



# How to Maintain a Qualified Workforce of the Future

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## OVERVIEW

Utility operators, natural gas pipeline contractors and trade unions are entering a new era of rising regulatory standards, modern materials, advanced methods, new learning technologies and better data. In addition, an aging and expanding infrastructure, and a new generation of workers are replacing baby boomers heading toward retirement. Now is the time for industry stakeholders to join forces and redefine what it means to maintain a qualified workforce of the future.

In Northern California, this scenario serves as a backdrop where PG&E's Operator Qualification (OQ) standards raise the bar for what is required to perform work on a natural gas construction site.

This document is the product of our research that examines the dynamics between the various stakeholders, including: A utility operator (PG&E), a pipeline contractor (Teichert Pipelines), and a local union (Laborers local 185).

Here's the situation as it exists today:

- The upgrade and expansion of our nation's natural gas infrastructure serves as a gateway to a clean energy future and an abundance of quality middle class jobs for the next decade and beyond.
- New regulations, advanced materials, modern methods, innovative learning technologies, and better data are transforming how job skills are developed, monitored, measured, and maintained.
- Northern California is at the epicenter of an industrywide transformation as PG&E raises Operator Qualification (OQ) testing and evaluation standards.
- Pipeline contractors seek ways to lower training costs as qualification standards move OQ training from on-the-job-training into the classroom, and annual requalification becomes the norm.
- Laborers local 185, in Sacramento, serves as an incubator for innovation in OQ training methods through collaboration with its contractors and members.

These five factors provide the backdrop for eight months of research, which has produced a series of early stage solutions that have the potential to organize essential OQ data, empower employees to own their OQ process, and help contractors and local unions forecast demand, measure results, and reduce the time and cost of maintaining a qualified workforce.

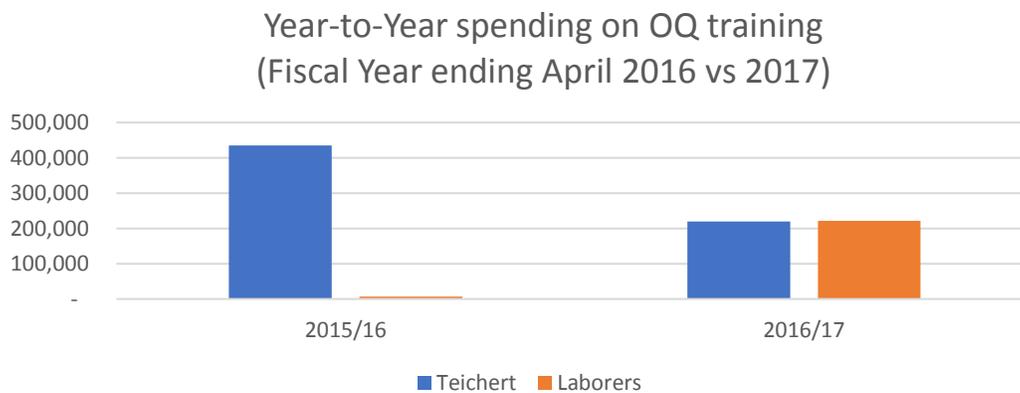
The following pages provide the information, framework and strategy that describes how to meet the needs of utility operators, pipeline contractors and unions to maintain a qualified natural gas workforce of the future.

## A LOCAL LABORERS UNION AND A REGIONAL CONTRACTOR ARE MEETING THE CHALLENGE

Over the past several years, pipeline contractors have experienced fits and starts in reaching growth expectations as PG&E continues its ongoing plans to repair, upgrade and expand its Northern California transmission and distribution network.

Founded in Sacramento, in 1887, Teichert Construction holds California State Contractor's License #8, the oldest active contractor's license in California<sup>1</sup>. In 2013, Teichert Pipelines entered the natural gas pipeline construction market and, after 4 years of investment, it was awarded its first major distribution contract that will take the company's field workforce from 2 to 22 distribution crews in 2017. Reports from the other pipeline contractors in the region reflect positive growth expectations, and word on the street is that national firms like Henkels and McCoy are planning to enter the market, starting with 5 crews to meet PG&E's growing demand.

A major expense for contractors is in maintaining a qualified workforce as PG&E's OQ standards increase in complexity. For example, in 2016, the qualifications required to coat pipe went from 2 to 8 on-line exams and 5 hands-on skills demonstrations. Pipeline contractors were not fully prepared for the increased cost of training their employees which exceeded \$650,000 for Teichert Pipelines, alone, during the past 2 fiscal years. In response, the Laborers local 185 began hosting weekend OQ classes to help all pipeline contractors in the region offset the rising costs of maintaining a qualified workforce. This directly lowered Teichert's year-to-year OQ training costs by 51 percent.



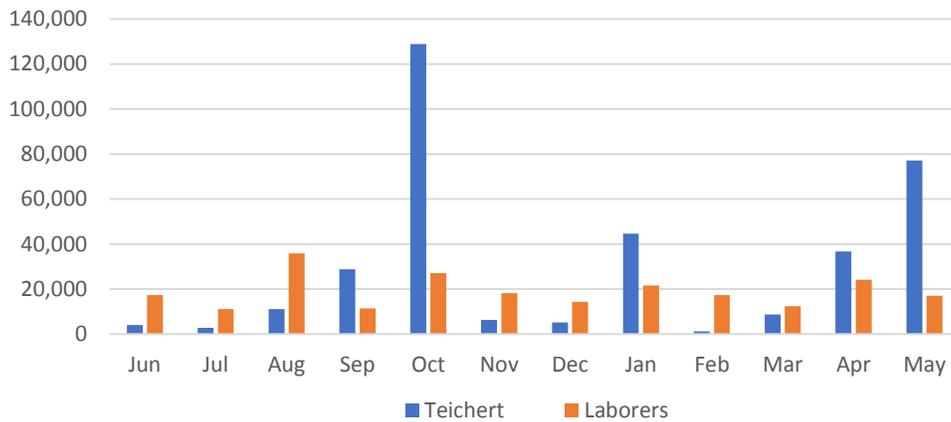
*During their fiscal year ending in April of 2016, Teichert Pipelines spent \$435,000 on OQ training. For the fiscal year ending in April of 2017, their OQ training expense was \$220,000. This is a decrease in OQ training cost of 51 percent. Over the same periods, the Laborers sponsored OQ training went from \$6,707 to \$221,000, respectively, representing an increase of over 3,000 percent (this data does not include any other OQ training offered by the Laborers or Teichert's overall contribution to the Laborers Training Fund).<sup>2</sup>*

<sup>1</sup> Wikipedia reference on Teichert's website

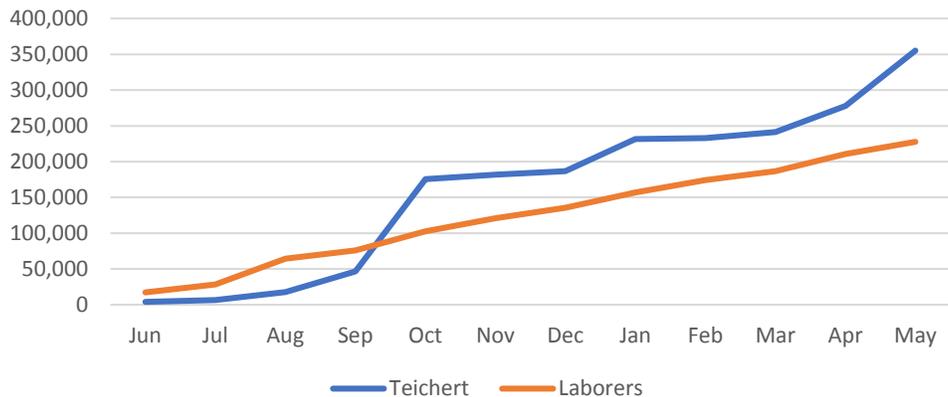
<sup>2</sup> Teichert data provided by Teichert Pipeline, includes OQ training only and does not include new hire orientation and safety training. Laborers data is the sum of the total classes provided by LMurphey Consulting.

Even though the Laborers have increased year-to-year funding for OQ training in Northern California, contractors continue to carry the lion's share of the cost of providing OQ training for their workforce. This is mainly due to the early stage of program development, and to the lack of shared data for a proactive approach to anticipate demand and allow a coordination of resources between the Laborers and their contractors. The following charts break down the past 12 months of spending by Teichert Pipelines and the Laborers to maintain a qualified workforce in Northern California.

Monthly Spending on OQ Training  
(June, 2016 through May, 2017)



Cumulative Spending on OQ Training  
(June, 2016 through May, 2017)



Today, Teichert Pipelines is at eight distribution crews (up from 2 crews at the beginning of 2017) and 4 transmission crews. At the time of this report there were no Laborers qualified in natural gas distribution available for dispatch because they were all working. Although the Laborers local 185 is only one local union of many locals, and Teichert Pipelines is just one contractor of many pipeline contractors, the insight these two organizations provide gives us a road map to the future of how the Laborers and their contractors can work together to build a qualified workforce of the future.

## THE FIVE ESSENTIALS FOR MAINTAINING A QUALIFIED WORKFORCE

What we have learned in the hundreds of OQ training classes delivered for contractors and the Laborers is:

- Each experience provides some new insight
- There is always room for improvement
- Learning by doing is a better way to learn

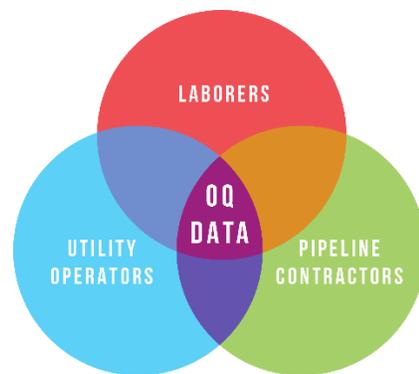
The classroom provides an opportunity to explore and try new ideas, and sometimes these ideas change the status quo and lead to better ways to learn and work. This is the origin of the following five essentials that have the potential to transform how utility operators, pipeline contractors and the Laborers maintain a qualified workforce:

### Share data to anticipate demand and improve results

Today, there is no system that aggregates essential OQ data from different compliance companies and across the various natural gas utilities. This is a major source of frustration for all stakeholders. Think of it like a broken traffic light. It is inevitable that drivers will become frustrated with each other when the source of frustration is the traffic light, and not the drivers.

Current OQ data systems are siloed by design. Compliance companies who manage the data compete for business, charge the various stakeholders for the data they manage, and have no financial incentive for an open access system.

A better way is to take a page from the financial industry, where basic data regarding what products and services a professional is licensed to sell is readily available. In financial services, compliance companies help financial firms meet regulatory requirements, and a national system reports on the status of a financial professional's qualifications and when they expire. Replicating this system within the natural gas industry would allow contractors and unions to forecast requalification demand and to coordinate necessary resources before they are required.



### Define best practices for contractors to access the training resources they need

In Northern California, Teichert Pipelines runs regular inhouse OQ training and determines what methods work best for its employees. This knowledge is transferred to the Laborers local 185's hands-on classes to directly benefit all members.

In the early stages of developing any new system, there is a good amount of boot-strapping to determine best practices and normalize operational procedures. This is not a perfect science. It requires many iterations of trial and error--what works stays and what does not work goes. This promotes collaboration and is the fastest path to standardizing any system from inception to full scale distribution.

Through this experience stakeholders can find the proper balance between their collective resources and key in on any blind spots that cause duplication of time and expense. This is an excellent opportunity for

the Laborers to take the lead in redefining the role of organized labor as a true partner in productivity to businesses of all types.

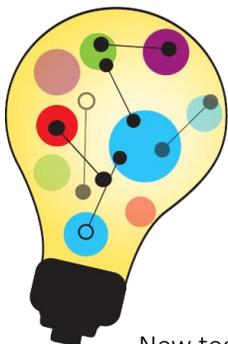
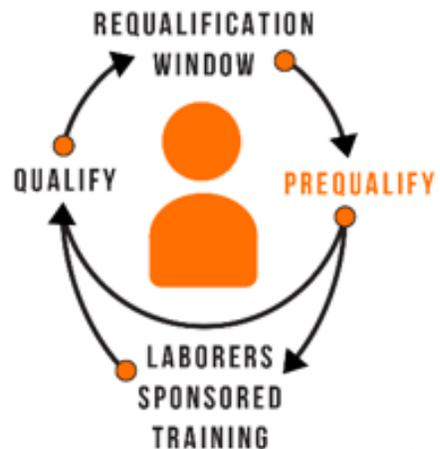
Northern California provides the perfect environment to establish the benchmarks and best practices on the best way for the Laborers to allocate training fund assets, and how to focus essential resources on lowering the rising cost of maintaining a qualified workforce, while creating an abundance of quality middle class jobs for a clean energy future.

### Give employees the tools and resources they need to own their OQs and their craft

Most OQs are now on an annual requalification schedule. This is because a lack of verified skills and knowledge in pipeline construction can lead to accidents that result in catastrophe.

Fortunately, technology and better data are making it easier to proactively engage employees to take ownership of their OQ process and their craft.

The key is to deliver prequalification content in smaller bits of microlearning over a longer period as a primer to accessing sponsored OQ training or facetime with an evaluator. In requalification, employees receive daily OQ practice questions on their mobile devices to challenge their knowledge and pinpoint areas for improvement. This is a method of gamification that engages employees in an interactive learning experience to motivate and reward participation.



### Deliver training in every format, whenever and wherever it's needed

Gone are the days where learning meant pouring through procedural manuals, and passively watching boring instructional videos. It is no surprise that this method doesn't produce the best results for many people, especially for people who learn best by doing, which is pretty much everyone.

New technologies are transforming traditional content into an interactive learning format that can be experienced whenever and wherever it is needed. Through a collaboration with Rapt Media and Studio 27, our team recently tested an interactive video we created for PG&E's procedures on Abrasive Blasting. During a recent hands-on class, we watched a group of Laborers interact with digital demonstrations by answering OQ practice questions on their mobile devices. Studies show that pretesting in this manner induces people to retrieve information from memory and makes it more recallable in the future.<sup>3</sup>

<sup>3</sup> From research on [Applying Cognitive Psychology to Enhance Educational Practice--the Bjork Learning and Forgetting Institute](#)

This learning experience is ongoing, can take place anywhere, to determine prequalification and notify management to schedule hands-on training, examination, skills demonstration, and time with an evaluator.

## Distinguish the difference between certification and qualification

The words “certification” and “qualification” can have different meanings to different people. In the OQ world, qualification means whether you can perform the necessary tasks at the level required and certification is more about the paper that verifies a level of education or training.



Natural gas regulators require utility operators to have a written system of evaluation to determine qualification, and these qualifications typically have a one-year shelf life. This means any work performed after a qualification expires is noncompliant, and the contractor can be held liable redo the unqualified work in place.

New OQ standards require employees to demonstrate a level of knowledge and skill to qualify and requalify each year. Certain institutions’ certification programs fail to appreciate the nuance of Operator Qualifications. This is an underlying source of confusion, misinformation, and poor results--which can be easily remedied through proper education and better distinction. A solution could be to distinguish a certificate program as a prerequisite for certain entry level workers to develop the skills and knowledge necessary to access OQ training and qualify to perform certain tasks on a natural gas construction site.

## CONCLUSION

Each day it becomes harder to find an industry that has not been completely disrupted due to cultural changes and innovations in technology. New ways to access data shed light on inefficiencies and new methods eliminate entire workforces literally overnight. This challenges institutions to embrace change and to constantly determine and implement best practices at every opportunity.

Technology evolves workers’ ability to develop the skills they need to compete for the jobs of the future. The critical questions are: Where are those jobs? How do we empower workers to take ownership of their qualifications and their craft? What role does organized labor play in this evolution?

There will always be those who cling to old ways and those who see the emerging future as opportunity waiting to unfold. This is human nature. One thing for sure is that we can learn from one local union and a regional contractor in Northern California about how organizations can join forces and serve a common purpose--to maintain a qualified workforce of the future.

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### About the Author

*Jerry Murphey is an entrepreneur and writer who thinks about ways organizations can actualize untapped growth potential as markets shift and change happens. He can be reached at [jerry@jerrymurphey.com](mailto:jerry@jerrymurphey.com).*