



The natural gas
utility workforce in
a decarbonizing world

Natural gas has played an important role in reducing US carbon emissions over the past several decades, by replacing coal and balancing intermittent renewables in power generation, and by more efficient and direct delivery to homes and businesses. While the power sector continues to drive an economy-wide decarbonization based on a record deployment of renewable electrons, natural gas utilities are uniquely positioned to deliver cleaner molecules than today's natural gas and other fossil fuels to residential, commercial, and industrial customers seeking to lower their emissions. The utilities and their stakeholders are exploring how they can deploy their infrastructure, new technologies, and skilled workforce as an integral part of America's clean energy future while enhancing resilience and maintaining customer choice, at lower cost. What opportunities can natural gas utilities and their workforce seize today to prepare to be more sustainable over the next decade and beyond?

This report explores how natural gas utilities can strategically position themselves for growth, what skills their workforces may need to implement these strategies, and how they can bridge the gap between current and future workforce needs.

The analysis shows that decarbonization is a growth opportunity. Gas utilities can seize it by reorienting their core workforce and infrastructure towards the emerging renewable natural gas (RNG), geothermal, and hydrogen industries. They can further amplify growth by engineering a digital-skill advantage. Finally, ambitious decarbonization strategies can help gas utilities attract the growing talent pipeline they will need to achieve their targets.

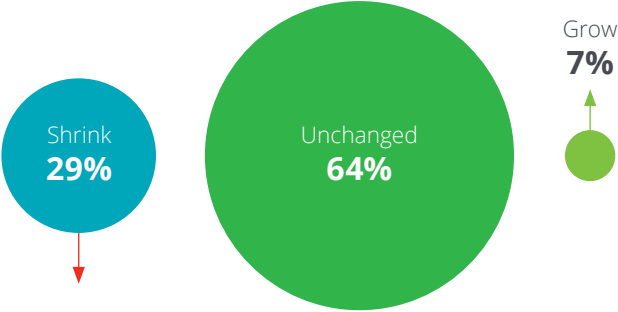
Natural gas utilities engaged in sustainability efforts could see a reversal in business-as-usual workforce trends

Natural gas utility workforce trends do not show growth in a business-as-usual scenario. Natural gas distribution employment grew just 1.3% between 2010 and 2020, while an analysis of job postings in the natural gas distribution sector over the past seven years shows little change.¹ The US Bureau of Labor Statistics projects natural gas distribution employment will shed thousands of jobs over the next decade.²

In a survey of 59 American Gas Association (AGA) and American Public Gas Association (APGA) member utilities, the majority (64%) anticipate that the overall size of their workforce would remain unchanged if policies in their territories were to require steep reductions in greenhouse gas (GHG) emissions. And more than a quarter (29%) anticipate that the workforce would shrink. Only 7% of those surveyed responded that the workforce would grow (figure 1).

Figure 1. Most surveyed gas utilities anticipate an unchanged or shrinking workforce amid decarbonization (Percent of respondents who selected each option)

If emissions policies in your territories were to significantly change, will your workforce:

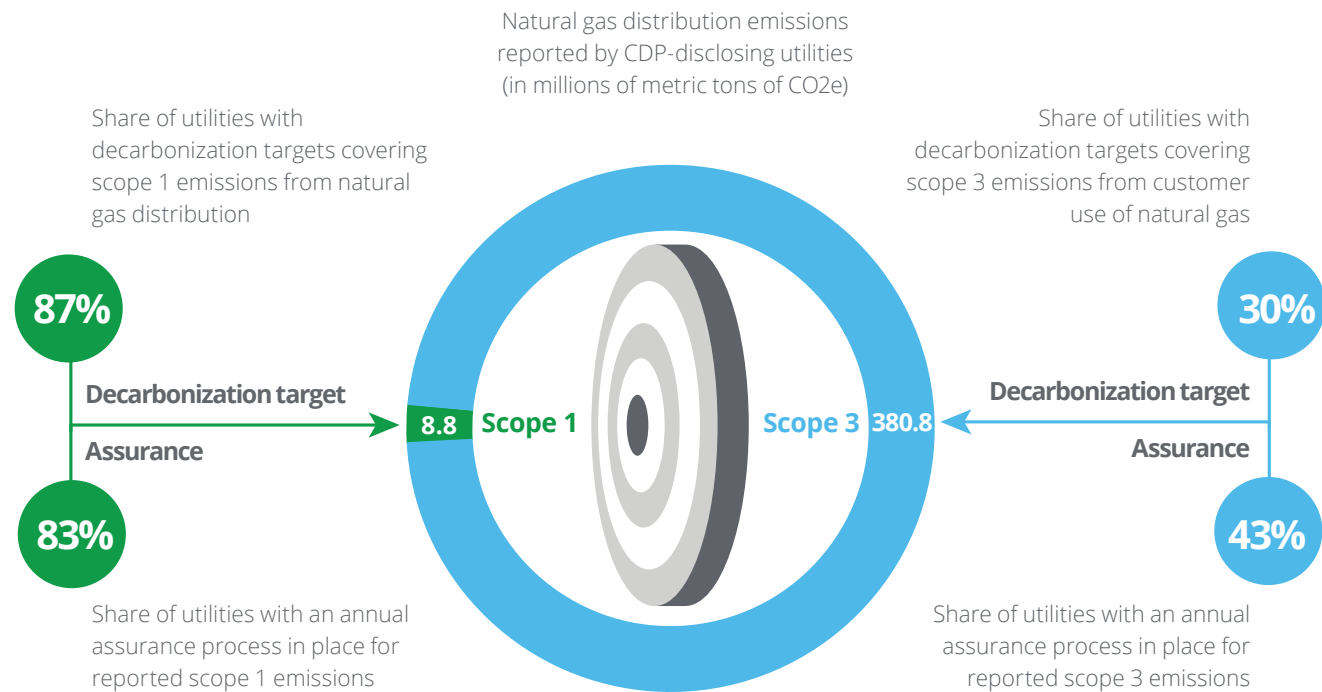


Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey

These trends could indeed continue if decarbonization policies outpace utility strategies. However, our analysis shows that efforts to lower emissions could lead to workforce growth. Ambitious federal, state, customer, and utility net-zero targets are propelling nascent industries at the intersection of energy and other sectors. The rising renewable natural gas (RNG) and green hydrogen industries could turn the tide for the natural gas utility workforce, assuming regulatory support for new pathways to reduce GHG emissions. Under the RNG Coalition’s Sustainable Methane Abatement and Recycling Timeline (SMART) initiative and the 2030 scenario in the Fuel Cell & Hydrogen Energy Association’s Roadmap to a US Hydrogen Economy report, our analysis estimated that more than 12,000 new jobs could be created by 2030. Exponentially more could appear by 2050 as natural gas utilities expand to new customer segments.³

With this in mind, how are natural gas utilities looking at lower emissions? Each utility is defining and tackling emissions reduction with different toolboxes of disclosures, targets, timelines, scopes, and methodologies (figure 2). Of the 100 largest AGA and APGA member utilities, a third have filed CDP disclosures of their emissions in 2022 either directly or via their municipality.⁴ Their targets range from reductions to net zero and “climate positive”; the timelines range from 2025 through 2050; and the coverage ranges from electric-only scope 1 emissions to electric and gas scopes 1, 2, and 3 emissions. Methodologies to track and verify these emissions also vary. While many electric and mixed utilities have set net-zero targets, these rarely cover the natural gas scope 3 emissions that account for most natural gas utility emissions. Gas utilities with net-zero targets covering scope 3 emissions show the full range of value- and job-creating strategies.

Figure 2. Most utility decarbonization targets do not cover or assure the predominant scope 3 emissions from natural gas distribution

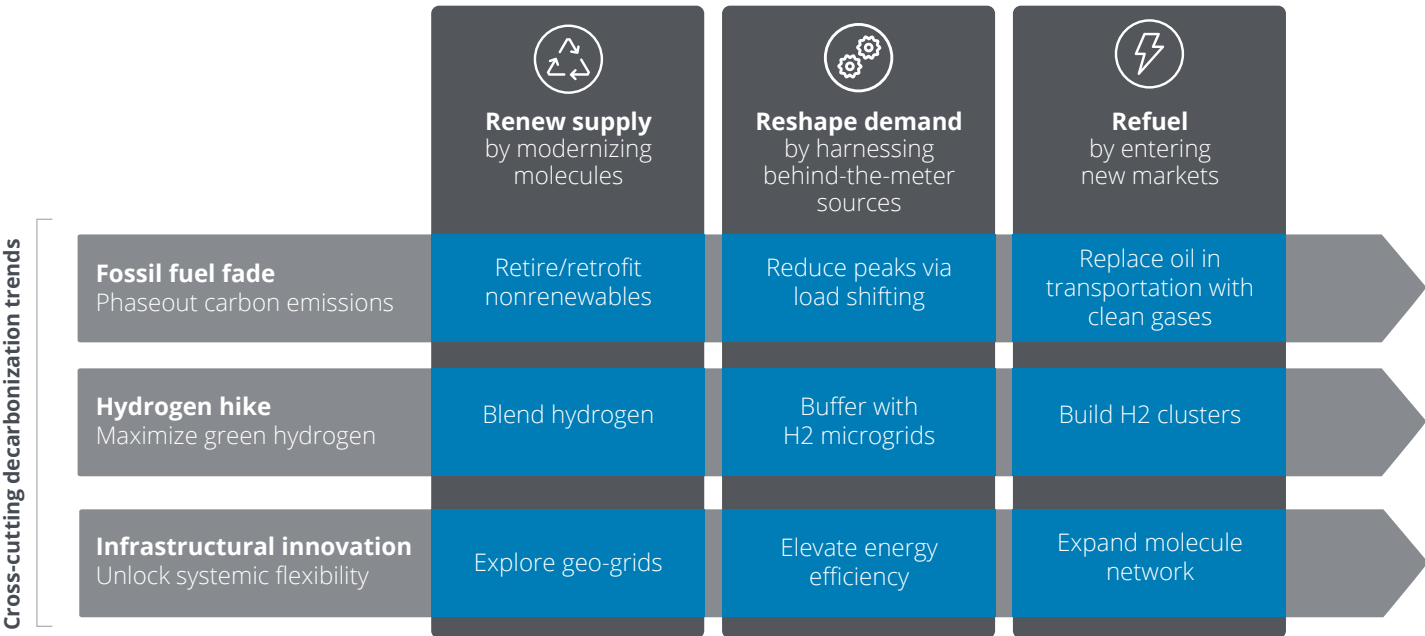


Source: Deloitte analysis of all public, full CDP disclosures from gas and mixed utilities. The sample includes 23 utilities

Deloitte has developed a utility decarbonization framework encompassing three trends and three strategies that gas utilities can pursue to lower their carbon emissions (see our [Utility decarbonization strategies](#) report for the electric utility equivalent). Three cost-cutting trends are shaping gas utility decarbonization opportunities (figure 3).

- Fossil fuel use is being reduced, as carbon emission budgets align with pathways to limit global warming to 1.5 degrees Celsius.
- A hydrogen hike, buoyed by the new federal production tax credit and funding for hydrogen hubs, is making clean hydrogen use more competitive.
- Infrastructure innovation is enabling the gas system to flexibly integrate different molecules into its energy networks.

Figure 3. Renew, Reshape, Refuel: A gas utility decarbonization framework



Source: Deloitte analysis

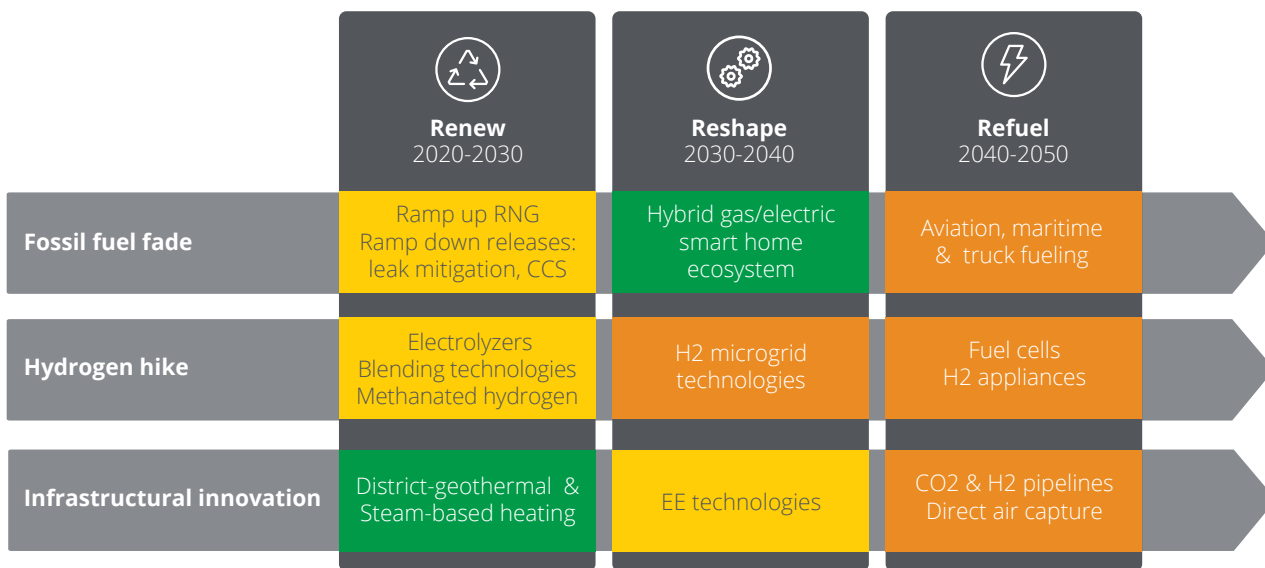
What follows are three value-creating strategies that utilities may want to consider deploying to capitalize on the three trends:

- 1. Renew supply by mainstreaming carbon-free sources.** This involves retiring or retrofitting nonrenewable energy sources by ramping up RNG and ramping down carbon releases by improving leak detection and capturing any emissions. Another alternative to geological gas—hydrogen—can be blended up to 15% with methane without requiring significant pipeline upgrades.⁵ In some cases, community geothermal heat pump networks that pump refrigerants through underground tubing might be more cost-effective as a complement or alternative to replacing old natural gas pipelines for heating and cooling buildings. The **renew** strategy is mostly deployable over the next decade, given that the technologies involved in modernizing molecules are established or evolving (figure 3).
- 2. Reshape demand by harnessing behind-the-meter sources.** Load shifting can help mitigate both electric and gas demand peaks and enable homeowners with hybrid appliances to switch based on price signals. Microgrids can also help shift load

while deploying hydrogen as a distributed energy resource. Significantly expanded energy-efficiency measures could further optimize the network by avoiding the production of any superfluous molecules. Evolving and emerging technologies in the **reshape** strategy could have a greater impact in the 2030–2040 time frame.

- 3. Refuel by entering new markets.** In addition to buildings, net-zero gases could replace liquids in segments that are hard to electrify, such as long-distance road, railroad, aviation, and maritime transportation. Hydrogen deployment to appliances could be achieved through participation in hydrogen hubs bringing together numerous hydrogen producers, distributors, and off-takers in one location. As hydrogen production expands beyond hubs and direct air capture technology matures, natural gas utilities could develop new pipeline networks dedicated to transporting these molecules, in addition to retrofitting existing infrastructure. The **refuel** strategy is still emerging and has a longer runway to mature by 2040–2050, when it is expected to be most needed.

Figure 4. Technology can help close decarbonization target gaps



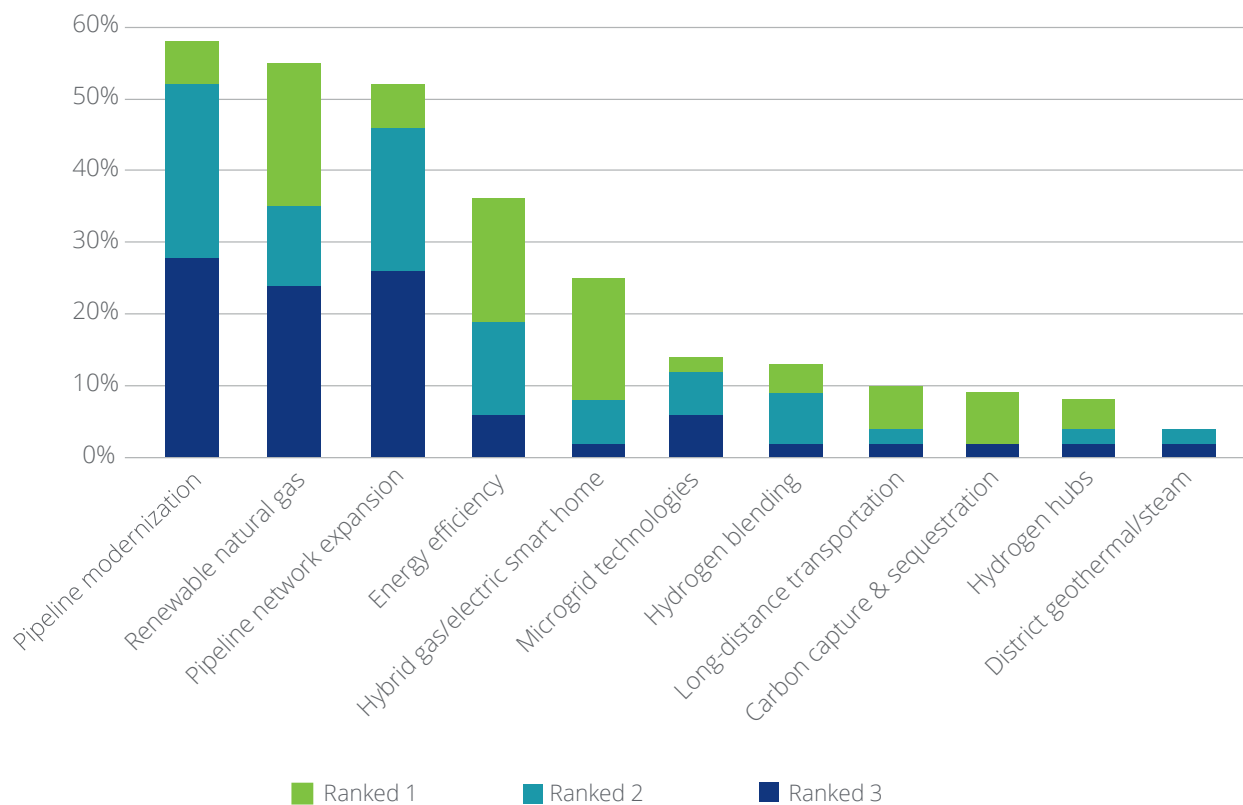
Gap addressable with:
■ Established technologies
 ■ Evolving technologies
 ■ Emerging technologies

Source: Deloitte analysis

Gas utility leaders see some of the greatest opportunity for workforce growth at the intersection of the first trend and strategy to **renew** supply: Most respondents ranked pipeline modernization and RNG among the top three opportunities (figure 5). Most respondents ranked pipeline modernization or network expansion as the single greatest opportunity, while geothermal ranked last. Utilities may not see the expansion of alternative

pipeline networks, such as geothermal, as falling within the remit of their workforce, which would need some retraining to implement district geothermal solutions (figure 6). The other rankings align with the framework, as **refuel** opportunities likely to peak in the 2040s, such as hydrogen clusters, ranked lower than **reshape** opportunities, such as hybrid gas/electric smart home ecosystems, which are likely to peak in the 2030s.

Figure 5. Most surveyed gas utilities see pipeline modernization & expansion and RNG as the greatest opportunities for workforce growth
(Percent of respondents who ranked the strategy among top 3 opportunities)



Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey

Industry perspective on RNG

“There is a huge opportunity for combined utilities to convert their wastewater treatment to anaerobic digesters, capture the gas, and reintroduce it into their system as RNG. This would allow utilities to capture any green therm credits and reduce operational emissions while helping their customers decarbonize.”

Source: APGA RNG task group discussion, October 12, 2022

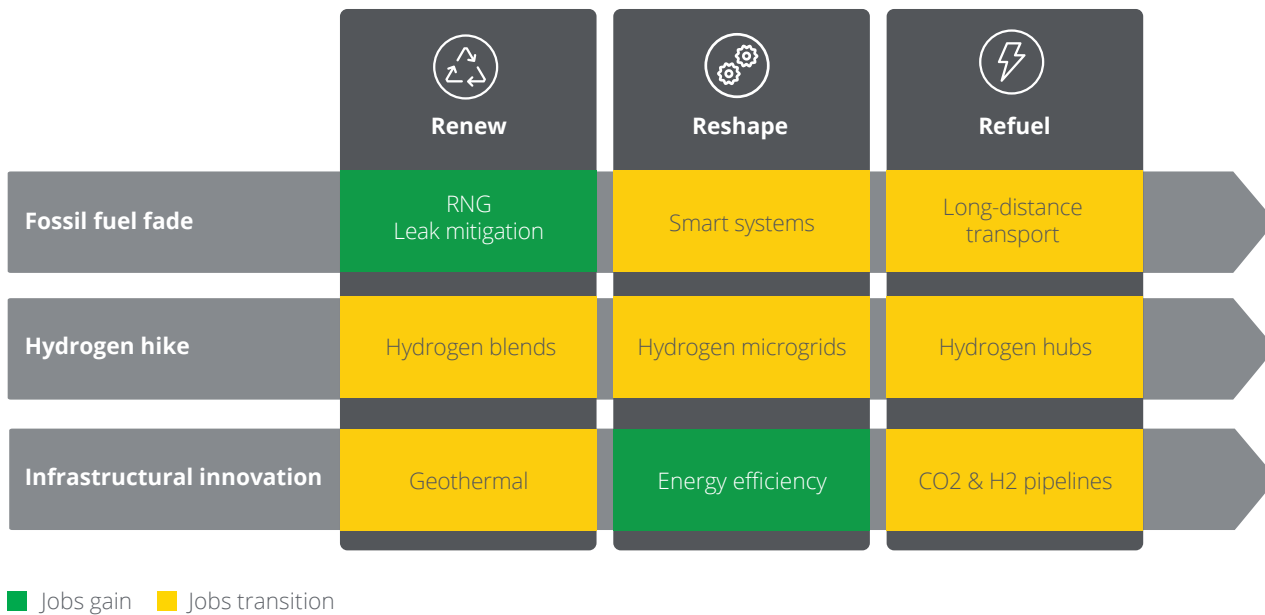
The natural gas utility workforce in a decarbonizing world

Growth strategies will likely also vary across utility type. For example, the workforce of a combination utility could already have the skill sets to implement hybrid gas/ electric smart home ecosystems and a wider range of energy-efficiency programs and microgrid technologies. Utilities with midstream operations might find more workforce synergies in hydrogen hub development, as might utilities serving greater shares of industrial customers. A utility with a largely residential customer base would need a relatively larger workforce to

implement any **reshape** strategy to weatherize and “smarten” thousands of individual homes than ones with greater shares of commercial and industrial customers.

Overall, natural gas emissions reduction strategies do not entail the elimination of any workforce segments, but there will likely be a need to transition the existing workforce to new skill sets, leveraging existing skills and training for new ones (figure 6).

Figure 6. Workforce transition and growth can help enable gas utility decarbonization



Source: Deloitte analysis

Industry perspective on local workforce

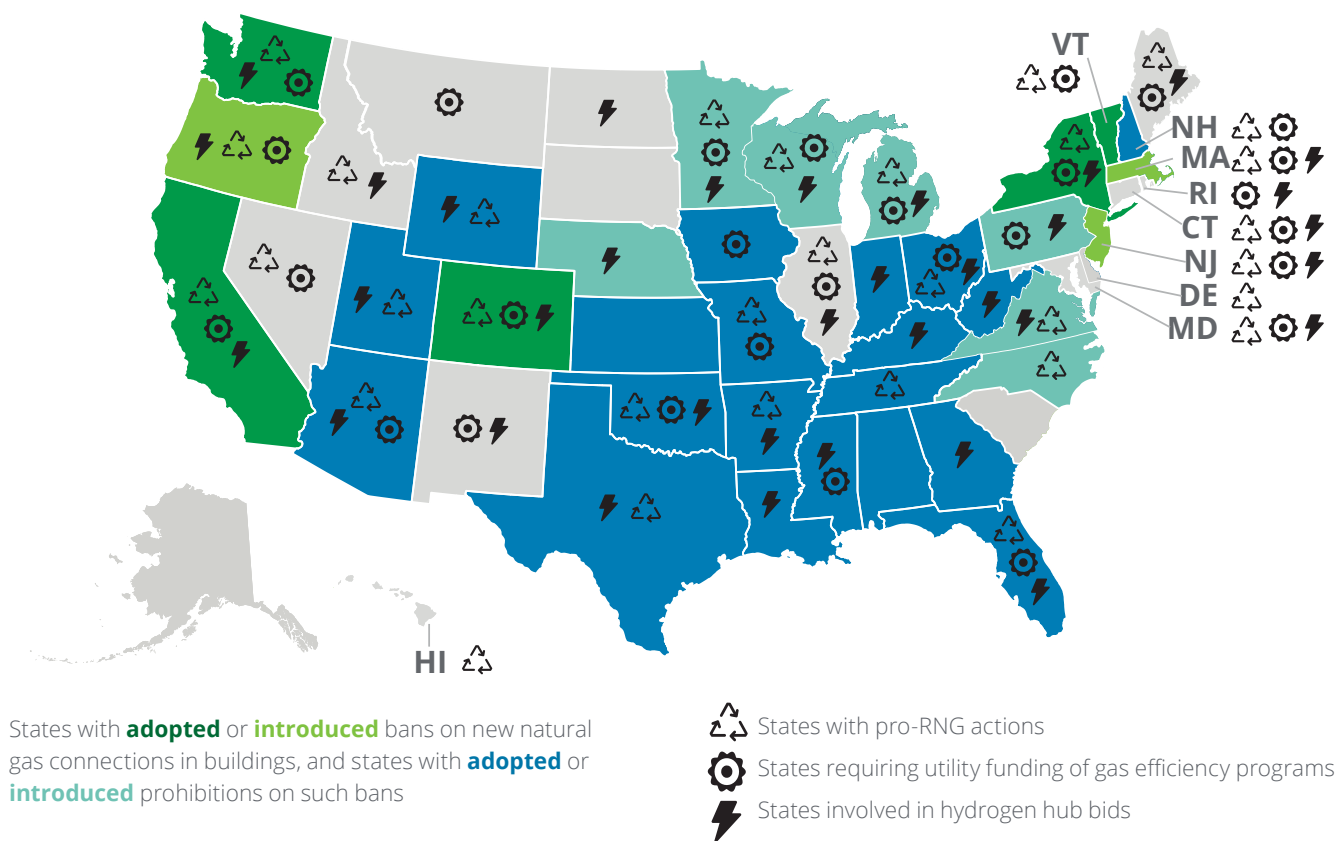
“Utilities offer well-paid and secure jobs to people who want to stay local or return to their hometowns. Sometimes they might be the only game in town for skills that folks would take elsewhere if it weren’t for the utility.”

Source: Interview with Ian Baldwin, Director of Geospatial Excellence, TRC, October 11, 2022




The natural gas sector’s workforce transition may proceed faster in states with supportive policy levers than in states without them. The reverse may also be true: Utilities with clear emissions reduction pathways could more easily garner public, municipal, and state support. Nine states have adopted or are developing local or state bans on connecting new buildings and homes to existing gas infrastructure, while three times as many states have

passed legislation prohibiting such restrictions (figure 7).⁶ In states with bans, the pipeline network expansion that utilities ranked as one of the greatest opportunities for workforce growth will likely be more limited. In these areas, utilities might still achieve workforce growth by focusing on geothermal network expansion and new carbon dioxide (CO2) and hydrogen pipeline development.

Figure 7. Workforce transition opportunities vary by state



States with **adopted** or **introduced** bans on new natural gas connections in buildings, and states with **adopted** or **introduced** prohibitions on such bans

-  States with pro-RNG actions
-  States requiring utility funding of gas efficiency programs
-  States involved in hydrogen hub bids

Source: Deloitte analysis and interviews, S&P Global Market Intelligence, AGA, CSIS

A key enabling policy for the **renew** strategy is support for RNG use in natural gas distribution. Thirty-three states have seen such pro-RNG actions.⁷ These include regulatory actions to approve utility RNG purchases, rate schedules, tariffs and interconnection pilots; and government actions to set mandatory RNG targets, treat RNG as an operating expense, or allow full recovery of capital investment in RNG.

least-cost pathway to emissions reduction, energy and customer bill savings are the primary drivers of these programs.

The 28 states requiring utility funding of natural gas efficiency programs provide some of the most fertile ground for **reshape** strategies.⁸ While efficiency is the

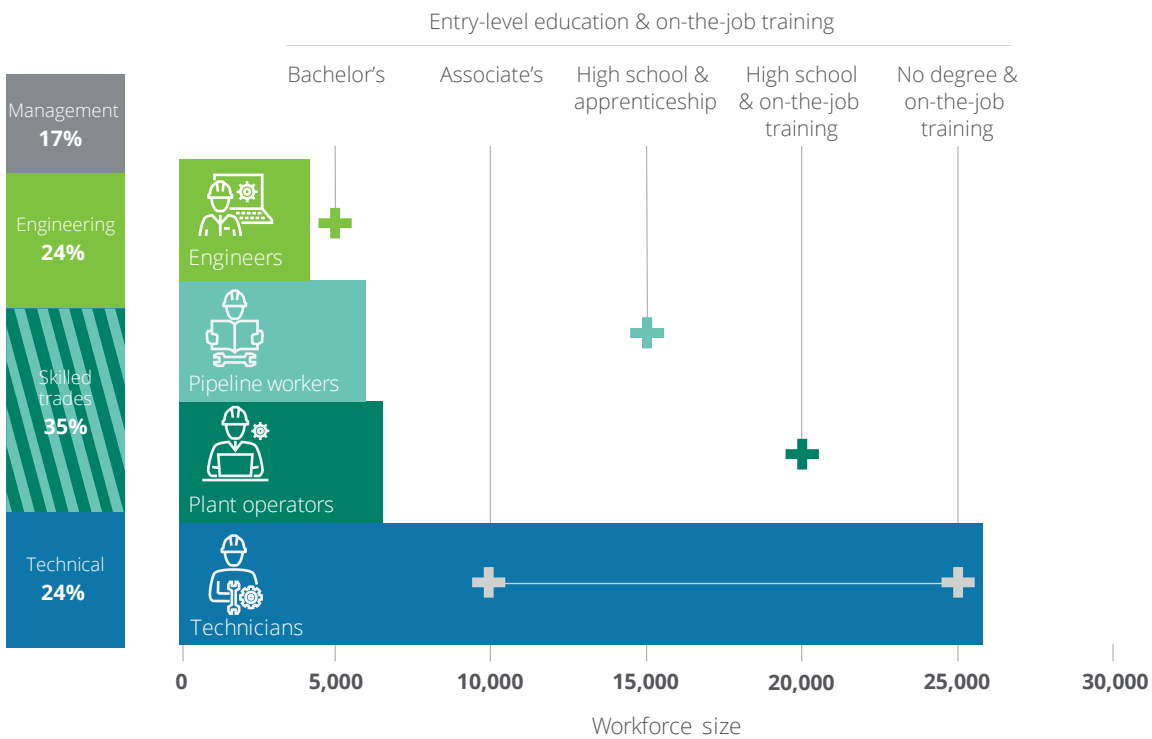
Utilities in states vying to tap into \$8 billion of federal funding to support hydrogen hubs may get a big head start in deploying their **refuel** strategy. Thirty-five states are involved in proposals for the US Department of Energy (DOE)’s clean hydrogen hubs program, and most of the proposals are public-private partnerships. However, only three explicitly target heating as an end use—a key opportunity for natural gas utilities.⁹

Utilities should address workforce skill gaps to seize the sustainability opportunities

Workforce skill requirements are growing in many of the positions that utilities tend to have the most difficulty filling. Burning Glass analysis of skills demanded since 2015 shows that demand for skills in supply chain and logistics; maintenance, repair, and installation; and architecture and construction have grown the most over the past seven years (around 8%).¹⁰

One-third of jobs posted now require maintenance, repair, and installation skills. Within this cluster, jobs requiring equipment operation skills have grown the most. These skills are associated with skilled trades that most surveyed utilities ranked as the most difficult positions to fill, followed by technical and engineering positions (figure 8).

Figure 8. Surveyed utilities are having most difficulty filling skilled trades that require on-the-job training and/or apprenticeship
(Percent of respondents who ranked the occupation as most difficult to fill)

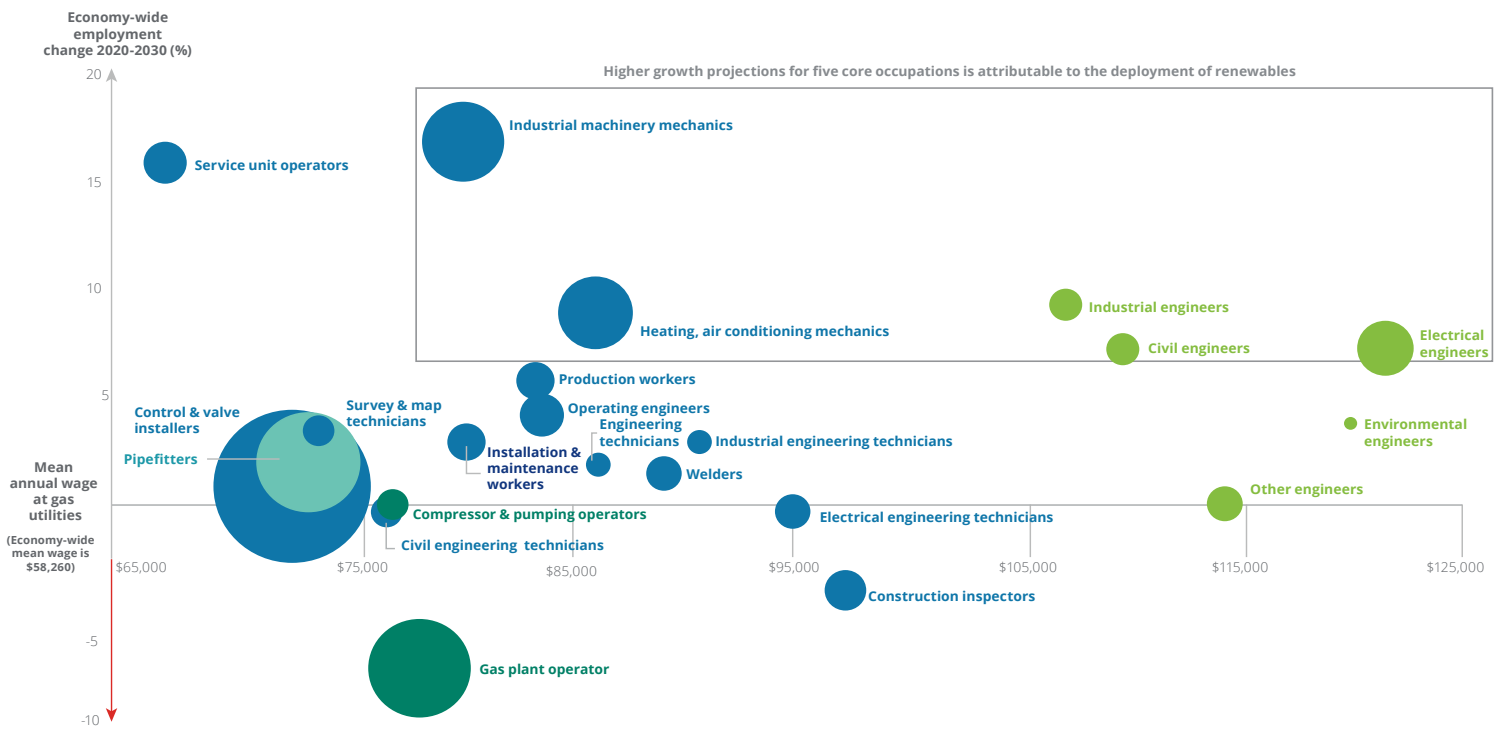


Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey; Deloitte analysis; BLS OEWS; BLS *Occupational Outlook Handbook*

The roles in figure 8 include all the core natural gas utility jobs that account for close to two-fifths of the surveyed organizations' workforce: pipeline workers, plant operators, engineers, and technicians (figure 9). An analysis of occupational employment and wage statistics from the US Bureau of Labor Statistics shows

that average wages for all core jobs are higher than the average for the position across all industries, suggesting other factors are driving hiring difficulties.¹¹ In fact, natural gas utilities rank among the top five paying industries for 60% of core occupations.

Figure 9. Decarbonization could accelerate growth and competition for core gas utility occupations by 2030



Bubbles show current workforce size at natural gas utilities
 Colors denote 4 categories of core occupations:

- Engineers
- Pipeline workers
- Plant operators
- Technicians

Source: Deloitte analysis; BLS OEWS; American Clean Power's 2021 Clean energy supply report

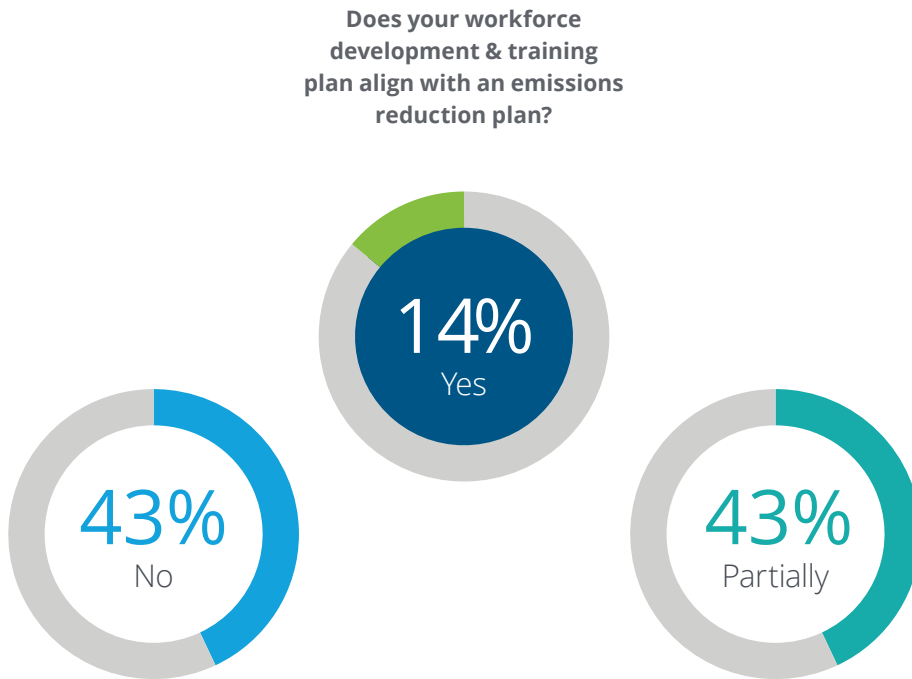
Skill requirements are expected to increase as utilities align to achieve a clean energy future. American Clean Power Association (ACPA) projections show that a massive deployment of solar, wind, and battery storage could increase demand for five core natural gas utility occupations, boosting their projected growth to rates well above the national average through 2030. Meanwhile, the largest-employing core occupations could see accelerated growth from the expanding RNG, geothermal & hydrogen industry. Unprepared utilities could face labor and skill shortages from competition with power

and renewables companies and the emerging hydrogen industry.¹²

Yet 43% of utility respondents have not aligned their workforce development and training plan with an emissions reduction plan. The same share of respondents have partially aligned the two, and 14% have fully aligned them (figure 10).

The core natural gas utility workforce is well positioned to transition to adjacent roles in the three industries taking off over the next decade in the **renew** strategy. Indeed, the natural gas utility workforce shares most

Figure 10. Few surveyed gas utilities have fully aligned their workforce and decarbonization plans (Percent of respondents who selected each option)

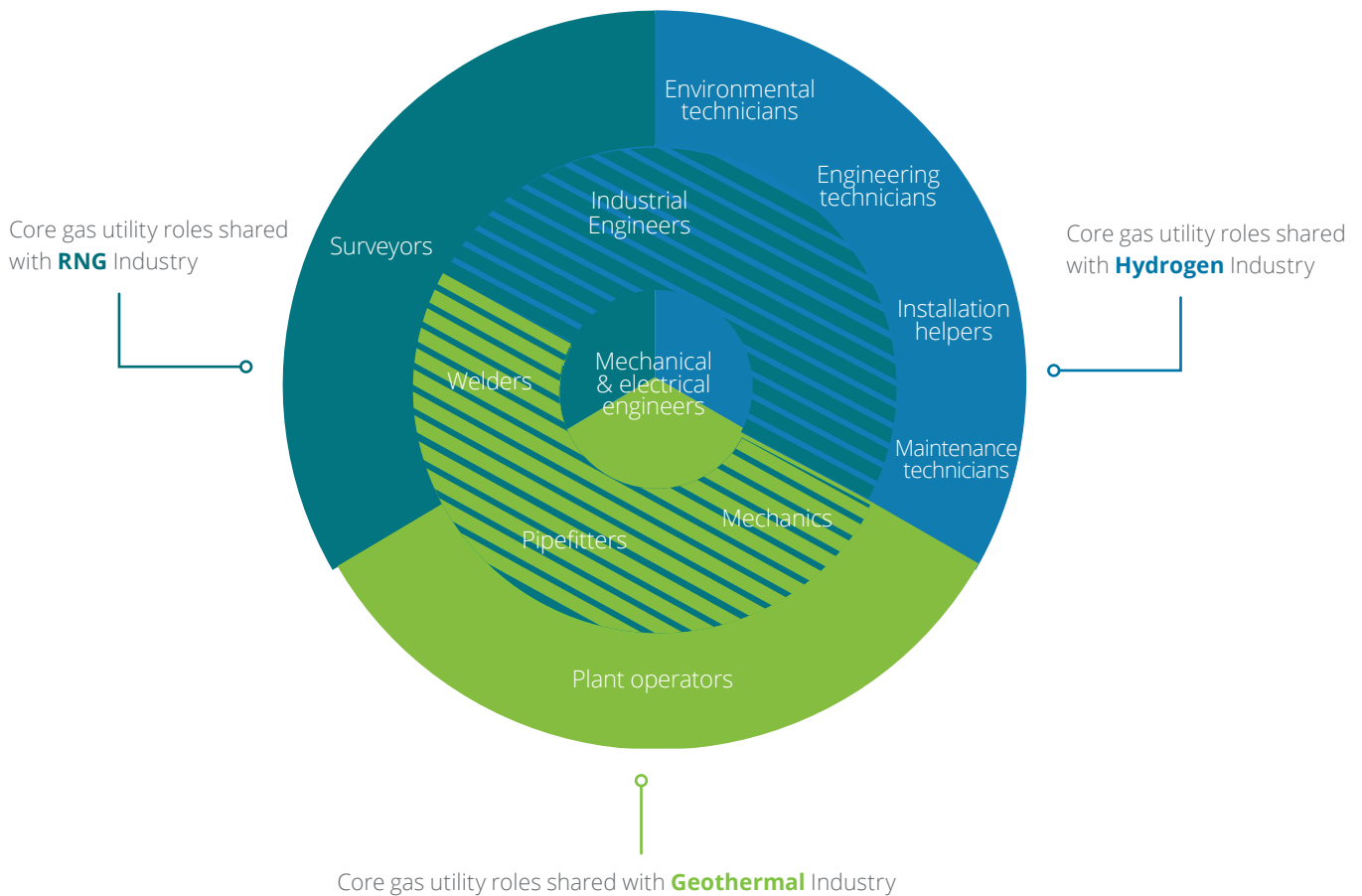


Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey

of its core roles with the RNG, geothermal, and hydrogen industries.¹³ All four include mechanical and electrical engineers, and the geothermal and RNG industries include pipefitters, mechanics, and welders (figure 11). Utilities that build the capabilities now may be positioned to take on a **renew** strategy.

Beyond the roles, the natural gas utility, RNG, hydrogen, and geothermal industries also share skills across their whole workforces. For example, the hydrogen sector currently shares almost half of the natural gas utility sector's 512 skills across all job categories, predominantly ones related to information technology.¹⁴

Figure 11. Core gas utility roles overlap with those of the RNG, geothermal, and hydrogen industry workforces

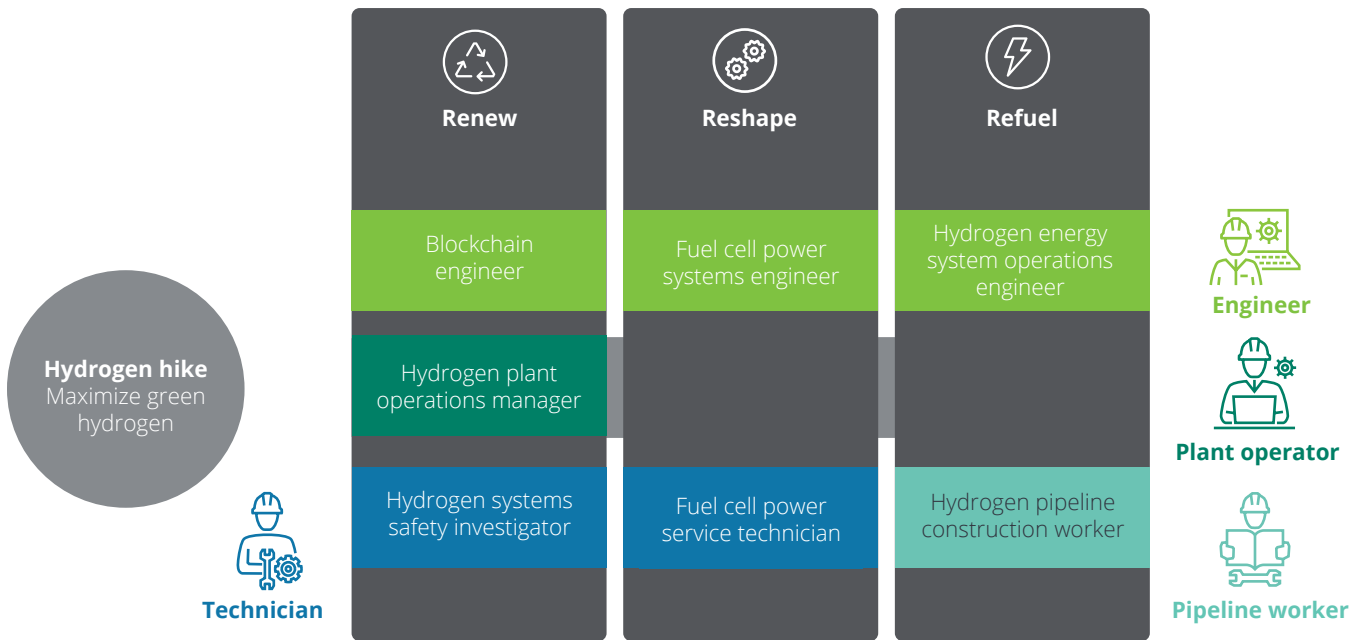


Source: Deloitte analysis based on the US Department of Labor's *Renewable Energy Competence Model*

Preparing to use more green hydrogen further involves roles that do not yet exist. An analysis of these roles suggests that the emerging hydrogen economy will likely offer the core natural gas workforce many opportunities to transfer into new roles across decarbonization strategies (figure 12).¹⁵

If natural gas utilities produce hydrogen as part of their operations, **renew** roles working with zero-emissions fuels might include a hydrogen plant operations manager, a hydrogen systems safety operator, and a blockchain engineer sharing skill sets with natural gas utility plant operators, engineers, and technicians, respectively.

Figure 12. Gas utility core roles can transfer to the future hydrogen industry workforce



Source: Deloitte analysis based on BLS, ONET, interviews, and WorkingNation's 2022 *Green jobs now* report

Engineers and technicians could also consider upskilling to **reshape** roles on the demand side such as fuel cell power systems engineers and fuel cell backup power service technicians if utilities operate hydrogen microgrids on behalf of customers. Finally, a pipeline worker could transfer to retrofitting or constructing new pipelines to carry hydrogen in the **refuel** strategy. Beyond the core workforce, the transition to hydrogen could also create new entry-level positions that require a high school diploma and on-the-job training, such as hydrogen energy system installers. At the other end of the spectrum, new and more senior positions such as a hydrogen/fuel cell R&D director could require a PhD.¹⁶

Finally, the hydrogen roles would intersect with adjacent roles in the emerging carbon-intensity management field that the current natural gas utility workforce could train to fill.

In addition, digital skill gaps are likely to become more acute across all current and future core roles. IT skills are in highest demand across all natural gas utility job postings, similar to what we find in electric utilities (see our [Decarbonized power workforce](#) report). In 2021, 42% of posted jobs required an IT skill, although these skills were mostly basic. We more closely examined 1,196 digital skills through 61 broader skills that we grouped into 7 clusters: automation, cloud, cyber, data analysis, data management, connected technologies, and software development (figure 13).

Industry perspective: How Washington Gas is preparing its workforce for a hydrogen future

Monica West, Senior Manager for Community Engagement and Workforce Development for Washington Gas, states that the company has already prepared for a hydrogen future. The Mid-Atlantic Hydrogen Hub is a coalition of leading organizations accelerating the adoption of clean hydrogen energy solutions across DC, Maryland, and Virginia. It has applied for DOE funding for hydrogen hubs.

The utility, along with Connect DMV, Constellation, Dominion Energy, Exelon, and Pepco, is part of the National Capital Hydrogen Centers. Working together to build a hydrogen economy can create jobs, accelerate economic growth, reduce greenhouse gas emissions, and position the region to compete in the clean energy market on a national and global scale. The National Hydrogen Center has a mandate to accelerate the adoption of clean hydrogen energy solutions across the regions, augmenting existing decarbonization efforts already underway.

West described how the hub is expected to create at least 9,000 new jobs in engineering, operations and maintenance, and other areas in the Greater Washington area by 2030 as H2DMV is implemented. Through the Center, Washington Gas will work with its partners, community organizations, federal and state energy and transportation agencies, companies, unions, and educational institutions to develop a local skilled workforce, focusing on creating training and job opportunities in underserved communities.

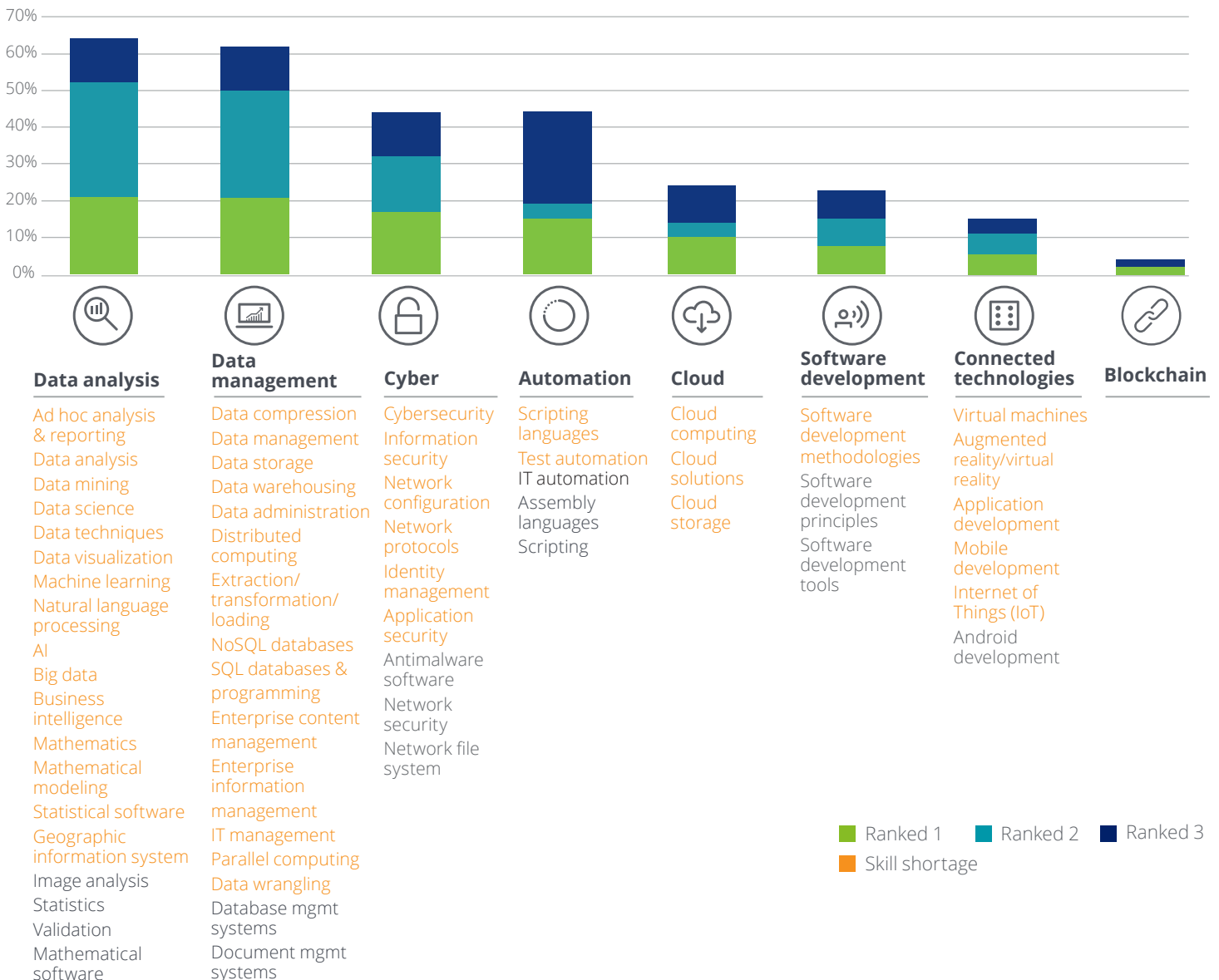
Regardless of whether it receives all the hydrogen-related grant funds it has applied for, West confirmed that Washington Gas is “one hundred percent committed to advancing its hydrogen strategy.” The utility plans to build a training and research center designed to nationally certify and train the hydrogen workforce of the future, primarily through Department of Labor-registered apprenticeships, pre-apprenticeships, and youth apprenticeships, to name a few. West anticipates that in addition to retraining the current workforce, the utility will attract talent to the industry with its “new story: it’s no longer all about gas and electric, but new and exciting things like renewables and hydrogen.” The utility has integrated its research and training functions because working with hydrogen is expected to require “continual experimentation with new technologies that will require continual upskilling in technical and digital skills, some of which cannot yet be foreseen.”

Our Burning Glass Technologies analysis shows that demand for these digital skills has grown most in occupations showing post-pandemic recovery, including engineering jobs and maintenance, repair, and installation jobs. Job posting data also shows that data analysis is the most in-demand digital skill cluster, as is the case in the power sector.¹⁷ Survey results support this: Data analysis is the most top-ranked digital skill, with most respondents ranking it among their top-three greatest digital

skills desired (figure 13). Data management is a close second among respondents, followed by cyber and automation.

Closer analysis of the core roles shows that gas utilities “have a skilled workforce that continues to evolve with technology and customer expectations,” as states Gery Gorla, Chief Human Resources Officer at Spire. Demand for data analysis and cyber cluster skills have either grown or newly appeared since 2010 for technicians, engineers, and plant operators.

Figure 13. Most surveyed gas utilities report that data analysis & management, cyber, and automation are the greatest digital skill talent needs
(Percent of respondents who ranked the skill cluster among top 3 needed)

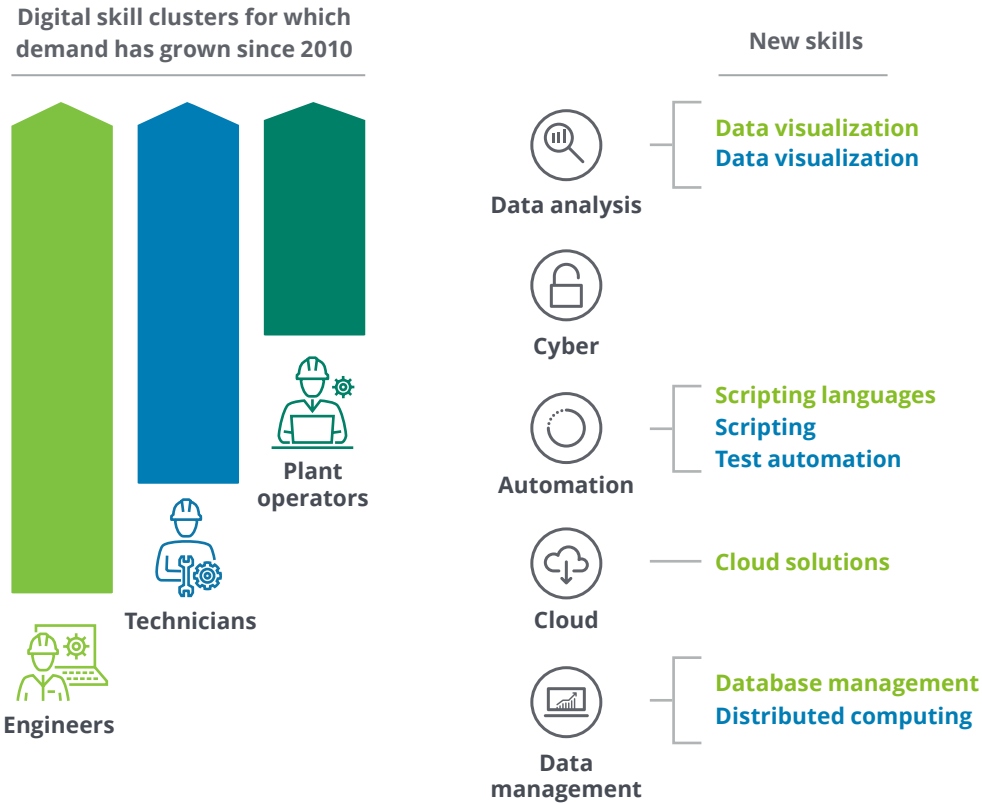


Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey; Deloitte Decarbonized Power Workforce report's analysis of data from proprietary data lake and Burning Glass Technologies

Within the data analysis cluster, data visualization has recently appeared as a new skill in demand for both engineers and technicians. Demand for automation cluster skills has grown since 2010 for technicians, with scripting and test automation most recently appearing as new skills in demand. For engineers, demand for automation skills, namely scripting languages, newly appeared in 2016; demand for cloud skills, namely cloud

solutions, newly appeared in 2021. While demand for the data management skill cluster didn't grow overall, demand for specific skills within it, such as database management and distributed computing, have recently appeared for engineers and technicians, respectively (figure 14).¹⁸

Figure 14. Gas utilities are looking to engineer an advantage through digital skills in their core workforce

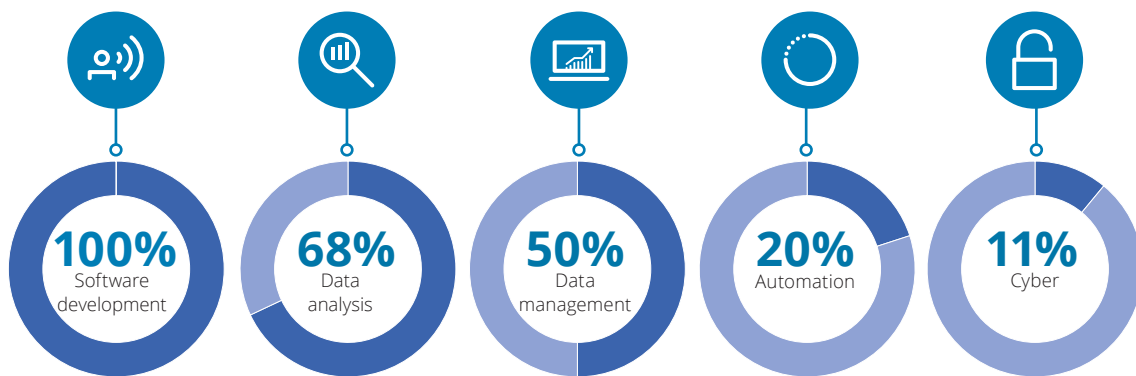


Source: Deloitte analysis of data from Burning Glass Technologies

Renew, reshape, and refuel efforts could accelerate digitalization and digital skill requirements as utilities automate pipeline leakage detection, secure pipelines from cyberthreats, and possibly use blockchain to track the environmental attributes of the molecules they transport. In fact, demand for digital skills in aforementioned hydrogen occupations and in the

natural gas utility industry currently intersects for 26 skills across the data analysis (13), data management (8), software development (3), automation (1), and cyber (1) clusters (figure 15).¹⁹ Digital skill training will be key to gas utilities looking to engineer an advantage for their natural gas workforce of the future.

Figure 15. There is already significant overlap in demand for digital skills in the gas utility and hydrogen industry



Source: Deloitte analysis of data from Burning Glass Technologies

Industry perspective on new skills for rapidly growing decarbonization technologies gas utilities are deploying

“New technologies and practices will require an industry assessment of training and OQ [operator qualification] certifications for gas technicians. For example, current standards do not yet adequately address “cross-compression” – a procedure to capture gas that would otherwise be vented during pipeline maintenance and repair work. This OQ assessment effort should be accelerated given the new technologies that utilities are rapidly deploying to meet their scope 1 emissions reduction targets. Not to mention the re-training that will be needed to perform the procedure on hydrogen blends.”

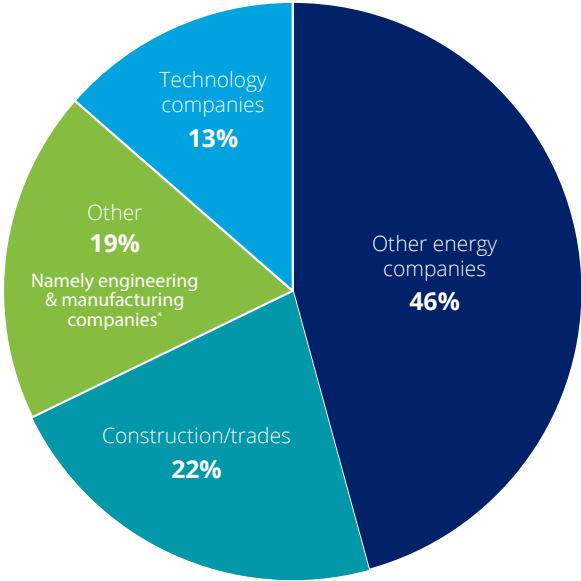
Source: Interview with Alan Hansen, Director of Operations, Onboard Dynamics, October 12, 2022

Utilities focused on sustainability could be best positioned to attract and train talent

The energy sector is decarbonizing and digitalizing in varying degrees, but utilities willing to champion these intertwined trends could be more attractive to prospective employees. Gas utilities could differentiate from other energy companies they see as their greatest competitor in attracting talent (see results from respondents in figure 16). As energy carriers, they are re-inventing themselves as carbon-free fuel networks advancing the energy transition, green hydrogen

economy, and digital future. Luke Litteken, Senior Vice President at Xcel, explains that gas utilities “have a very skilled workforce, that I believe will adapt and transition very well to the molecule changes within our gas assets. The challenge will be in continuing to keep the image of our industry relevant by leading with our commitment to a better environment and by promoting highly skilled and compensated careers that will bring us through this transition.”

Figure 16. Most surveyed gas utilities view other energy companies as their greatest competitor in attracting talent (Percent of respondents who selected each option)



* Reflects answers of respondents who selected and specified “other”
Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey

The natural gas utility workforce in a decarbonizing world

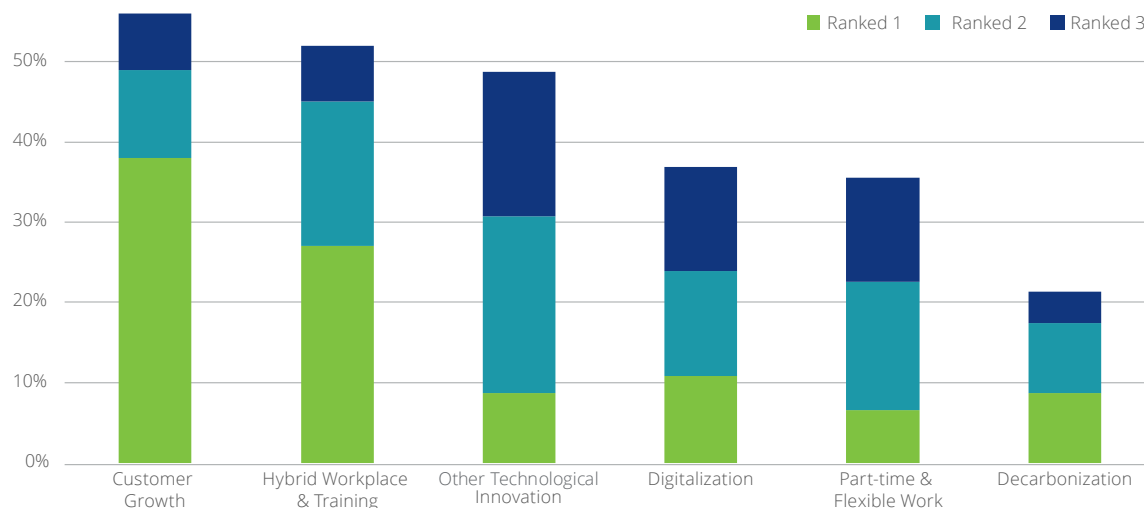
While decarbonization was least mentioned by respondents as a top trend shaping utility strategies to attract talent, it is closely tied to the top-ranked trend—customer growth (figure 17). However, as discussed earlier, growth is not forecast in a business-as-usual scenario. Conversely, the deployment of RNG, geothermal, and hydrogen offers customer growth prospects to utilities.

Given the overlap between the skills of the current and future workforce, gas utilities can close emerging gaps by heavily investing in training the existing workforce for new roles within the utility. While more than half (53%) of respondents report that their utilities are working with educational institutions on training programs to bridge current and future workforce needs, just over a quarter (27%) are doing so with unions. In their partnership with unions, apprenticeships and trade schools are equally popular programs to dispense training, according to respondents. For utilities working with educational institutions, trade schools are the leading partners among respondents (40%), followed by high schools (25%), community colleges (19%), and four-year colleges (16%). The predominance of apprenticeships and trade schools reflects the importance of on-the-job training for core roles, such as

industrial machinery mechanics, which are among the fastest-growing occupations that pay more than the median wage and don't require a college degree.²⁰ In fact, utilities is the third highest-paying industry for workers without a college degree, the second highest-paying industry for workers without a high school degree, and the highest-paying one for women without a college degree.²¹

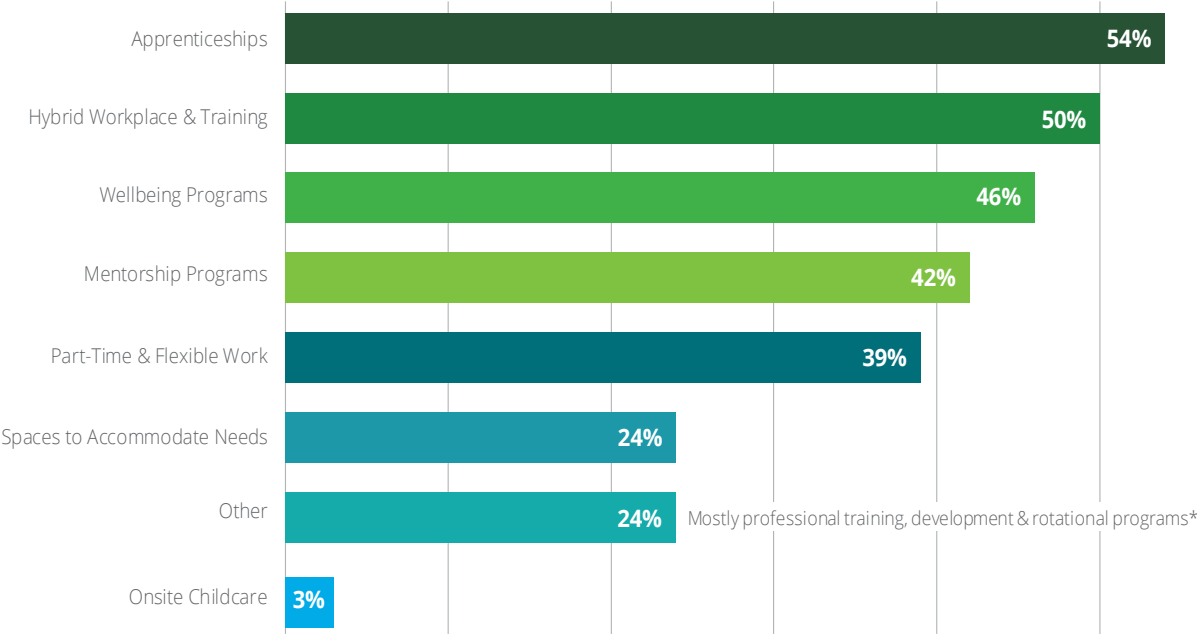
Apprenticeship program training is the leading workplace accommodation which respondents report utilities are implementing to attract and retain talent (figure 18). It has also become important to increase workforce pathways for women in the sector. The US Department of Labor recently announced \$3.4 million in grants to help recruit, train, and retain women via apprenticeships in fields where they are underrepresented, such as energy.²² The second and third leading workplace accommodations that respondents selected—hybrid workplace and training and well-being programs—could also help recruit women. A recent Gallup poll of US employees found that while men ranked increased income the most important factor when considering a new job, work/life balance and well-being were the most important factors for surveyed women.²³

Figure 17. Customer growth is the most important trend in gas utility strategies to attract talent by most surveyed utilities
(Percent of respondents who ranked the trend among top 3)



Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey

Figure 18. Over half of surveyed gas utilities attract and retain talent through apprenticeships and hybrid workplace & training
(Percent of respondents stating the opportunity is available at their utility)



* Reflects answers of respondents who selected and specified "other"
Source: AGA-APGA-CEWD-Deloitte Low-Carbon Future Workforce Survey

Industry perspectives on mentorship

“In larger utilities, creating affinity groups – such as an engineering/ technical professionals group – could be helpful to developing intergenerational relationships and knowledge-sharing.”

Source: Janelle Johnson-Grummert, Director of Sustainability, Philadelphia Gas Works, October 12, 2022

“Smaller utilities could tap into industry associations for resources to support their younger employees. For instance, APGA is beginning a mentorship effort, allowing for knowledge transfer from more experienced workers. Utilities need to support younger employees, who want mentors, to keep those individuals and not lose the valuable knowledge as the older generation leaves the industry.”

Source: Interview with Stuart Saulters, Vice President of Government Relations, American Public Gas Association, October 12, 2022

Concluding thoughts

Surveyed natural gas utilities see pipeline renewal and expansion and customer growth as drivers of workforce growth and talent attraction. Less apparent is that sustainability is a key enabler. Utilities with ambitious decarbonization strategies can amplify growth in three ways. First, by using core workforce skills and infrastructure to enable larger RNG, geothermal, and hydrogen industries. Second, by successfully

transitioning the workforce to new roles and digital skills. And third, by embracing decarbonization goals and a training-based workplace to attract talent away from competitors. Gas utilities have a key role to play in closing the molecule, skill, and training gaps to help enable America's clean energy future.

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Endnotes

1. Burning Glass Technologies analysis.
2. US Bureau of Labor Statistics (BLS), "[National Employment Matrix – 221200 Natural Gas Distribution](#)," accessed October 12, 2022.
3. Extrapolating from the RNG Coalition's Sustainable Methane Abatement and Recycling Timeline (SMART) initiative, 800 new RNG facilities by 2030 would create 7,385 jobs. That's 19% of 38,870 direct jobs—where 19% is the natural gas distribution share of direct RNG jobs. The 38,870 direct jobs make up 32% of 121,469 total jobs (direct, indirect, and induced), including 36,400 operations jobs and 85,069 construction jobs. See [RNG jobs study](#). Similarly, Fuel Cell and Hydrogen Energy Association (FCHEA)'s [Roadmap to a US Hydrogen Economy](#)' ambitious 2030 scenario sees the creation of 700,000 jobs by 2030. Hydrogen production, distribution, infrastructure, and retail account for 36% of revenue (i.e., 252,000 jobs). Direct jobs comprise 24%, based on the [Political Economy Research Institute \(PERI\) Job creation estimates through proposed Inflation Reduction Act report](#), (i.e., 60,480). Fuel for residential and commercial buildings (1.1 mmt) and fuel for industry (0.2 mmt) total 1.3 million metric tons (mmt) of total H2 demand per segment in 2030, out of 16.7 mmt total over five segments (i.e., 7.8%, or 4,717 jobs). RNG + hydrogen = 12,102 jobs in 2030.
4. The 100 parent utilities include 49 AGA members, 38 APGA members, and 13 members of both AGA and APGA. The 2022 CDP disclosing utilities are Algonquin, Alliant, AltaGas, Ameren, Avangrid, Consolidated Edison, Constellation, CMS, CPS, Dominion Energy, Duke, Emera, Entergy, Essential Utilities (PNG), Eversource, Exelon, MGE, National Grid, PG&E, PPL, PSEG, Sempra, Southern Company, Unil, and WEC. The 2021 CDP disclosing utilities are Atmos and DTE. The 2022 disclosing municipalities are Charlottesville, Knoxville, Memphis, Mesa, Omaha, Palo Alto, Philadelphia, and York County. 2021 CDP disclosing municipality is Long Beach. Non-CDP-disclosing are Austell Gas System, Avista, Berkshire Hathaway, Black Hills Energy, CenterPoint Energy, Citizens Energy Group, City of Alexandria, City of Buford, City of Clarksville Gas Department, City of Corpus Christi, City of Hamilton, City of Lawrenceville Gas, City of Rocky Mountain, City of Tallahassee, City Utilities of Springfield, Clearwater Gas System, Colorado Springs Utilities, Duluth Water & Gas Dept., Elk River Public Utility District, Florence Gas & Water, Fort Hill Natural Gas Authority, Fortis, Gainesville Regional Utilities, Gallatin Department of Public Utilities, Greater Dickson Gas Authority, Greenville Utilities Commission, Greenwood Commission of Public Works, Greer Commission of Public Works, Grey Forest Utilities, Hearthstone Utilities, Huntsville Utilities, Jackson Energy Authority, Knox Energy Cooperative, Lake Apopka Natural Gas, Lancaster County Natural Gas, Marshall County Gas, Midwest Energy, MDU, National Fuel Gas Co., National Gas and Oil Cooperative, Natural Gas Processing, New Jersey Natural Gas, Northwest Natural Gas, Ohio Valley Gas Corp, Okaloosa Gas District, ONE Gas, Pensacola, Powell Clinch Utility District, PSE, Richmond Dept. of Public Utilities, Roanoke Gas, Sevier County Utility District, South Jersey Industries, Southeast Gas, Southwest Gas, Spire, Summit Utilities, Trussville Utilities Board, UGI Utilities, Vermont Gas Systems, West Tennessee Public Utility District, Xcel.
5. US Department of Energy, "[Hydrogen Pipelines](#)," accessed November 15, 2022.
6. Tom DiChristopher, "[Mass. gas ban backers want to convert narrow win into broader victory in 2023](#)," S&P Global Market Intelligence, August 30, 2022.
7. American Gas Association (AGA), [RNG Activity Tracker](#), updated June 2022.
8. Sapna Gheewala, [Natural Gas Efficiency Program planning and evaluation – 2019 program year](#), AGA, April 2022.
9. Morgan Higman, [Hydrogen hubs proposals: Guideposts for the future of the U.S. hydrogen economy](#), Center for Strategic & International Studies (CSIS), July 14, 2022, updated October 4, 2022. Industry sources.
10. Burning Glass Technologies analysis.
11. BLS, "[May 2021 National Industry-Specific Occupational Employment and Wage Estimates – NAICS 221200 – Natural Gas Distribution](#)," last modified March 31, 2022.
12. Projections extrapolated from BLS and [American Clean Power \(ACP\)'s 2021 Clean energy labor supply report](#) top 35 in-demand occupations that will be affected when increasing nationwide solar, wind, and battery-storage capacity.
13. Based on analysis of BLS and [Renewable Energy Competency Model](#). Includes only roles that would not require upskilling.
14. Burning Glass Technologies analysis.
15. Analysis based on BLS and ONET data and [WorkingNation's description of future hydrogen roles](#).
16. Deloitte analysis based on BLS, ONET, interviews, and WorkingNation's [2022 Green Jobs Now report](#).
17. Burning Glass Technologies analysis.
18. Ibid.
19. Ibid.
20. Ryan Farrell and William Lawhorn, "[Fast-growing occupations that pay well and don't require a college degree](#)," BLS *Career Outlook*, June 2022.
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23. Kristin Barry, "[Recruiting women takes more than just competitive pay](#)" Gallup, March 2, 2022.



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