of children’s energy education programs

STANFORD—Want to encourage families to save energy at home? Teach their children, reported a study by Stanford University researchers.

The researchers presented a five-part program on energy-saving behaviors to Girl Scouts from 30 troops in Northern California. As a result, the study showed that their households were likely to save 3 to 5 percent annually on their electricity costs and 1 to 3 percent annually on their gas. The estimates were based on questionnaires given both before and after the program, which was called Girls Learning Environment and Energy.
The girls and their parents also answered questions about their energy, food and transportation use eight months later to test whether they maintained the changed behaviors.

“We found that engaging people in reconsidering their energy use is a family affair,” said Nicole Ardoin, an associate professor at Stanford Graduate School of Education and a senior fellow at the Stanford Woods Institute for the Environment. “Fourth- and fifth-grade Girl Scouts shared their newfound interest, enthusiasm, knowledge and skills with their families. In turn, that information and interest diffused to parents. Parents supported their girls’ learning by making changes together, and parents helped the girls make changes that the children couldn’t make on their own.”

Such programs have the potential to extend beyond a single household, as participants spread their knowledge to friends, schools and extended communities, the researchers said.

Thomas Robinson, a professor of child health in the Stanford School of Medicine, said involving younger generations is crucial in making progress on environmental issues.

“Children are the group whose futures are most impacted by environmental changes,” he said. “If they adopt sustainable lifestyles now, they are the group who will live long lives of sustainable practice.”

According to a news release from Stanford University, the study used “rigorous research designs, behavioral theory and approaches borrowed from public health,” and the results were published in *Nature Energy*. The Stanford researchers also plan to scale up their program to reach Girl Scouts across the country.

WEST VIRGINIA

**Relieved**

**Dominion Resources aided state’s flood victims**

**CLAY COUNTY**—After historic floods ravaged West Virginia in late June, nearly 100 volunteers, 10 dump trucks and eight backhoes from Dominion Resources were on the scene quickly to help with the cleanup, according to coordinator Christine Mitchell.

Many of the volunteers formed bonds with residents they were helping, Mitchell told *American Gas*.

The floods left one church with piles of muck and debris. Church officials told volunteers to just toss everything. But when volunteers found a cross covered with purple draping in the rubble, they set it back up as a beacon.

“They couldn’t stand to see it go in the trash,” said Mitchell, who is an external affairs representative for Dominion in West Virginia.

One employee delivered coolers full of ice daily at his own expense. Another made a lamp for one family out of discarded piping. A third found in the debris a military flag that honored a family member who had served in World War II. At his own expense, he had it restored and cleaned and purchased a display case for it.

The company also gave $50,000 to the American Red Cross.

“It was devastating, so quick,” Mitchell said of the floods, which killed 23 people and destroyed about 5,000 homes. “People had no time to prepare or evacuate. People lost lives, were stranded. It’s hard to imagine the devastation water can do.”

According to news reports, some eight to 10 inches of rain fell within a few hours and rushed down through the state’s narrow valleys. Thousands of people were left homeless.

The volunteers with Dominion went to work almost right away, logging 12-hour days in places like Jordan Creek, Clendenin and Clay County, Mitchell said. That was true even though Dominion suffered damage itself, particularly at its Cornwell Compressor Station. Three employees were trapped there during the flooding and had to spend the night in their trucks.

Dominion employees also worked to restore service where possible and cut off gas service when houses had to be demolished.

“It’s as though everything has been turned upside down,” Mark Barnes, director of gas operations for Dominion Hope, said in a news release.

Dominion employees have continued to help long after the floodwaters have receded. They are contributing to a “Helping Them Get Back on Their Feet” campaign to provide 5,000 new sneakers or tennis shoes to students who escaped the flood with nothing but the clothes on their backs and the shoes on their feet.
INSIDE OUT

Since 1996, Carnegie Mellon’s cybersecurity experts have collected at least 1,200 publicly reported cases of insiders causing harm to companies and other institutions — but that might only be the tip of the iceberg. As physical and cyber threats become a company priority across all industries, here’s how natural gas utilities in particular can protect their physical and intellectual assets.  

BY JOHN EGAN
The greatest potential physical and cyber threats to the integrity of gas utility networks, systems, assets and operations may not be coming from a cell located somewhere on the other side of the world. They might be walking in the door at the start of each work day.

Popular movies including *Live Free or Die Hard*, *Blackhat* and *Swordfish* focus on cybercriminals breaking into corporate networks from the outside to steal sensitive information, interrupt daily operations or cause financial or reputational harm. But unwary insiders can pose a potentially greater threat to your digital and physical assets, gas utility officials, consultants and academic experts tell *American Gas*.

Most employees and contractors, known collectively as insiders, don’t realize they are a potential threat. But each time they fire up their laptop, log onto the network or insert a USB thumb drive into their terminal, they could inadvertently be injecting malware, viruses or ransomware into your network. And if they click on the wrong phishing email, they might accidentally be sending the keys to your network to cybercriminals.

There’s even a chance your employees could be motivated by malicious intent, though there have been no confirmed reports of that among local distribution companies. Yet.

**The Tip of the Iceberg**

Utility companies around the world responding to PricewaterhouseCoopers’ 18th annual Global State of Information Security® Survey for 2016 reported a surge in cyber incidents of all kinds—not just
insider threats—in 2014 (from 1,179 in 2013 to 7,391 in 2014), followed by a big decline in 2015 to 4,694.

The PwC survey includes responses from 129 power and utility executives around the world, 43 percent of whom are located in North America. The survey was sent to leaders at gas utilities, electric utilities and merchant generators; PwC did not specify how many gas utility executives responded to the survey.

Although 4,694 cyber incidents are better than 7,391, the numbers are still worrisome.

In other industries, employees and contractors acting with malicious intent have been behind some of the reported high-profile cyberattacks of recent years, typically attacking financial institutions, health care companies or government agencies. Randy Trzeciak, technical director of the insider threat center at Carnegie Mellon University’s Software Engineering Institute, told American Gas that its CERT division has collected, coded and analyzed at least 1,200 insider incidents that have occurred since 1996 across all sectors of the economy where insiders intentionally caused harm to their employer.

But that number might be only a fraction of the real number of actual insider attacks since, according to Trzeciak, as many as 75 percent of the victim organizations do not involve law enforcement or take legal action when an insider incident happens, preferring to handle it internally and without filing charges. Adding in that 75 percent would put the total at about 5,000 insider attacks done with malicious intent across all industries over the last two decades.

**Huge Potential, Pointed Response**

“All industries, including gas utilities, need to recognize the potential of insider threats,” Trzeciak told American Gas.

For example, Forrester Research surveyed 200 technology decision-makers who experienced a data breach in the previous 12 months in its report, *Understand the State of Data Security and Privacy: 2014 to 2015.* Nearly half—46 percent—said an internal incident was the source of their compromise. Of those 46 percent, more than 4 in 10—42 percent—said the incident stemmed from accidental misuse of company property, while 46 percent claimed the breach occurred because of deliberate, malicious abuse by an insider.

“Across all industries, over 95 percent of the cyber incidents we see are accidental malware infections caused by employees or contractors,” said Del Rodillas, a lead for industrial control systems and supervisory control and data acquisition solutions at Palo Alto Networks. “I imagine it’s not all that different for gas utilities. Attacks inadvertently facilitated by employees are far more numerous but less harmful than malicious attacks launched by insiders.”

Brian Butler, a corporate systems engineer manager with Lancope, now an Oracle subsidiary, blogged about insider threats last year. He said there are five signs that a company could have an insider threat:

- Unusual data movement
- Unauthorized access attempts
- Suspicious employee behavior
- Stolen credentials
- Policy violations

The move to digitization has also made it easier for these threats to occur.

“There has been a massive digitization of information assets over the last few years, as gas utilities have put paper-based information into enterprise resource planning systems and document management systems,” said Dan Bowman, a principal in PwC’s Power & Utilities practice.

“Having that data digitized makes it easier to extract useful information using various analytic tools,” he continued. “But with greater digitization comes greater risks. Data that used to exist on a piece of paper in a drawer now resides in a server, which can be vulnerable to a breach.”

His colleague Brad Bauch, security principal in the firm’s U.S. Power and Utilities practice, recommended gas utilities protect their cyber and physical assets by following the five-step cybersecurity framework laid out by the National Institute of Standards and Technology:
• Understand what’s important.
• Install controls and safeguards.
• Monitor and detect anomalies on your network.
• Create incident response capabilities.
• Build capabilities surrounding resilience and recovery.

“Gas utilities are in a relatively early stage of adopting the NIST CSF,” Bauch said. “Over the last two or three years there has been a sharp increase in focus on this framework, but not all gas utilities are there yet.”

Don’t Get Hooked by a Phisherman

Most inducements to unwary employees and contractors come in the form of phishing, which is why Colorado Springs Utilities implemented a phishing security initiative a year ago. Each month, a randomly selected group of employees receives a fake phishing email sent by the utility’s security team. Over the course of a year, each employee and contractor can expect to receive at least three such emails.

Anyone who clicks on the phishing email will be notified that they could have placed the utility’s cyber and physical assets at risk. They also receive a link to educate them to the dangers of phishing. This mandatory training has cut the number of employees who click on a phishing email by 74 percent, said Rick Bustillos, a cybersecurity supervisor and cybersecurity architect at the Colorado utility.

“We take phishing very seriously, and we have implemented these measures to better protect our assets and our customers,” Bustillos said. “Any company on the planet that is connected to the internet has to worry about phishing. Using a fake email to get a company insider to perform a specific action that gets outsiders into the network is the highest and most common cyber threat we face.”

Phishing emails commonly contain macros, scripts, malware or ransomware. Bustillos noted that phishing was one of the methods outsiders used to get access to the Ukrainian power grid last year, turning out the lights for as many as 225,000 Ukrainians for as long as six hours.

New Safeguards

Since October is National Cybersecurity Awareness Month, it’s a good time for all gas utilities to take a hard look at their cybersecurity, evaluating both information technology and operations technology, including their ERP and SCADA systems.

Colorado Springs Utilities, for example, has implemented the five-step cybersecurity framework laid out by NIST and emphasized the importance of educating employees about phishing and other scams that could expose a gas utility’s networks and assets to exploitation by cybercriminals.

“Cybersecurity is not only about spending money for new hardware, software and systems,” Bustillos said. “It’s also about more effectively leveraging your employees to spot something anomalous and report it. If they see something, they should say something. This is a discipline you have to build internally. It’s not something you can buy off the shelf. The cultural elements of cybersecurity are indispensable to keeping the bad guys away.”

One easy step gas utilities can take: Affix a prominent banner that flags incoming emails that originate from outside the network and reminds employees not to click on any attachment.

RANSOMWARE: A GROWING THREAT

Del Rodillas of Palo Alto Networks warned that a relatively new threat, ransomware, should be keeping corporate information security officers at gas utilities up at night.

“Ransomware has evolved as a business model,” he said. “Rather than hold an individual’s computer hostage for $200, cybercriminals are finding it more profitable to hold the networks and data of large companies hostage for a much larger payout. Ransomware has escalated as a cyber threat.”

According to news reports, the Lansing Board of Water & Light, a Michigan public power utility, was victimized by ransomware earlier this year after an employee unknowingly opened an email with a malware-infected attachment.

“Hospitals, school districts, state and local governments, law enforcement agencies, small businesses and large businesses are just some of the entities impacted recently by ransomware, an insidious type of malware that encrypts, or locks, valuable digital files and demands a ransom to release them,” according to a warning issued this year by the Federal Bureau of Investigation.

“The inability to access the important data these kinds of organizations keep can be catastrophic in terms of the loss of sensitive or proprietary information, the disruption to regular operations, financial losses incurred to restore systems and files, and the potential harm to an organization’s reputation,” the FBI warning continued. —J.E.
or link if they don’t know the sender. These email banners have become increasingly common at gas utilities in recent years, but their use is not yet universal. One company’s banner reads, in bold red type: “SECURITY NOTICE: This email originated from an external sender. Exercise caution before clicking on any links or attachments and consider whether you know the sender. For more information please visit the Phishing page on [the company website].”

Gas utility executives and board members also can obtain more information on insider threats to cybersecurity from the FBI, Homeland Security and Carnegie Mellon’s CERT, among other sources. That information is as eye-opening as it is disturbing. Employees who suddenly start living beyond their means could be demonstrating important early warning signs that something is amiss. Disgruntled employees also might bear watching. For their own protection, gas utilities should develop programs and procedures for fellow employees to raise a red flag on their colleagues who might be up to no good.

There are various types of behavioral analytic systems that gas utilities can install on their networks to flag anomalous employee behavior as well. “I’m a consultant and I do a lot of travel in the U.S.,” said PwC’s Bauch. “So it is not unusual for me to access my company’s networks anytime between 6 a.m. and midnight from anywhere in the U.S. But for an accounting clerk who works a 9-to-5 shift at the company headquarters, it would be unusual if he tried to access his company’s network at 3 a.m. from Iceland.”

Behavioral analytic software has come into vogue over the last few years for companies in a wide variety of industries, said Ryan Frillman, director of information security and compliance at Spire (formerly The Laclede Group) in St. Louis. Spire is investigating behavioral analytic software. “Behavioral analytics help detect and deter insider threats by flagging employee behavior that’s out of the norm,” he told American Gas. “Is the time of accessing the network out of the ordinary? Is the location from which they access the network out
In 2015, respondents detected 36% fewer information security incidents compared with the year before.

![Graph showing the decrease in cyberattacks from 2011 to 2015](image)

Figure 1: According to PricewaterhouseCoopers’ Global State of Information Security® Survey for 2016, the number of cyberattacks across utilities decreased by nearly 3,000 in 2015. But utilities should remain on their guard.

of the ordinary? Are the actions they are trying to perform out of the ordinary? The network’s logs will capture all of that information. Once the anomalous behavior is flagged, then you have to decide if it is a concern.”

Depending on their size, gas utilities are able to track employees accessing the network using one of two types of systems: a System Information Event Manager, which large utilities would use, or a System Log Server for smaller utilities. Either can have behavioral analytics software installed.

Behavioral analytics “can be misunderstood,” Frillman said. It is not Big Brother tracking every employee’s keystrokes.

“Behavioral analytics doesn’t look at everything an employee does on the job,” he said. “It doesn’t allow us to read employees’ email. It is not monitoring the day-to-day, minute-by-minute activities of an employee. Behavioral analytics simply allow us to see how employees are accessing the network and what they’re trying to do on it.”

Every organization has the right and responsibility to protect itself, its employees and its customers from insider threats, said Colorado Springs Utilities’ Bustillos. In fact, organizational factors are one of three factors the FBI suggests industries examine to prevent insider threats, along with personal factors and behavioral indicators.

Organizationally, gas utilities should institute a least-privilege protocol, where employees are only granted access to the systems and data that are directly relevant to their jobs. That means an accounting clerk would not have access to the company’s SCADA system or its customer information system.
“It’s easier for IT to give all employees credentials to access all parts of the network,” said one industry source, “but the fewer people who have access to sensitive parts of the network, the less you have to worry that someone is accessing data they don’t need. More and more gas utilities are implementing least-privilege protocols.”

Network segmentation is another step gas utilities should take to guard against insider threats. Network segmentation means different sets of credentials are required to access different parts of the network. Segments that utilities could implement include requiring two-factor logon authentication, installing fingerprint scanners or embedding commands limiting machine-to-machine transfer of certain data.

Employees remain the most cited source of compromises, but incidents attributed to external actors are rising.

Gas utilities also can guard against known network-borne threats with an intrusion detection system or intrusion prevention system, recommended Palo Alto Networks’ Rodillas. An IDS runs in the background of a network and flags malicious traffic, such as malicious software like the Stuxnet or BlackEnergy payloads, which exploit vulnerable IT- and SCADA-specific systems and command and control communications. Using a more prevention-focused approach, the more robust IPS blocks the flow of malicious payloads and communications.

Industrial control systems and SCADA environments are more vulnerable than IT environments to malicious software and exploits because of infrequent patching and extended use of legacy, unsupported software. The use of IDS or IPS helps asset
owners cope with this dynamic by serving as a compensating control.

“IPS is a must-have system, but it’s not too common with gas utilities right now. It’s more common for those companies to have an IDS,” said Rodillas.

All of the Above
Experts agree that guarding against insider threats at gas utilities is not a case of “either/or”—invest in either systems or employees. Rather, it is a case of “both/and.” Gas utilities need both vigilant employees and cutting-edge software to help ensure their networks, data and physical assets are safe.

“We can put systems in place, but we can’t tell what’s in someone’s heart,” said one source. “That’s where the human intelligence comes in. Employees are critical to prevention or early detection of insider threats.”

“It all comes down to hiring,” another industry source said. “Find people who have integrity and verify they have integrity with background checks or criminal checks. A number of gas utilities are doing this, and those that aren’t are considering it.”

“It is absolutely critical to hire the right people, conduct background checks and then periodically perform those checks once they are employees,” said PwC’s Bauch. “The NERC Critical Infrastructure Protection standard calls for criminal background checks for employees in certain positions every seven years. There’s nothing comparable for gas utilities at this point. But would anyone argue that the nation’s gas pipeline and delivery network is not part of our nation’s critical infrastructure that requires protecting?”
From harnessing virtual reality to feeding wind power into natural gas pipelines, utilities are forging the path to the future. **BY CHRISTINA KELLY**

Technology continues to make possible what seemed impossible only a few short years ago. We’re wearing it. We see it in the skies as aerial drones give us a bird’s-eye view of the terrain. We’re planning to take regular people into space for a look at the cosmos. And we’re creating huge 3-D printers to map the earth in such a way to reveal natural resources like never before. It’s the stuff of science fiction, except in many cases, it’s just around the corner. In the natural gas industry, innovation has changed the way business as usual takes place—and in some cases, is having a profound impact.

**Virtual Reality — The Next Big Thing**

In the 1990s, the gaming industry exploded with games featuring virtual reality, a computer technology that replicates an environment, real or imagined, and simulates a user’s physical presence and environment for user interaction.

As the technology has evolved, so have the uses, not just in entertainment, but in medicine, the military and, most recently, for training, allowing professionals to conduct it in an environment where they can improve skills without the consequence of failure of a vital operation or injury to an employee.

It’s how Detroit-based DTE Energy plans to train some of its employees to handle dangerous situations. In a partnership announced in May with Vectorform, a company that creates digital experiences for some of the world’s largest brands, DTE plans to use VR for high-consequence training. This will allow DTE technicians to train in simulated work environments that include performing gas line shut-offs—all from the safety of their offices.

Tony Battle, manager for DTE Technical Training, said the utility is just getting started, and at press time, planned to pilot the simulation during the September-October timeframe.

“We’re in the development phase of a project to prove out the virtual reality concept in the utility space,” said Battle. “Significant effort has gone into the analysis, design and development of the product thus far, and we have received great interest and support from our executive and business unit customers.”

DTE has about 3,500 field personnel who inspect and repair natural gas systems and other infrastructure. Battle said the goal is to promote a safe and effective workforce by using VR to place the employee in dangerous situations in a VR world first to learn how to work in such an environment.

Vectorform CEO Jason Vazzano said his company is excited by the possibilities
of using the company’s technology for training in a safe setting so employees can learn skills critical for their jobs.

“We are excited to drive an industry first, in integrating the HTC Vive into the energy company’s high-consequence and life-critical training programs,” Vazzano said. “This application is leading the way for energy companies nationwide to focus on performance and safety.”

Allowing technicians to walk around and train in a lifelike virtual space—without exposure to the real-world dangers they’d typically encounter—takes the pressure and anxiety out of the training, and leaders from both companies believe the training will be more effective.

Battle said that if the VR training does prove to be successful, he believes it can be used throughout the utility industry.

“This is especially true in areas that pose a challenge in terms of difficult-to-replicate environments, particularly those that have significant safety implications,” Battle said.

Full Steam Ahead — Turning Waste Heat into Energy

Few people would think of Amelia Island, about 30 miles northeast of Jacksonville, Florida, as a hotbed of technology. The island is 13 miles long and about four miles wide at its widest point. Many of the jobs on the island come from tourism, shrimp and two paper and pulp mills.

However, an agreement between Chesapeake Utilities, Florida Public Utilities and Rayonier Advanced Materials has led to the creation of the Eight Flags Energy Combined Heat and Power plant on the island, which began generating electricity for FPU in June and producing steam for Rayonier Advanced Materials in July. Fueled by natural gas, the CHP plant generates 20 megawatts of power for Amelia Island customers.

“The innovation was born from a joint opportunity involving Chesapeake, FPU and Rayonier,” said Jeff Householder, FPU president, who came to the utility in 2010. “Rayonier Advanced Materials was interested in additional steam—and in continuing to generate its own power. We were trying to find opportunities for economic development while adding load to the natural gas pipeline we were constructing to serve Amelia Island.”

Eight Flags Energy operates with a Solar Turbines Titan 250 gas turbine generator set coupled with a Rentech heat recovery steam generator. The steam is purchased by Rayonier Performance Fibers for its pulp and paper mill. FPU, a subsidiary of Chesapeake Utilities, is buying the power for distribution to its retail electric customers on Amelia Island.

Householder said the system generates electricity through a 20MW gas-fired turbine, producing a large amount of waste heat. The plant recovers the waste heat—heat that would otherwise be allowed to escape—which is then run through a steam generator and piped to the paper mill. Emissions are significantly reduced.

“We’re pretty happy with it,” said Householder. “This is power we can depend on. It’s environmentally friendly, and it’s saving millions of dollars to our customers in the long run. If you are a combo utility with gas, there’s no reason why this can’t work elsewhere.”

The plant is expected to generate a $3.7 million margin in 2016, and a $7.3 million margin on an annual basis.

According to the Environmental Protection Agency, a CHP system increases energy efficiency, lowers a facility’s operating costs and contributes to lower emissions. In a 2012 report, Combined Heat and Power: A Clean Energy Solution, the EPA states that a 50 percent increase in CHP systems within a 10-year time frame could yield a savings of 150 million metric tons of CO₂—the equivalent of removing 25 million cars from the road.

Power to Gas — A 100 Percent Renewable Energy Future

Science fiction begets science reality with a new technology that converts electricity from renewable sources into hydrogen gas.
As some industry leaders have said, it’s like spinning gold from straw.

Power-to-gas technology uses electricity from renewable sources, and then uses an electrolyzer-based method to create carbon-free hydrogen gas by breaking down water into hydrogen and oxygen. From there, the hydrogen can be converted into synthetic, renewable methane, which can then be stored. The resulting natural gas can be used to power vehicles, fuel cells, microturbines and other equipment.

For several years, German engineers have been testing the power-to-gas technology—a method that could make a 100 percent renewable energy possible, according to E.ON and its wholly owned subsidiary Uniper. E.ON is developing power-to-gas technology as an innovative method for storing surplus energy from renewable sources that include wind and solar to balance long-term fluctuations in power generation.

Now that technology has come to the United States. Southern California Gas Co. has joined with the Energy Department’s National Renewable Energy Laboratory and the National Fuel Cell Research Center to launch demonstration projects to create and test a carbon-free, power-to-gas system for the first time in the U.S. The technology converts electricity into gaseous energy and could provide North America with a large-scale, cost-effective solution for storing excess energy produced from renewable sources.

Should the project prove to be successful, the technology could enable natural gas utilities across the country to use their existing pipeline infrastructure to store and deliver clean, renewable energy on demand.

Jeffrey Reed, director of SoCalGas Business Strategy and Development, said the technology could help California meet its environmentally focused energy goals while helping the country with cost-effective storage from renewables.

Reed said renewables are limited to when the wind blows and the sun shines. By converting the renewables, the excess power can be stored until it’s needed.

The energy industry has focused on developing batteries to store excess energy, but battery capabilities are limited to short-term storage and are expensive. Power-to-gas offers longer storage capacity and uses existing natural gas infrastructure, saving an enormous amount of money, according to Dr. Martha Symko-Davies, director of Partnerships for Energy Systems Integration for NREL.

“As we reach high levels of renewable energy on the grid, storing the electricity generated by solar power and other variable energy sources will help unlock greater use of these renewable resources in the U.S. and throughout the world,” said Symko-Davies. “This project will examine a unique way to reduce the capital cost of energy storage.”

The projects are located at the NFCRC at the University of California, Irvine and NREL’s laboratories in Golden, Colorado. The power-to-gas demonstrations will also assess the feasibility and potential benefits of using the natural gas pipeline system to store photovoltaic and wind-produced energy.

“We see this project as an important step forward in our efforts to reduce the carbon footprint of natural gas and support the integration of ever-increasing amounts of renewable electricity by developing new storage resources,” said Reed. “Power-to-gas is still in the development stage but offers great promise for the future.”

![Image of a house with a natural gas pipeline]

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*Image credit: [American Gas Association](https://www.americangas.org)*
New initiatives in supplier diversity are strengthening local communities and economies.  

**BY DANIELLE WONG MOORES**

No matter the industry, competition among a diverse set of suppliers is recognized as a very good thing.

In the utility world, supplier diversity can help increase the supplier base, reduce costs, improve a utility’s own economic sustainability, benefit its local community and improve a utility’s brand. Simply put: Customers and other suppliers want to work with utilities that support diversity.

The 2016 Natural Gas Industry Buyer’s Guide (also available online at [www.naturalgasindustrybuyersguide.com](http://www.naturalgasindustrybuyersguide.com)) showcases the broad range of suppliers who serve our industry, serving as a starting point for procurement staff seeking vendors for everything from business services and IT/ information systems to pipeline materials/services and professional services.

But identifying suppliers is just the first step.

**Innovations**

At BGE, Frank Kelly, manager of supplier diversity, recalls that when he took on that role in 2009, the utility focused about 9 percent of its spending on diverse suppliers. That same year, the company, along with other utilities throughout the state, entered into a memorandum of understanding with the Maryland Public Service Commission for an aspirational goal to spend 25 percent of its procurement budget with minority- and women-owned businesses.

Seven years later, BGE has more than doubled its spending, achieving 22 percent and more than $180 million invested in procuring materials and services from diverse suppliers. Meanwhile, its parent company Exelon’s corporate spending with diversity-certified suppliers totaled more than $1.1 billion.

“It’s not only the right thing to do, it’s the smart thing to do,” Kelly told *American Gas*. BGE’s success, he says, is driven both by support from the C-suite and processes that ensure continual innovation. For example, the utility just accepted its third class into one of its newer supplier...
The Illinois Utilities Business Diversity Council hosted its first Professional Services Summit this summer, where representatives from several regional utilities were able to discuss supplier diversity in the industry.
Meeting Mandates and Beyond
In California, utilities have a legislated goal of spending 21.5 percent of their procurement dollars with women, minority, service-disabled veteran and now lesbian, gay, bisexual and/or transgender business enterprises. Southern California Gas Co. has met that goal and beyond for the past 23 years, last year achieving an astonishing 44.7 percent spend with diverse suppliers at BGE’s central Maryland service area with an in-depth overview of the company’s business and procurement processes, along with insight on how to be a successful partner.

Diversity-certified companies must apply to participate in the one-year program, which has already graduated 18 companies. All told, BGE has spent $52 million dollars with Focus 25 participants since the program’s inception.

Another unique offering is BGE’s Banking Program, which has arranged for credit lines totaling $123 million with 28 minority and community-owned banks in BGE’s service area and other regions where Exelon operates. It’s a win-win-win: BGE receives an additional source of credit at a competitive price; the banks can strengthen their relationships with the utility as a key customer; and the local economy receives a boost.

Industry Networking

“No pun intended, there was real energy in the room,” said Meena Beyers, managing director of customer and partner engagement at Nicor Gas and chairwoman of the IUBDC’s communications committee. “Vendors found the networking opportunity valuable since they were able to connect not only with procurement representatives, but also with the decision-makers within the utilities who have the business needs to engage professional services.”

Utilities in Illinois are the most recent to recognize the value of a council that brings these like-minded organizations face-to-face with one another and with shared vendors. Other states including California, Missouri and New Jersey have similar councils.

“We recognize that the IUBDC plays a significant role in supporting the efforts of each member utility,” said Melvin Williams, president of Nicor Gas and chairman of the IUBDC Board of Directors. “Within our first year, we are already seeing the benefits of collaborating across the state to advance business diversity in the areas of construction, engineering and professional services.”

In Illinois, while there is no mandated supplier diversity expenditure, utilities are mandated to report the amount they spend annually to the Illinois Commerce Commission. The IUBDC provides a forum where member utilities can engage in deeper conversations about their individual efforts to support and help grow businesses.

The Joliet gathering was the third event that the IUBDC has held since it launched in July 2015. The others included a roundtable discussion between suppliers and advocacy organizations to discuss opportunities and challenges, and a networking and business overview event for vendors in construction and engineering fields.

“We’re trying to bridge gaps and create a forum to share successes,” said Beyers. “We’re learning that together we have the opportunity to better support and further advance our individual company goals of supplier diversity.”

Rick Hobbs, director of supply management and supplier diversity at SoCalGas, also serves as vice chairman on the National Utilities Diversity Council. Part of his job involves fielding calls from other utilities and even companies outside the energy industry who want to benefit from his utility’s knowledge and methods surrounding supplier diversity. That’s also the aim of the NUDC, which has a toolkit of supplier diversity best practices available on its website, www.nudc.com. SoCalGas also shares many of its own best practices in an annual Supplier Diversity report.

“My personal view—and our company’s too—is that our suppliers should reflect our customer base as well as our workforce,” said Hobbs. “The bottom line is that this creates another advantage.”

Taking its supplier diversity efforts to the next level comes from an ability to identify challenges and develop solutions, he added. For example, “in certain areas, there are just limited suppliers, period,” he said. “So, we reach out to diverse suppliers in related fields and talk about opportunities and ways they can change and grow their business in that direction.”

SoCalGas also gives small companies with revenues under $1 million and fewer than 25 employees a leg up. These companies are invited to do business with the utility on a direct-source basis so they can demonstrate how well they work. Once they go through a couple of demonstration projects, they are invited to compete for work with like-sized companies. If they’ve never completed a bid, SoCalGas “handholds” them through the process.

“We tell them, ‘Don’t be late,’” said Hobbs with a laugh. He added, “We want to see a multitude of companies [competing], not just major suppliers. That’s the ultimate goal.”

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2016 CATEGORY LISTINGS OF VENDORS

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ANODES
A & L Underground Inc.
Allied Corrosion Industries Inc.
Ark Engineering & Technical Services Inc.
Badger Daylighting
BGL Asset Services LLC
Border States
Brance-Krachy Co. Inc.
Corrosion Control Central Inc.
Corrosion Control Products Co.
Compro, an Agion Co.
Deep Water Corrosion Services
Electrochemical Devices Inc.
Energy Control Systems Inc.
Energy Economics Inc.
Flexipe Systems
Galvotec
International Corrosion Control Inc.
KS Energy Services LLC
Loreasco Inc.
Lyell
Mears Group Inc.
Mesa
MRC Global Inc.
Ningbo YuYu Cathodic Protection Materials Co. Ltd.
NPL Construction Co.
Pipeline Accident Prevention Service
Plakso, The Pipe Line Development Co.
Pro-Kote Engineering & Supply Inc.
Ramvac Vacuum Encounters
Step-Ko Products LLC
Stuart Steel Protection Corp.
Step-Ko Products LLC
Ramvac Vacuum Encounters

APPLIANCE WARRANTY SERVICES
Pivotal Home Solutions
Sentix Technologies

ARCHAEOLOGY
Commonwealth Cultural Resource Group Inc.
Cultural Resource Analysts Inc.
GAI Consultants
KLI
MidHarden, a GoodEye Co.
R. Christopher Goodwin & Associates
WSA Inc.

AUDITING SERVICES
Arcadis
Brooam Engineering (Wavespec)
Breakthrough Results LLC
Celtery Consulting Group
Concentric Energy Advisors Inc.
Continuum Capital
Gannett Fleming Valuation and Rate Consultants LLC
Hunter McDonnell Pipeline Services Inc.
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Mariano Dewatering
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PolyPhaser | Transactor
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Advantis LLC
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Althoven
Apogee Interactive Inc.
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Border States
Bugs & Systems International

B

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Cameron Measurement Systems Division
Chromatotec Group
Cleveland
COSA+Anthrax
Cylotronic Valve Co.
Cyphert Software (a Weatherford International Co.)
Dickson
Emerald Innovations Inc.
Engineered Software Products Inc.
ENSGlobal
Flow-Cal Inc.
Flux Sentinel Automatic Gas
Fireplace Damper
Gas Analytical Services
GE Energy Management
Geospatial Corp.
Ifon Inc.
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Konica
PowerGen International
Pronex Inc.
Puffer Sleeves LP
Quorum Business Solutions Inc.
Schneider Electric
SealWing Design Corp.
Sensus
Siemens
Slab Corp.
SunGuard Energy Systems
Telecom Inc.
Texas Energy Control Products Inc.
Total Safety
Trilliant Networks Inc.
Tri-Check Inc.
Vertex Business Services
Wagware

BILLING SYSTEMS
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Accenture Business Services for Utilities
AMS Billing Services
Associated Systems Inc.
Billingline Payment Solutions
Blustrust

BRIGHTSIDE SOLUTIONS
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Continuum Capital

BOILERS
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Brueck Catbytic Heaters
Chromalox
Coorsteck Igniter Products
ECI International
Get Industries Inc.
International Comfort Products
K&W International
K&W International (prev. Advance Fabrication & Measurement LLC)
L Holman Corp.
Matrix Service Co.
NEUCO — New England Utility Constructors Inc.
Pioneer
PowerGen International
Rinnal Corp.

BROWSERZ
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Sensus
Sidel Systems USA Inc.

BUILDINGS
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Consolidated Analytical Systems Inc.
Palmar Modular Buildings LLC
Shelter Works
Trachte Inc.

BUSINESS MANAGEMENT SYSTEMS
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Continuum Capital
Doe2File Inc.
Fiserv
GE Oil & Gas
geoAMPS
IBM
Micon Inc.
NSF International
PI Confluence Inc.
Qinqi
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SEDC
Tri-Point Technology Inc.

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MaxTel North America Inc.
Neptica
Quantum Services
TelePath Corp.

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Alliance One Receivable Management Inc.
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Arcos LLC
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Contact America
Convergesys Corp.
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Enhanced Recovery Co. LLC
Entegco Co.
Fernald Inc.
Fiserv
GC Services
Harris & Harris Ltd.
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CP Test Services-Valvco Inc.
Deep Water Corrosion Services
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DIV Columbus
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**SUPERVISORY CONTROL AND DATA ACQUISITION**

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SAFETY

Dominion East Ohio Partners with Veriforce® to Improve Management of Contractor Safety

For Dominion, one of the country’s largest producers and transporters of energy, safety is the number one core value. Michael Donahue, Manager of Safety and Training for subsidiary Dominion East Ohio Gas, underscores the company’s attitude:

“We want our workers to go home the same way they came to work – with no injuries – each and every day.” In addition to its ongoing business of supplying natural gas to 1.2 million customers, Dominion East Ohio is engaged in a 25-year, multi-billion dollar program to replace 5,500 miles of bare steel and cast iron pipeline infrastructure in the state of Ohio. Throughout all of its work, the company takes pride in its continuing focus on putting in place robust safety programs.

An AGA session on contractor safety, however, prompted Donahue to consider that there might be a gap in their safety program. The AGA speaker highlighted the importance of a company’s contractors when looking at efforts to improve safety. While Dominion East Ohio rigorously follows operator qualification requirements for contractors, Donahue realized the company had very little insight into its contractors’ safety profiles. Gaining an understanding of contractor safety practices became the next safety improvement priority.

When considering how to get a handle on contractor safety, Donahue had a pretty good idea where to look for assistance. Dominion East Ohio had an established, productive relationship with Veriforce, a provider of compliance solutions for the energy & utilities industry. The company already relied on VeriSource™, a compliance management software solution from Veriforce, as well as Veriforce services to help in managing its OQ and drug and alcohol programs. Donahue reached out to explore what capabilities Veriforce could offer to manage contractor safety.

First, Dominion East Ohio needed a solution that would enable the company to collect information on contractors’ safety programs and performance for prequalification purposes and then track their safety status on an ongoing basis. It was also important to the company to be able to adapt its successful employee safety observation process for use with contractors. Through the employee observation process, supervisors observe employees on the job, actively coaching them on observed unsafe behaviors and commending them on the things they are doing well – for example, taking the extra time needed to do things right.

Veriforce responded with a solution that met all of these objectives. With the aid of VeriSource Safety Compliance Management software, Dominion East Ohio is able to provide its field inspectors with a safety observation checklist specifically designed for use with contractor personnel. Field inspectors can record observations, identified by contractor personnel and date, then upload their observations to VeriSource. By reviewing the observations, Dominion East Ohio staff can easily spot recurring issues (e.g., failure of a contractor’s personnel to wear hardhats) and take appropriate corrective actions.

VeriSource also greatly facilitates the contractor onboarding process. Now, contractors that want to do work for Dominion East Ohio must first submit information on their safety policies, as well as statistics on their safety records. Through the contractor view of the VeriSource web-based application, potential contractors can easily see what they must submit, upload the required information, and verify that they’ve met all requirements.

Dominion East Ohio staff can then review contractor safety policies, check for any OSHA citations, compare contractor statistics against company prerequisites (e.g., EMR of 1 or less), quickly determine whether a contractor meets all safety requirements, and identify which contractors have the best safety performance. For those accepted, the information submitted becomes part of the contractor profile.

In addition, active contractors are required to provide quarterly reports on their safety status. VeriSource gives Dominion East Ohio a central place to track safety performance for all of its contractors, including the reports submitted by contractors and field observation reports. “Along with environmental compliance, technical compliance, and productivity, safety is a key component of the performance metrics we have begun putting together on contractors,” says Gary Penny, Program Development Manager for Dominion East Ohio Gas. “I can see that the data we are able to collect in VeriSource will add valuable additional visibility in managing our contractor resources.” Penny and his team can see safety trends, identify contractors with poor safety practices, and generally make better decisions. VeriSource also enables them to get a consolidated view of contractor status on OQ and drug and alcohol compliance, as well as safety.

Donahue observes that Dominion East Ohio and its peer companies in the AGA are all very serious about contractor safety. “If your contractors are working safely, that’s an excellent reflection on your company and its commitment not only to your employees and customers, but also to the contractors themselves, and to the communities in which you operate.”

Technology is a key tool for helping to fulfill that commitment. According to Donahue, “This has really opened our eyes to where our contractors stand from the perspective of safety. Plus, the processes we’ve put in place put contractors on notice that our company is serious about safety.” With Veriforce support, Donahue and Penny look forward to taking the Dominion East Ohio safety program to the next level.

“I can see that the data we are able to collect in VeriSource will add valuable additional visibility in managing our contractor resources.”

–Gary Penny, Program Development Manager, Dominion East Ohio Gas
ENGINEER

The Engineer, under supervision, performs a variety of engineering work, involved in the design, development, implementation and analysis of engineering functional activities.

ESSENTIAL DUTIES/RESPONSIBILITIES

1. With direction, performs a variety of work in the planning, design, monitoring and evaluation of storage, meter and regulator facilities, gate/compressor stations, distribution and/or transmission pipeline projects.

2. Performs assigned engineering and construction inspection duties. Assists in assessing infrastructure replacement projects to determine the projects’ cost estimates, designs and specifications.

3. Attends information meetings and routine inspections with government and environmental regulatory agencies.

4. Performs system analysis, flow modeling and recommends process improvements.

5. Performs introductory level project management activities such as bid reviews, cost estimates, design specifications, purchase and work orders.

6. Performs calculation and/or maintain documents for regulatory code compliance and department records.

7. Prepare special reports and presentations as necessary.

8. Develops company standards and work procedures.

9. Supports various project teams for the improvement of company systems/technology.

10. Maintain professional and technical knowledge by attending educational workshops, reviewing professional publications and establishing personal networks.


MINIMUM QUALIFICATIONS

• Bachelor’s degree in engineering or related technical field or equivalent.

• Good organizational and analytical skills, with the ability to evaluate data, compile statistics and prepare reports, graphs, tables and charts.

• Good communication skills, both oral and written, in order to deal effectively with a variety of interpersonal relationships and situations.

• Ability to learn various personal computer business and engineering software applications presently used by the company.

• Professional Engineer (PE) license preferred.

• Must maintain a positive work atmosphere through effective interactions and communications with co-workers, customers and management.

• Must maintain a safe environment for co-workers, customers and the public through adherence to established safety standards and timely reporting of potential hazards.

• Must adhere to company policies and procedures related to the code of business ethics, compliance, responsible use of company assets and all applicable state and federal laws.

• Ability to travel as required.

• Valid driver’s license pursuant to company policy.

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OPERATIONS MANAGER – DISTRIBUTED OPERATIONS

Responsible for directing area utility operations in a fiscally efficient and effective manner while maintaining a safe, reliable gas distribution system.

RESPONSIBILITIES:

• Establish the area operating budget for utility operations and manage area performance to meet the budget.

• Manage area maintenance capital budget to ensure effective use of dollars while maintaining the integrity of the distribution system.

• Develop operations goals consistent with area and divisional goals and direct the operation to meet these goals.

• Develop a strong supervisory team and promote individual growth, cooperation and development among the operating section employees.

• Support the area expansion of facilities by directing operations in support of the marketing goals.

QUALIFICATIONS

• Bachelor’s degree – engineering or business

• Working knowledge of GOM, MSP and CPG OPM

• DOT and PUC regulations

• Knowledge of gas distribution system operating procedures

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PROJECT SPECIALIST – COMPLIANCE & QUALITY ASSESSMENT

The Gas Quality Assurance section of Gas Compliance & Quality Assurance seeks to recruit a highly motivated, dedicated and forward-thinking professional to join its management team. The successful candidate must promote a team-spirited work environment in support of the company’s values and mission.
The Project Specialist will be responsible to:

- The successful candidate must possess excellent interpersonal, oral and written communication skills, and must be able to effectively interact with various departments in a positive and constructive manner at all levels. S/he must have strong analytical and computer skills. Must be flexible in handling multiple work assignments, changing priorities and different work schedules in a fast-paced environment and be able to meet deadlines. The successful candidate must be able to exercise independent judgment and render sound business decisions. The candidate must possess a bachelor’s degree in engineering, business, education, quality management, or a related field, with 3 years’ applicable work experience; or an associate’s degree in a related field with 5 years’ applicable work experience. Must possess a minimum of 3 years’ work experience related to compliance, quality assurance/quality management, gas operations, data analytics and/or regulatory interpretation.

RESPONSIBILITIES

The Project Specialist will be responsible to conduct objective quality assurance reviews of work in Gas Operations to improve work practices and mitigate potential violations of internal requirements as well as federal, state, and city codes. S/he will develop a professional relationship with the Gas Operating Areas, Gas Engineering and other departments that interact with Gas, as well as our regulators. The successful candidate will issue reports that review compliance with regulations, company procedures and specifications by Gas Operations and other departments that perform work with Gas Operations, and provide recommendations for corrective actions, as necessary. The successful candidate will also investigate incidents, participate on various committees and issue reports, as required. Review proposed specification changes for adherence to procedures and code compliance. The candidate will be expected to conduct reviews during different parts of the day or evening or weekends as the job warrants.

Interested in applying to this position, please click on the below link and apply online:

apps.coned.com/careers/careers/list.asp?c=19

Equal Opportunity Employer: Consolidated Edison is an equal opportunity employer and, as such, affirms in policy and practice its commitment to recruit, hire, train and promote, in all job classifications, without regard to race, color, creed, religion, sex, gender, age, national origin, marital status, sexual orientation, gender identity, gender expression, citizenship, eligible veteran status, disability or any other status protected by law.

We will only contact candidates who are being considered for an interview.

SECTION MANAGER – COMPLIANCE & QUALITY ASSESSMENT

JOB CODE: 16-0662

The Gas Quality Assurance section of Compliance and Quality Assessment seeks to recruit a highly motivated, enthusiastic, knowledgeable and dedicated professional to join its management team. The Section Manager develops and coordinates programs to assess and improve Gas Operations work practices. Coordinates activities in support of the operating organizations to verify compliance with regulations, procedures, specifications and expectations associated with the planning, construction, and operation of Con Edison gas facilities. In collaboration with the Quality Control Section Manager, the Quality Assurance Section Manager will develop an annual risk-based program that conducts quality assurance reviews to improve work practices and mitigate potential regulatory or code violations relating to gas pipeline safety or other gas operations-related work. The successful candidate must have a bachelor’s degree with 8 years of related experience or a master’s degree with 6 years related experience. Degree in engineering, quality management, quality assurance, communications, project management, business, information technology, regulatory compliance or related course work preferred. Must have experience with investigative techniques and Root Cause Analysis approaches. Must have three to five years’ experience managing a team. Must possess excellent written and oral communication skills and strong computer skills (MS Word, Excel and PowerPoint). Must have the ability to interact with all levels of union and management personnel. Must possess demonstrated leadership abilities. Knowledge of Gas pipeline safety regulations and requirements and an understanding of specifications/procedures relating to gas and construction work preferred. A minimum of three years’ experience in a Quality Assurance/Quality Management environment is preferred. Six Sigma or other Quality Assurance/Quality Management certification preferred. Experience with ISO Quality standards and/or API Recommended Practice 1173 preferred. Knowledge of the various database and electronic systems Con Edison uses to design and manage gas pipeline work preferred.

Master’s degree is preferred.

RESPONSIBILITIES

Ensure implementation of company safety, health and environmental programs for employees whose work is directed. Ensure that safe work practices are followed and the environment is fully protected in accordance with company policy and governmental regulations. Commitment to the Way We Work principles, and adheres the company’s standards of business conduct and other company procedures and practices and makes recommendations for improvements. Oversees the investigation and reporting associated with gas pipeline incidents, and performs special studies relating to work quality, as requested, by executives. Tracks and analyzes trends to identify areas of focus or concern. Verifies that safe work practices are followed and the environment is fully protected in accordance with company policy and governmental regulations. Develops a plan and manages the adoption and implementation of API Recommended Practice 1173. Develops Quality Assurance Key Performance Indicators (KPIs) that will assist Gas Operations to define and measure progress toward organizational goals. Works with other Con Edison Quality Assurance groups to standardize Con Edison’s approach to Quality Assurance and Quality Management. Creates and sustains a workplace environment that fosters inclusion, leadership, professionalism, safety, operational excellence, integrity and courtesy. Motivates and develops team members, and provides
constructive and timely feedback to improve performance. Assists in the sections budgetary planning and assumes responsibility for working within budget. Perform other related tasks and assignments as required.

Interested in applying to this position, please click on the below link and apply online:

apps.coned.com/careers/careers/list.asp?c=19

Equal Opportunity Employer: Consolidated Edison is an equal opportunity employer and, as such, affirms in policy and practice its commitment to recruit, hire, train and promote, in all job classifications, without regard to race, color, creed, religion, sex, gender, age, national origin, marital status, sexual orientation, gender identity, gender expression, citizenship, eligible veteran status, disability or any other status protected by law.

We will only contact individuals who are being considered for an interview.

TECHNICAL SPECIALIST
This position is in the Electric & Gas Asset Strategy organization and is responsible for providing technical support services to field operations. Evaluate, test and select new tools and equipment for use by over 700 service technicians throughout the business. Coordinate evaluation and testing of tools and equipment to ensure operating according to specifications. The position is required to solve technical problems, investigate and perform root cause analysis of equipment/material failures and develop corrective action plans. Update and revise technical manuals based on policies and procedures, manufacturer information and industry standards and practices. Participate on teams to develop new products and services. Assist technical training in determining training needs and participate in development of training courses. Set methods for performing updates of Technical Support database programs (i.e., Pricing, Parts Manual, Servicepersons Instruction Manual, ASB Website, etc.). Coordinate rollout of new technology programs with various departments within the company. Participate on trade associations that influence industry codes, standards and practices.

ESSENTIAL:
• Minimum of 3–5 years of appliance service experience required.

• Excellent oral and written communication skills, ability to problem solve and team oriented.
• BS degree in science or technology or equivalent experience.
• Providing appliance service/repair troubleshooting guidance.
• Developing & delivering technical training related to appliance service and emergency response work activities.
• Developing and delivering technical training presentations covering critical safety subjects/lessons learned/solutions.
• Demonstrate knowledge and understanding of corporate goals, policies and procedures.
• Demonstrates openness to change.
• Demonstrate ability to perform project management and handle multiple tasks simultaneously.
• Ability to understand complex engineering systems/facilities drawings/appliance wiring diagrams and specifications.
• Ability to build strong relationships with key stakeholders (e.g. both external and internal).

DESIRED:
• Appliance Service experience, advanced computer skills, technical problem solving experience.

Please direct all responses to nekisa.norman@pseg.com.

UTILITIES TECHNOLOGY ENGINEER
Utilities Technology Engineer UGI Utilities Inc., natural gas and electric utility serving over 600,000 customers in Pennsylvania, is seeking an experienced Engineer to join our team in Reading, PA. The foundation of our success lies in the strength of our 1,500-plus employees who serve our customers to ensure the safe and reliable delivery of energy every day. As a company, we are very community focused and proudly support many community organizations in our service areas.

This position offers an opportunity to be UGI’s expert on all new natural gas technologies, such as Combined Heat & Power (CHP) and Compressed Natural Gas (CNG), and support the sales team to promote these new technologies through program development, training and implementation.

THE INDIVIDUAL WILL BE PRIMARILY RESPONSIBLE FOR:
• Provide technical support to sales team related to new natural gas technologies, including CHP, CNG, natural gas vehicles, power generation, etc.
• Develop and implement programs to promote new technologies in the residential market as well as in the commercial and industrial markets.
• Provide technical input for regulatory filings, including PUC filings and Energy Efficiency and Conservation (EE&C) plans.
• Develop and execute initiatives to build external relationships with industry professionals and key specifiers such as the Energy Solutions Center (ESC), Association of Energy Engineers (AEE), American Gas Association (AGA), and other natural gas distribution companies.

QUALIFIED CANDIDATES WILL POSSESS:
• Bachelor’s degree, preferably in engineering
• Work experience in engineering and/or energy industry
• Knowledge of gas technologies, gas equipment, combustion, energy conservation and other general industry knowledge
• Highly motivated to learn with ability to work independently
• Ability to multitask and work well under pressure
• Strong analytical and creative thinking skills

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The gas and pipeline industry is facing an unprecedented level of change, requiring a shift in the way organizations approach the training of field workers. Forty to 50 percent of the industry’s employees are eligible to retire in the next three to five years, and each retirement typically causes a ripple effect of two to three employee moves or new hires to backfill, multiplying the required investment in training. At the same time, growing regulatory pressure is creating more job complexity and training expectations and increasing the risks of noncompliance.

Meanwhile, as the nation’s infrastructure undergoes replacement and expansion, field workers must be equipped to service and maintain an ever-growing list of heterogeneous pieces of equipment. And the continuous evolution of technology is changing how employees do work at unforeseen rates.

All of this means that field workers will require a significant training investment. The historic apprenticeship model for training new workers created a relatively slow learning curve and required a long time for employees to reach full productivity. Given today’s competitive and changing environment, the ultimate goal of a successful training program must be to accelerate learning and to achieve, confirm and sustain mastery in employees so that they are able to support the needs of the business and become valued members of the team sooner rather than later.

For example, Pacific Gas & Electric, NiSource, Dominion East Ohio and other utility and energy companies are transforming the way they train. These companies have emphasized:

**Alignment:** They are aligning training programs to the organization’s strategic priorities and shifting old-school thinking. Instead of looking at training as an expense that needs to be managed, they are viewing it as a strategic competitive advantage.

**Process vs. Task:** They are training employees to competently do the whole job, instead of focusing only on technical tasks or simply passing tests to meet compliance obligations.

**Integration:** They are designing, developing and delivering training programs that accelerate learning. This includes increased integration of role-based classroom training, structured on-the-job training and the innovative use of technology to provide employees with the information they need when and where they need it—on the job.

**Measurement:** They are measuring training effectiveness through business outcomes rather than training transactions (“butts in seats”) or test scores.

### A Closer Look: Tiered, Task-Based Training at NiSource

NiSource’s new training programs are organized by groups of job activities so that employees are trained in distinct tiers on specific tasks needed by the business. Each tier of training includes formal training, followed by coaching and assessment in the field. Once an employee completes a tier, he or she is able to perform those tasks independently. The business can then decide whether to move that employee to the next tier of training, depending on workload and specific skill gaps within the organization.

This structured approach to training equips field workers to do their jobs more comprehensively and independently earlier in their careers, because they have been trained and coached on specific job tasks. For example, NiSource trains plant employees on service line work first, enabling them to perform much of the routine work required of them earlier in their careers and saving the more complicated main line work for later in their development.

One important business benefit that NiSource has achieved through this approach is being able to connect training records to the work dispatch process. Schedulers can see tier designations for field employees and are able to assign work based on an employee’s level of competence with specific job tasks. This enables the business to effectively assign work and ensure that employees are operating effectively and safely based on individual capabilities and development tiers.

### Accelerated Bootcamp Training

One of North America’s leading transmission and storage companies is building and implementing an accelerated training program to support its massive investments in new assets and technology and to replace the outflow of retiring field employees.

Many of its new hires have little previous exposure to jobs in the natural gas industry. This company uses Pipeliner Bootcamps to accelerate employee development. These weeklong courses provide a broad exposure to the different work that
new hires will perform in the field and reinforce their understanding of performance expectations.

The boot camps include formal training on foundational skills along with hands-on training and practice in the field. To increase retention and knowledge/skills transfer, field training coordinators and supervisors work closely with new pipeliners who come out of the program to set expectations and provide opportunities to practice their skills on the job.

Under the old model, pipeliners required an average of two to three years of training and observation to reach proficiency. With the new structured training approach, pipeliners are expected to reach proficiency and be fully productive within one year. This will save the business approximately 120 days of productive work per employee over two years.

**FINAL THOUGHTS**

A structured approach to training accelerates learning through a combination of instructor-led and on-the-job training, performance support and continuous coaching. As a result, field workers are able to become more skilled and productive in a shorter amount of time. This not only equates to a significantly greater number of productive days earlier in an employee’s career but also a substantial return on investment for the business.

*John Benoit is the vice president of Energy & Utilities and Amy Borgmeyer is a senior consultant, both at Mosaic, a national training and workforce consulting firm that focuses on utility and oil and gas industries. Benoit has 20 years of experience in gas transmission, and Borgmeyer is the focus area lead for Mosaic’s field operations training service offering.*

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**NEXT ISSUE**

**SEA CHANGE: LNG AND MARINE**

From cruise ships to containerships, as the world continues to move toward an international emission standard, liquefied natural gas is asserting its role as a marine transportation fuel.

**INFRASTRUCTURE AND EXPANSION**

In our annual report, we review major pipeline expansion and replacement activity across the nation.

**BURNER TIPS: LEGAL**

With the recent Federal Communications Commission approval of automated call and text message guidelines, Mike Murray, deputy general counsel at the American Gas Association, explains what this new ruling may mean for utilities.
SAFE FROM THE START

As Southern Co. CEO Tom Fanning rang the bell to end the day’s trading, Atlanta Gas Light lead crewman Robert Brown looked down at the floor of the New York Stock Exchange and smiled. “It was a great experience,” said Brown. “I got to meet a lot of nice people and learned a lot.”

Brown was invited to join Southern Co. executives in New York City to honor his unique accomplishment: 43 years on the job without a single safety incident—a feat made even more impressive considering the fact that Brown drives a company vehicle every day.

Brown says when he goes into the field, he always keeps his mind on the job.

He began his career at age 18, and he tells new employees that when he started at Atlanta Gas Light, he knew he had the best job in the state of Georgia. “I knew I would be working here for the rest of my life,” said Brown.

His years of experience and spotless safety record make Brown a perfect choice to mentor new employees. “The older guys taught me, and now I want to give the younger folks everything I’ve learned,” he said.

He takes his role as a safety advocate seriously. “It’s all about staying focused,” said Brown. “Don’t be in a hurry. Take your time and make sure you look at everything around you. If something doesn’t look right, don’t do it.”

PHOTO COURTESY OF SOUTHERN CO.
### Facility Office Locations

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- Regulator Station Inspections
- Emergency Response
- Land Surveys
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