**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, v. **PUGET SOUND ENERGY,** Respondent.	**Docket UE-22____** **Docket UG-22____**

**NINTH EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

CATHERINE A. KOCH

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

2017
Energy & Utility Training Benchmark Report

Increasing investment and rigor in operations training is driving operational efficiencies and improving employee competence

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NOTE FROM THE AUTHORS

In 2011, Mosaic was asked by Pacific Gas & Electric Company to conduct a comprehensive review of best practices in training across the gas utility industry in North America. Based on this analysis, Mosaic developed the Seven Pillars of Training Excellence. Since this time, we have refined this methodology to help our clients improve the safety, effectiveness and competence of their field operations workforces. Last fall, we initiated another round of this benchmark study with 39 energy and utility companies to follow up on changes to operations training over the past five years in order to more effectively serve our clients and the industry.

The culmination of our findings is included in this 2017 Energy and Utility Training Benchmark Report. It includes both what we heard, as well as our own insights and recommendations based on 21 years of experience in the training business. We gained many new and valuable insights, and feel confident that the best practices presented in this report are the keys to building and delivering effective, value-adding operations training in the energy and utility business.

We want to thank each of you for participating. Without your candor and insight this report would not be possible. You are a hard-working, highly skilled and very motivated group of training professionals. It is our pleasure to work in this industry alongside each of you, and to invest in the enormous potential and value of the people who keep energy flowing safely and efficiently each day.

It is our hope that this report will help you strengthen your company's training effectiveness in producing a competent, skilled and high-performing workforce. Our recommendation is that you read it with an open mind, and embrace what makes sense for your organization.

Sincerely,

Clint Morse
Executive Vice President and Founder, Mosaic

Rachel Collier
Director, Marketing & Business Development, Mosaic

Note: After careful consideration, we decided to omit all financial information obtained during the interview process. The data collected was inconsistent and difficult to summarize and compare in an objective way. It is our hope that we can provide a separate report focused specifically on the cost of training in the future.

Executive Summary

INTRODUCTION

The energy and utility industry is facing an unprecedented level of change, requiring a shift in the way organizations approach training. Developing a competent, skilled and high-performing workforce is essential to maintain and improve workplace safety, optimize business performance, ensure compliance and maximize stakeholder value. Investing in people—an organization's most important asset—is critical to maximizing workforce potential and driving business results.

This benchmark study revealed several common areas that are placing increasing pressure on field operations training. Benchmark participants ranked the significance of each of these market triggers as follows.
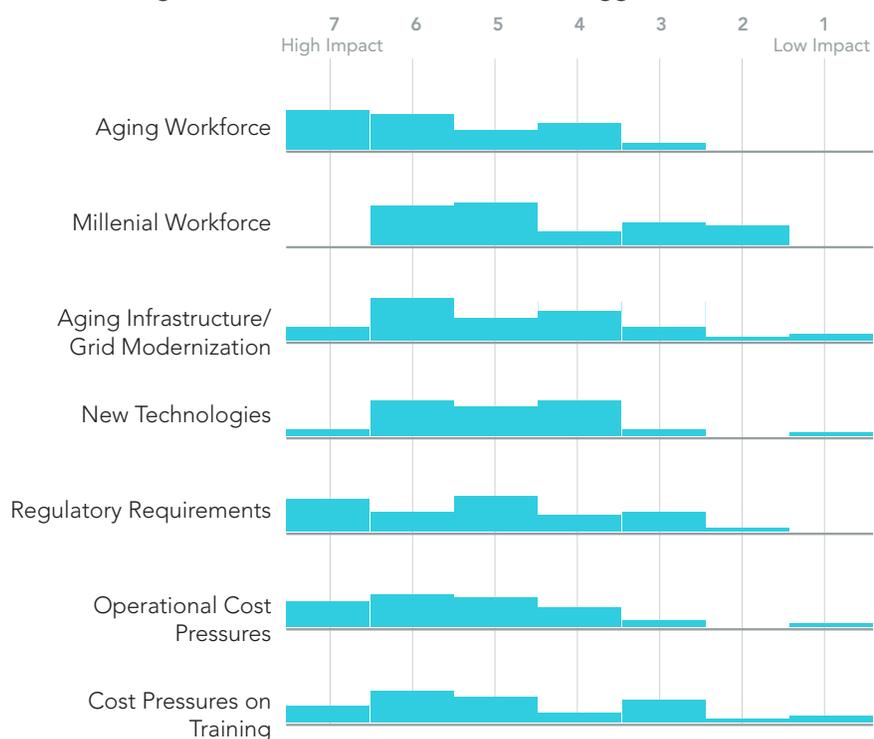
Figure 1. Significance of Market Triggers

PARTICIPATING COMPANIES

- Ameren
- American Electric Power
- ATCO Electric
- ATCO Pipelines & Liquids
- BC Hydro
- Baltimore Gas & Electric
- CenterPoint Energy
- Colonial Pipeline
- Consolidated Edison
- DCP Midstream
- Dominion Energy
- DTE Energy
- Duke Energy
- Enbridge
- Entergy
- FortisBC
- Kinder Morgan
- Miller Pipeline
- National Grid
- New Mexico Gas
- NiSource
- NW Natural
- Oklahoma Gas & Electric
- Pacific Gas & Electric
- PPL Electric Utilities
- Public Service Electric & Gas
- Puget Sound Energy
- San Diego Gas & Electric
- SoCalGas
- Southern California Edison
- Southern Company
- Vectren
- Washington Gas
- We Energies
- Xcel Energy

This report summarizes key findings and best practices from 35 energy and utility and companies, as well as Mosaic's insights and recommendations based on two decades of experience supporting this industry. Benchmark participants included combined utilities (21), electric utilities (4), gas utilities (4), midstream pipeline operating companies (5) and a contract services company (1) operating throughout the United States and Canada.
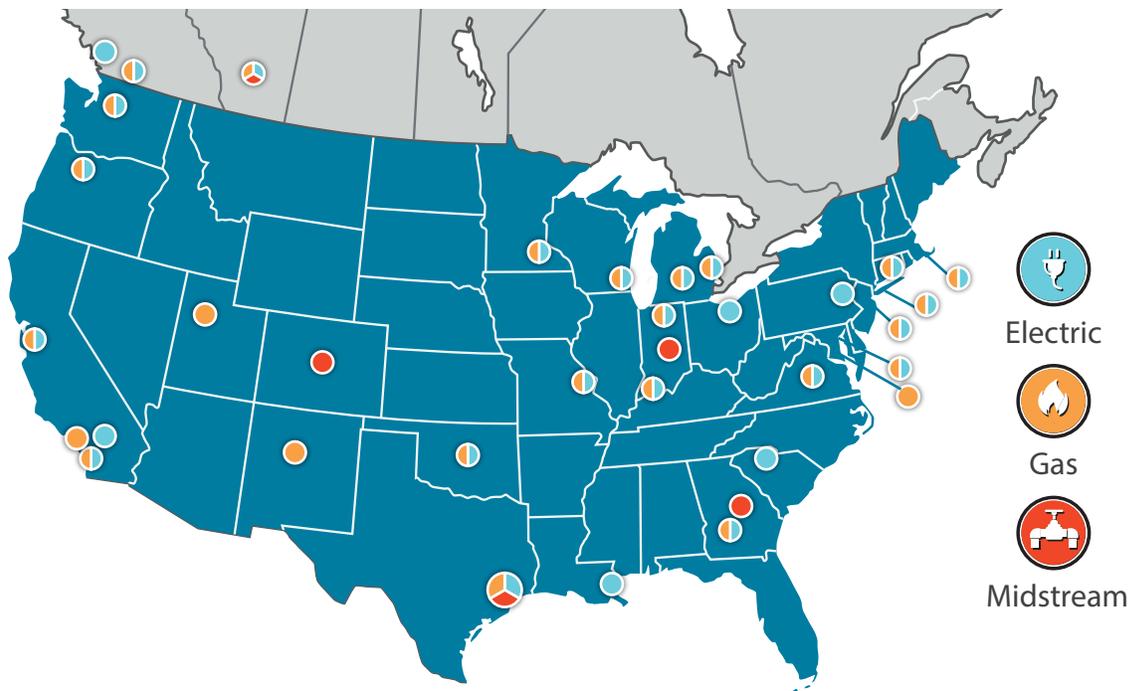

Figure 2. Map of Participating Companies

KEY FINDINGS

All benchmark participants indicated that the importance of building a competent workforce is becoming increasingly critical, as is the importance of effective operations training. However, only 16% of participating training leaders reported being able to perform at a level that matches this criticality.
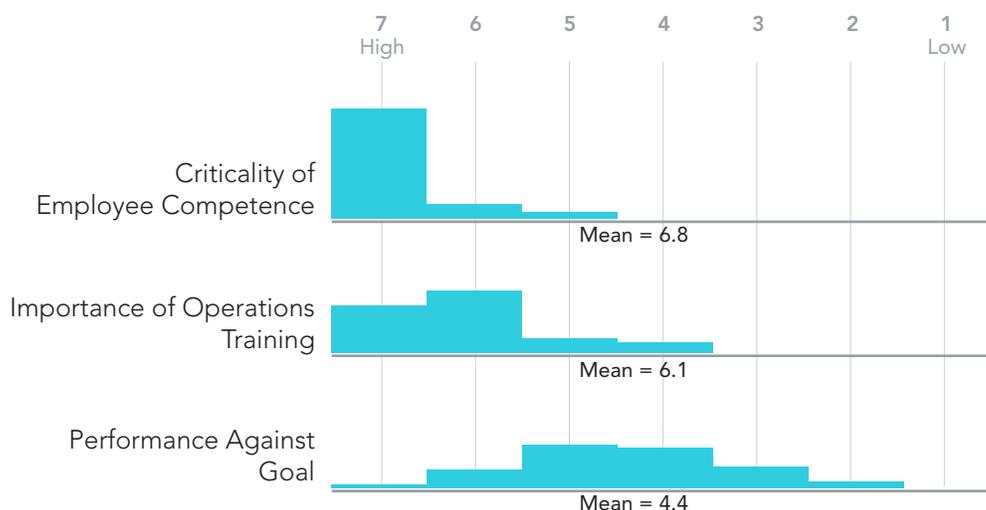
Figure 3. Importance of Operations Training

All benchmark participants reported that the importance of operations training is increasing, and several reported that their companies are increasing the level of investment due to the necessity of closing the gap between the criticality of operations training and its current ability to deliver value to the business. The fact that many companies recognize the significance of a competent workforce, while failing to adequately invest in the training required to achieve that goal, is a serious gap in the industry.

Benchmark participants reported the following key findings related to operations training:

- All benchmark participants reported increased pressure on operations training to produce measurable business enhancements in the areas of improved operational efficiencies, increased safety and regulatory compliance. However, very few training organizations reported having the structure and rigor in place to deliver these performance measurements. Those that are producing and communicating measurable business improvements reported increased support for training by senior leadership and the internal business organizations they support.

- Effectively aligning training efforts to business priorities, and measuring the impact of that alignment, is becoming increasingly critical to justify a significant investment in training. Participants that are effectively achieving this alignment and positively impacting business goals reported consistent and increased investment in their companies' operations training efforts.

- There is a significantly increased focus on developing and delivering competency-based training within the industry. Companies that have moved from compliance to competency-based training reported marked improvements in safety, increased operational efficiencies, faster time to proficiency and qualification, and an elevated ability to contribute toward meeting business goals and improving value.

- The use of technology in training is rapidly gaining momentum. Participants reported that introducing technology-based training solutions is decreasing the cost of training and increasing the speed to competence. Additionally, the use of technology to develop on-the-job support is proving to be an effective training tool and a valuable asset in gaining line of business support and investment.

- Far and away, the most effective training organizations balance the investment in training across dedicated training facilities, effective instructor facilitation and competency-based training curriculum. Companies that neglect one or more of these three areas consistently under-perform compared to their peers, and are in danger of being left behind as the industry and operations training continue to evolve.

BEST PRACTICES

The following 10 best practices have been identified through an assessment of the key themes and successes reported by benchmark participants. These practices consistently increase the effectiveness and value of operations training to achieve improved safety, compliance, workforce performance and business success.

1. Strong and consistent executive sponsorship.

High performing training organizations are consistently aligned with the needs of the business due to strong sponsorship at the executive level. This sponsorship can be gained through structured governance or informal relationships, but is hallmarked by consistent communication of training's value to the business.

2. Training effectiveness measured in terms of business value.

Measuring training effectiveness through business outcomes helps shift organizations from looking at training as an expense towards valuing it as a strategic investment that enables field workers to become safer and more productive in a shorter amount of time, and throughout their careers.

3. Centralized training organizations.

Centralized training organizations that report directly to operations or to a shared services group are more cost-effective, have demonstrably increased efficiencies, and experience better alignment with business priorities and goals.

4. Competency-based training programs.

Competency-based training programs speed the time to full employee competence, result in a more skilled and effective workforce, and increase the organization's confidence that employees are trained and qualified to do their work.

5. Training experts responsible for design and development.

Companies that utilize dedicated instructional design resources are more effectively addressing the increasing demand for training, and have stronger training programs that provide more business value when compared to companies that use instructors and other subject-matter experts to develop training.

6. Training materials aligned to work procedures.

The most effective training organizations have a process for clearly mapping training to their company's specific business processes and work procedures, and maintaining alignment as regulations, tasks, equipment and technologies change.

7. Instructor development programs.

The highest performing training organizations have created instructor development programs to recruit and train the most capable candidates. Development programs are structured to enhance an instructor's technical knowledge, facilitation skills, and familiarity with adult learning strategies to address both the efficiency and effectiveness of learning.

8. Structured on-the-job training (OJT) programs.

Creating structure and rigor around OJT increases the speed and success of transferring the knowledge and skills gained in formal training to actual work performed on the job. OJT is also a very effective way to pass on tacit knowledge from more experienced employees, and reinforce field buy-in and support of new employees.

9. Simple technology solutions for training delivery and on-the-job support.

Many easy-to-use and low-cost technology solutions are proving to be an effective way to provide impactful business value and gain momentum for further investments in technology. As an example, technology-enabled performance support tools provide easy access to valuable information and guidance to assist employees where they need it most—on the job.

10. Dedicated training facilities that mirror real-world work.

Facilities that mirror actual work settings improve the quality and consistency of training delivery, create efficiencies in scheduling and logistics, and reduce variation in how tasks and procedures are learned, and thus performed, in the field.

Detailed Findings

STRONG AND CONSISTENT EXECUTIVE SPONSORSHIP LEADS TO BUSINESS ALIGNMENT AND DRIVES TRAINING SUCCESS

Benchmark findings indicate that there is a clear correlation between strong and consistent executive sponsorship and the success and business impact of operations training. It is critical that training organizations define their relevance and success based on their ability to contribute to the priorities and goals of the company. Executive leaders who prioritize and focus on optimizing workforce performance, and value training to that end, are more willing to invest the organization's time and financial resources into building best-in-class operations training.

<u>Insights and Best Practices</u>

Benchmark participants who reported having high performing training organizations also reported having strong and consistent executive sponsorship. Two approaches emerged through the benchmark study to achieve this:

- Structured governance owned at the executive level. Less than 10% of companies interviewed reported having formal governance processes with strong executive-level sponsorship. However, these training organizations reported significantly higher levels of funding and success regardless of operational cost pressures, as well as better alignment with strategic priorities.

- Informal relationships built through consistent communication. Informally building and maintaining strong personal relationships with company leadership requires continually communicating training's value to the business in terms that matter to them. This requires a specific type of experience and expertise that doesn't always exist within training leadership, and can leave training organizations at risk of being dependent on an individual person to sustain executive sponsorship. Two benchmark participants reported having substantial success with this approach, and have had significant influence in shifting the perception of senior leadership regarding the value of operations training. This has resulted in both increased commitment and funding of training regardless of other operational cost pressures.

Participants who reported not having high performing training organizations also expressed frustration with a lack of executive support. Many of these respondents reported that the core quality of their training work is effective, but the lack of executive commitment diminishes the value of their work.

"Our executive vice president of operations brings all of his leaders together for an annual summit where we outline training programs and priorities for the year. This is a tremendously important event, because he stands in front of his entire team and lets them know he expects their support and commitment every day of the year."

<u>Recommendations for Improvement</u>

If executive sponsorship for operations training does not exist within your organization, championing for this commitment should be your number one priority. To move the needle toward gaining senior leader support, we recommend the following:

1. Make it a core part of your organization to consistently communicate training's value to the business in terms that will be understood and accepted by company leaders. Leverage peer reviews and benchmark studies, create anecdotal success stories and substantive case studies that demonstrate training's success in supporting business goals, and share these early and often. As you start to make progress in building relationships with senior leaders, continually look for new ways to make incremental improvements in measuring training's impact and translating its value in business terms. Proven examples exist and can be incorporated into your organization with thoughtful effort, at minimal cost.

2. Build a governance process that is owned at the executive level (or as high a level as possible), and pro-actively identifies and prioritizes training needs throughout the entire organization. It is critical that governance processes focus on tying competency-based training efforts to business objectives and strategic goals.

COMMON LEADING INDICATORS

- Regulatory requirements
- New equipment/technology
- Hiring/attrition data
- Corporate strategy and initiatives
- Benchmark studies and peer reviews

COMMON LAGGING INDICATORS

- Safety performance metrics
- Audit findings
- Key performance indicators
- Job site observations
- Customer satisfaction ratings

TRAINING EFFECTIVENESS MEASURED IN TERMS OF BUSINESS VALUE INCREASES SENIOR-LEVEL COMMITMENT

Measuring training effectiveness through business outcomes helps shift organizations from looking at training as an expense toward valuing it as a strategic investment that enables field workers to become safer and more productive in a shorter amount of time, and throughout their careers.

<u>Insights and Best Practices</u>

Many benchmark participants reported having limited success in measuring training's impact on business success. Although most respondents collect and assess quantitative, compliance-related data, or attendance and assessment metrics, very few tie measurements directly to training's impact on business goals. Only a handful of training organizations reported having an effective process or set of measurement tools in place to assess the business impact and value that training delivers.

Two participants have increased the level of rigor being placed on measuring the effectiveness of operations training. They are pro-actively quantifying training's value by directly aligning training objectives and metrics with business priorities, and consistently communicating training's impact at the executive level. This is resulting in improved workforce performance, continued engagement by senior leaders, and consistent investments in training.

- One combined utility utilizes a portfolio approach to measuring training effectiveness. While the results are still early, this model is providing a deeper view on highest cost and impact programs, and providing feedback to the business that is being used to prioritize further investment by quantifying training's positive impact on key business metrics.

- One midstream pipeline company uses a speed to competence model to measure the return-on-investment (ROI) from training. They used baseline data from the field by calculating the non-productive time of new hires before implementing their new training program. Recent post-training calculations demonstrated an ROI of over 15%. This metric demonstrates that a well-executed training program can reduce compliance risk, improve safety, and directly benefit bottom line financial results.

Most benchmark participants reported that senior leadership shows little interest in measuring training's impact beyond meeting compliance requirements. This results in training budgets being de-prioritized due to a lack of understanding about training's ability to create business value. Training resources are spent where the business places value, and without the commitment required to measure the impact of training, these organizations aren't incentivized to properly invest in employee development programs.

"Recently our company made a large investment in our training programs. Approval for the funding was based largely on metrics from an analysis we performed calculating improvements in field worker efficiency."

There is a small subset of the industry where business leaders do look at the business value of training beyond compliance. These leaders are seeing that an investment in more comprehensive employee development programs elevates the ability of employees to perform their work more safely and efficiently, with fewer compliance violations and less re-work required.

Recommendations for Improvement

To increase your measurement of training effectiveness, it is not necessary to measure everything all at once. Small steps can make big differences. Consider the following recommendations as you begin your journey:

1. Be comfortable with shared success. Human performance can't be perfectly isolated to one cause equaling one effect. Embrace that training is an important tool in the toolbox that helps employees develop competence and work safely. Just because improvements in safety, efficiency, or compliance can be partially attributed to non-training solutions doesn't mean these metrics shouldn't be measured and reported as training successes as well. The point is not to take sole credit, but to be willing to communicate that training played a role in the overall success.

2. Do not wait for perfect data. Begin by measuring what you currently have. Select a few tangible, easy to measure business performance metrics, report that data with the appropriate qualifiers, and learn to be more quantitative over time. Consider a portfolio approach where you measure high impact or high visibility training programs and reasonably extrapolate broader hypotheses based on a subset of data.

3. If you are hiring a high number of new employees or trying to improve productivity, focus your efforts on measuring workforce efficiency gains. A well sequenced, well-designed and well-delivered training program can drive increased productivity and faster time to proficiency. Execute, measure and document quick wins, and communicate early and often what is working and why.

"Utilizing a portfolio model for training effectiveness measurement has allowed us to create efficiencies in the measurement process, while proving training's value to our leaders."

CENTRALIZED TRAINING ORGANIZATIONS THAT REPORT TO THE BUSINESS INCREASE TRAINING QUALITY AND SUPPORT

Centralized training organizations that report directly to operations or a shared services group are more cost-effective, have demonstrably increased efficiencies, and experience better alignment with business priorities and goals. Centralization allows training organizations to better leverage best practices and build efficiencies around governance, program design, the use of technology, training effectiveness measurement and more.

Insights and Best Practices

Over 60% of benchmark respondents reported that their training organizations are centralized. Within the centralized training organizations, nearly 75% report to operations or to a shared services group that reports to operations, and the other 25% report to human resources.
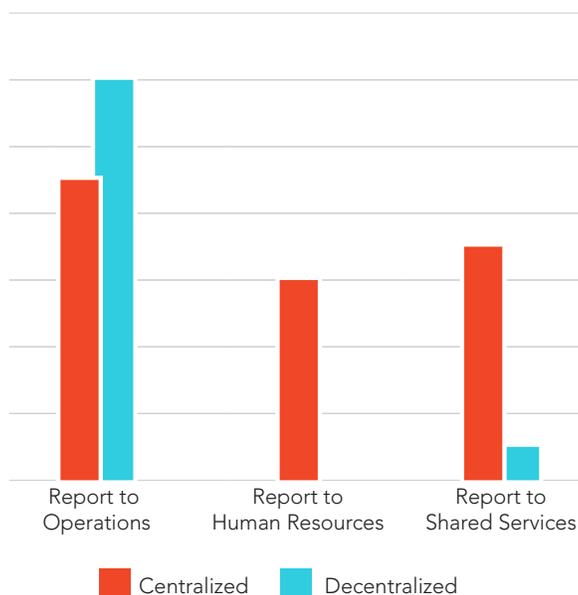

Figure 4. Structure of Training Organizations

Centralized training organizations reported efficiencies in systems, processes, facilities, technologies and resources, as well as increased quality of training, better measurement of training effectiveness, and less redundancy than decentralized training groups. It is additionally important to report to operations, either directly or through a shared services organization, to gain better alignment with business goals and increased support and buy-in by business leadership.

Respondents from decentralized training groups reported being unable to provide the strategic consultation and partnership needed to produce effective training. Decentralization results in a culture where separate business units decide what is important to them independent of larger business priorities. This separation also causes redundancies in effort and an increased overall cost of training, without guaranteeing that the training that is created and delivered is effective or meaningful. One advantage reported by decentralized training organizations is the ability to address site- or function-specific needs more effectively, and to ensure that no one group is neglected, regardless of size or criticality to the business, albeit at a higher and often not accounted for cost.

Centralized training organizations that report to human resources reported better efficiencies than decentralized training groups, but experience less support and buy-in from operations leaders. Overall, this results in a bigger disconnect from business priorities and a lack of consistent financial support. One combined utility that reports to HR has a strong operations-run governance structure that not only drives training priorities, but funds a majority of the training organization's programs and activities. This model offsets most weaknesses inherent in reporting to HR.

A few decentralized training groups appear to be finding success in creating cross-functional committees. The purpose of these committees is to bring siloed training functions together to share best practices and collaborate across systems to create some consistency in training processes and templates, and build efficiencies by leveraging common systems and facilities. However, these groups still struggle to position themselves as true strategic partners to the business, are not as cost-effective, and lack consistent support and commitment.

Recommendations for Improvement

1. If your operations training function is decentralized, strongly consider moving to a centralized model that reports to the business. There are many variables that lead organizations to select other models, and decentralization can work moderately well with the right governance and cross-functional collaboration in place. However, the findings of this benchmark clearly point to centralized training organizations experiencing higher levels of efficiency, diminished redundancies in training efforts, and consistent quality and effectiveness across training materials and programs.

2. In combined utilities, reporting to HR might be necessary. If your operations training function is centralized but reports to human resources, it is critical that you create executive-sponsored governance processes owned by operations to build direct buy-in and commitment to the training function by the line of business.

"We have gone back and forth between reporting to HR and to the business, and it has become abundantly clear that a centralized model that is embedded in operations allows for the most efficiencies and better alignment with the business."

COMPETENCY-BASED TRAINING PROGRAMS ARE THE FOUNDATION OF SUCCESSFUL TRAINING

Compliance-based training often results in "qualified" employees performing tasks in the field with insufficient preparation, and many do not know how to accurately or safely complete required tasks per company business processes or work procedures. Additionally, compliance-based training can significantly compromise an organization's goal of maximizing workforce potential and driving business results, especially as legacy employees retire and are replaced by an inexperienced workforce that has limited tenure in the field.

In comparison, competency-based training programs speed the time to full employee competence, and increase the organization's ability to ensure that employees are prepared and productive over the course of their careers. Training to competence creates better alignment across all levels of experience in the field, which improves crew productivity and support of training by the business.

Insights and Best Practices

Almost 40% of participants reported that their primary function as a training organization is to ensure a compliant and qualified workforce. The companies they work within prioritize measuring, managing and tracking compliance, and training's function is to support and strengthen the effectiveness of that effort. 25% of these organizations reported that Operator Qualification (OQ)-related training takes up most of their development and delivery time. Only 15% of participating companies reported building training based on competency frameworks that define the knowledge, skills and abilities required to effectively perform work in the field.

Figure 5. Focus of Training

In addition to being compliance-focused, the majority of participants' training efforts are primarily focused on training for new hires or new-to-role employees. There is little or no formal training provided to seasoned employees. However, the need for refresher training was reported to be increasing in criticality as employees with less tenure begin moving into more supervisor or journeyman-level roles.

There were many barriers identified that make it difficult for companies to provide refresher training. First, refresher training programs often do not exist, because this level of experience was historically developed in the field rather than through formal training. Second, the resources needed to create these new training programs either do not exist or are already stretched thin with other compliance-related or new hire training demands. Finally, operations leadership is often reluctant to allow their most experienced employees leave the field and forego productive work for training purposes.

A select few companies have established frameworks that define the end-to-end training needs for field operations roles. They report that these frameworks are effective and provide clear role and competency definitions based on the specific work an employee will be expected to do over the course of their career. They define how and when an employee will learn those skills over their development lifecycle—from new hire training through structured on-the-job and refresher training. Two participating companies have established a positive ROI for this approach, because new employees are equipped to do productive work more efficiently and earlier in their careers.

These two companies use refresher training to keep experienced employees continuously learning throughout their careers on topics such as changing tools, technologies and work methods. This creates better efficiency and alignment across all levels of experience in the field, and keeps experienced employees informed on what new employees are learning as they enter the company.

Recommendations for Improvement

1. Build a career-long description of the job skills required for successful performance across each field operations role.

2. Create a program design for each job classification that defines the training and on-the-job support required to gain full competence over the course of an employee's career. This should include everything from pre-hire screening and foundational new hire training to OQ assessments, structured OJT, refresher training, coaching and much more.

"Training is not developed as a single event, but rather as a development lifecycle throughout an employee's entire career. This has made all the difference for us."

TRAINING EXPERTISE IS CRITICAL TO DESIGNING AND DEVELOPING EFFECTIVE TRAINING MATERIALS AND TOOLS

All training organizations face significant challenges in responding to the increasing demand for training. Companies that utilize dedicated instructional design resources are succeeding in keeping up with the pace, and have stronger training programs that provide more business value compared to companies that use instructors and other subject-matter experts to develop training materials and tools.

Insights and Best Practices

Over 50% of benchmark participants reported utilizing instructional designers to varying degrees to develop new and update existing training materials. Approximately 40% reported relying solely on trainers or other subject-matter experts to develop training. And almost 30% of training organizations interviewed reported using contract resources to augment internal capabilities.
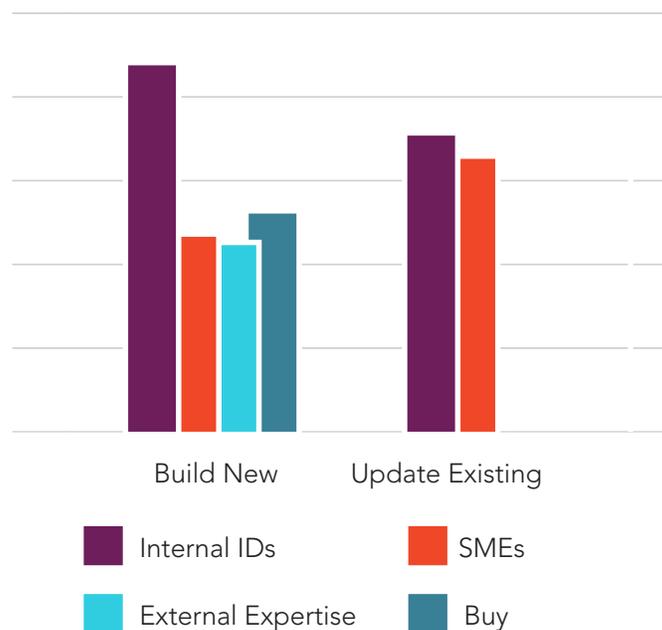
Figure 6. Source of Training Development

Benchmark interviews clearly demonstrate that the training organizations that utilize either internal instructional designers or external training experts are experiencing higher levels of success in their training development efforts in the following ways:

- Improved training program quality and effectiveness

- Increased ability to develop training programs efficiently and on schedule

- Increased consistency in training materials and tools

- Reduced time investment required by students in formal classroom training

- Effective use of innovation for both training development and delivery

- Improved transfer of knowledge back to the job

Outsourcing is one way many benchmark participants reported being able to retain the needed skill-sets while maintaining the flexibility to keep costs down long-term as development needs ebb and flow

In contrast, companies that rely on subject-matter experts or instructors to develop training materials are struggling to keep up with the increasing demands and challenges they are facing. Additionally, they are unable to efficiently develop effective training materials that meet the needs of a new generation of learners due to a lack of development skills and adult learning expertise.

Recommendations for Improvement

1. Separate training development responsibilities from training delivery, and hire or contract instructional design experts to develop training materials. These professionals provide new perspectives and fresh approaches and ideas that are essential for success.

"Our instructors are stretched thin with overburdened training delivery schedules, and don't have time to update materials or develop new training programs."

TRAINING MATERIALS ALIGNED TO WORK PROCEDURES AND BUSINESS PROCESSES SUPPORTS MANAGEMENT OF CHANGE

As regulatory requirements evolve and companies become more reliant on new technologies and equipment, work conducted in the field will continue to change, requiring training organizations to continuously adapt the knowledge and skills they transfer. The most effective training organizations have a process for clearly mapping training to their company's specific business processes and work procedures, and maintaining alignment as regulations, tasks, equipment and technologies change.

Insights and Best Practices

Benchmark interviews revealed that 66% of participating companies have training that is aligned to company-specific work procedures. The other 34% either don't have work procedures documented in a consistent way, or don't have processes in place to ensure that training is updated as processes and procedures change. These companies are at risk of having employees who are untrained on the specific methods, tools and procedures that are used in the field, especially as the work they are expected to do continues to change.
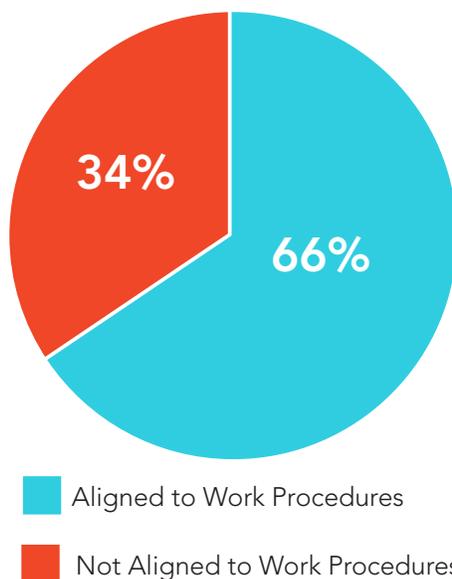

Figure 7. Alignment of Training to Work Procedures

Industry leaders implement processes to ensure that all training materials are regularly and consistently updated to reflect business process and work procedure changes. Most participants whose training is aligned to work procedures reported maintaining this alignment by participating on committees or working in close collaboration with the department responsible for updating work procedures. A few training organizations reported linking training materials directly to work procedures, either electronically or via reference, so that updates don't have to be made in multiple places.

Recommendations for Improvement

1. Implement a system and/or process to map training materials to standards and work procedures. This ensures that the impacts of regulation changes and other external inputs (new technologies, equipment changes, etc.) on specific training materials can be easily tracked and updated.

2. Consider using an automated system that identifies and notifies impacts on training materials due to any changes to standards, procedures, OQ or other compliance requirements, or equipment and technologies used in the field. This provides visibility into any gaps in training to enable better prioritization of training development and maintenance efforts.

"New compliance requirements frequently trigger new procedures and standards, but many of these functions operate in separate parts of the organization. As a result, standards get out of sync with procedures, which get out of sync from training, and it becomes nearly impossible to manage all the change."

INSTRUCTOR DEVELOPMENT PROGRAMS DRIVE TRAINING DELIVERY EFFICIENCY AND EFFECTIVENESS

The most effective organizations use their training delivery operations to set high standards for competence by ensuring that training is consistently and effectively implemented. Many companies move their most accomplished performers into the instructor role to provide role models for students and support the transfer of technical knowledge, but do not adequately prepare those instructors with the other knowledge and skills needed to effectively manage learning environments and develop employees.

Insights and Best Practices

Almost all participating companies recruit instructors from the field to provide the expertise and credibility necessary for the effective delivery of technical training. However, only three participating companies have instructor development programs in place to successfully transition subject-matter experts into training roles.

Those training organizations that have implemented instructor excellence programs have experienced elevated success in recruiting the most capable candidates with high subject-matter expertise, and then training them in preparation and facilitation skills to enhance both the efficiency and effectiveness of learning.

A few companies set the instructor position up as a developmental role to advance into supervisor positions. This makes it easier to recruit top performers with up-to-date subject matter expertise and context into training, and it creates business buy-in and support because these people go back to operations as leaders. There is higher instructor turnover with this model, but if managed effectively, it can serve companies well and help ensure that instructors are well versed in the most up-to-date and relevant information from the field.

> *"Our trainer development program brings new trainers with strong subject-matter expertise up to speed, and introduces foundational aspects of being a good trainer early on."*

Recommendations for Improvement

1. Recruit and hire individuals with extensive subject-matter expertise and a passion for transferring their knowledge and skill-sets to the next generation of workers. Consider setting up the instructor position as a developmental role to recruit better talent.

2. Create an instructor development program that provides initial skill development and prepares instructors to deliver new and existing courses. Ensure that trainers maintain those skills by implementing a robust instructor observation and review process to support continuous improvement.

STRUCTURED ON-THE-JOB TRAINING (OJT) PROGRAMS EFFECTIVELY TRANSFER LEARNING TO THE FIELD

Structured OJT is a critical element in building a skilled and competent workforce because it provides employees the ability to perform critical tasks in a real work environment under the supervision of an expert. OJT is the most effective means for transferring the knowledge and skills gained in formal training to actual work performed on the job, and is critical for passing on tacit knowledge from more experienced employees and re-enforcing field buy-in and support of new employees.

Insights and Best Practice

Of the companies interviewed, 70% have some form of OJT in place. However, only 40% report having any type of formal structure or tracking process in place to ensure OJT requirements are implemented in the field. The other 30% of training organizations do not create any formal structure or accountability around OJT.
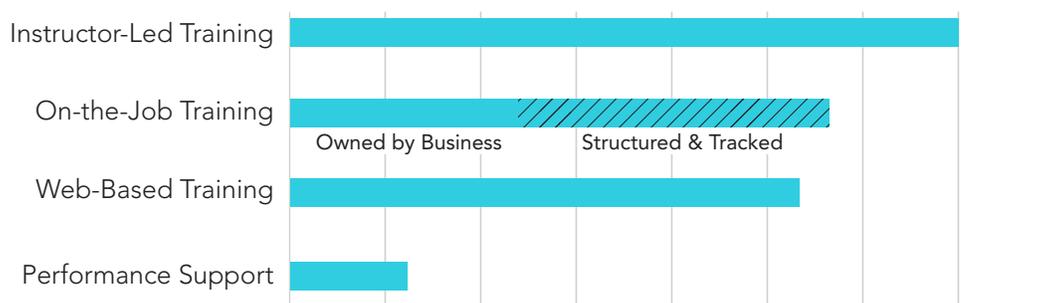

Figure 8. Types of Training Provided

OJT can provide a valuable opportunity for employees to broaden and deepen skills outside of the classroom, and is most effective if the structured OJT requirements align to business processes and work procedures, and the program is tracked to create accountability and consistency in its implementation. Defining and tracking OJT requirements also ensures that employees are getting exposure to all the different types of work they need to develop full competence.

Creating and implementing a structured OJT program require a substantial investment of time and resources by both training and operations, but these programs are proven to result in better alignment to business processes and work procedures, increased speed to competence for new employees, reduced time required in formal training, and tight feedback loops to support continuous improvement in training and in the field.

Two companies reported high levels of success with dedicated training resources who are responsible for implementing OJT and coaching new employees in between formal training sessions. One company utilizes a very structured OJT program as the only means of training for specialized roles that have smaller numbers of employees to train.

Recommendations for Improvement

1. Incorporate structured OJT as a component of all training programs to balance the different ways people learn and provide exposure to a broad array of common tasks in real-world contexts.

2. Build tracking mechanisms into OJT requirements to ensure accountability and alignment with work.

3. Regardless of reporting structure, involve operations directly in OJT components for every training program.

"Our OJT coaching resources in the field are seen as a vital component of the businesses' ability to effectively and efficiency conduct core business operations."

SIMPLE TECHNOLOGY SOLUTIONS FOR TRAINING DELIVERY AND ON-THE-JOB SUPPORT PROVIDE IMPACTFUL BUSINESS VALUE

Technology solutions provide the opportunity to embrace the more technologically savvy and less tenured millennial workforce by equipping them with must-need knowledge and hands-on practice of skills as part of their training experience, and then providing support tools to reinforce and elevate their performance where they need it most—on the job. Simple technology solutions are proving to be an effective way to provide impactful business value quickly and gain momentum for further technology investments.

Insights and Best Practices

IT departments and senior leaders have consistently de-prioritized technology investments for training. When funds are allocated, there is a lack of understanding by training organizations about what technologies to invest in and how to best utilize them. Many companies are beginning to experiment in this area, experiencing successes with technology solutions that improve training delivery and enable on-the-job support. However, the overall use of technology is consistently limited and not an integral part of training strategies for most benchmark participants.
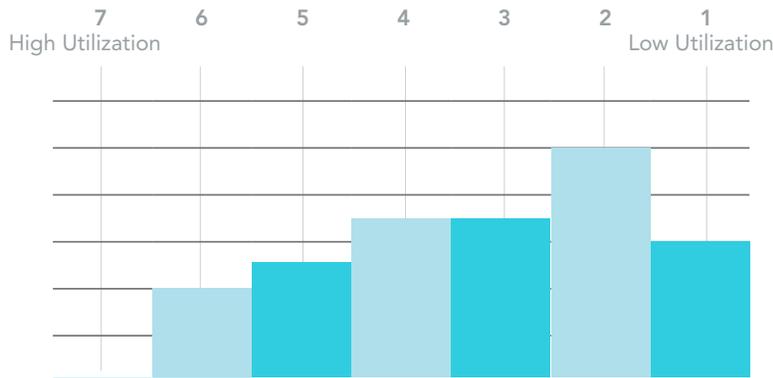

Figure 9. Utilization of Technology in Training

Five companies reported the use of performance support tools to provide easy access to essential information needed on the job. Performance support provides just-in-time and just enough information, tools and help to enable optimum performance by field employees in their moment of need, thereby enhancing the performance of the overall business. Providing the means to access just-in-time support in the field reduces variation in tasks performed, and speeds the time to competency by eliminating the need to memorize complex and seldom used information during formal training. Performance support also decreases training delivery costs by allowing less time to be spent in formal classroom training, and enabling employees to own their learning as their careers progress.

A few participants have had a high level of success leveraging simple, low-tech technology solutions. For example, a handful of companies are utilizing employee-created, YouTube-like videos for micro learnings and demonstrations of the application of critical skills. These types of solutions are much easier to put into place than more sophisticated technologies such as virtual reality, and have the capability to provide a high degree of impact very quickly.

Many participating companies reported that IT security constraints and a lack of individual computers or mobile devices in the field are barriers to being able to implement effective performance support solutions. Some companies are successfully overcoming IT restrictions, and putting training materials on the cloud, making information easily accessible on smart devices in the field.

The most appropriate and impactful technology solutions might look very different depending on the company. Geographic reach, rural vs. urban environment and number of field employees are all factors that must be considered. Addressing actual business needs is critical in determining which technologies to invest in, not just chasing the shiniest or trendiest new thing.

Recommendations for Improvement

Technology supplements hands-on learning, but will never replace it completely in an asset-intensive, technical industry like utility and pipeline operations. The key is to focus on practical solutions that deliver demonstrable value. Focus on speed, efficiency and cost savings, and then identify your top priorities to drive the highest business value. You can do a few simple things well, and provide impactful business value compared to where you are today.

Examples of relatively simple, high impact technology solutions include:

- Web-based training that focuses on general knowledge and augments or prepares students for instructor-led/hands-on training.

- Electronic training materials loaded on laptops or tablets that are easy to reference during formal training and back on the job.

- Easy-to-use performance support tools (SharePoint sites, apps, video libraries) that make learning available on the job and effectively transfer knowledge to future employees.

- YouTube-like videos for micro learnings and demonstrations of skills.

- Cloud-based training materials that make information easily accessible on smart devices in the field.

- Automated administrative functions, such as testing and scheduling, to improve the overall efficiency of training.

DEDICATED TRAINING FACILITIES THAT MIRROR REAL-WORLD WORK PROVIDE HANDS-ON PRACTICE AND TRAINING DELIVERY EFFICIENCIES

Dedicated training facilities and experiential props that mirror real-world work settings improve the quality and consistency of training delivery, create efficiencies in scheduling and logistics, and reduce variation in how tasks and procedures are performed in the field.

Insights and Best Practices

Of the companies interviewed, 72% have invested in dedicated training facilities and experiential props to support the hands-on practice of critical skills in a controlled environment, and report a high increase in training delivery effectiveness as a result. Investing in state-of-the-art training facilities also creates a visual representation for employees of the company's commitment to excellence in workforce performance.

Figure 10. Training Facilities

The highest level of training effectiveness is realized under conditions that reflect the actual work environment. Enabling employees to learn and practice tasks on equipment they encounter in the field under close-to-actual conditions gives the workforce and the broader organization a greater confidence in an employee's ability to do their work safely and competently.

Specific best practices identified through interviews include:

- Investing in dedicated training facilities to create efficiencies in scheduling and logistics, and better justify investments in training delivery technologies, equipment and tools that can be leveraged across larger numbers of students.

- Incorporating abundant opportunities for hands-on practice that mirrors work in the field. Examples shared by participants include gas cities, pole yards, props and mock-ups, and more.

- Using delivery technology such as virtual learning studios and simulators for expensive equipment to increase the effectiveness of training and significantly reduce training delivery costs.

- Designing innovative classroom layouts to bring practice opportunities into the classroom and reduce the time required to move from lecture to practice and back.

Recommendations for Improvement

1. Visit other facilities to learn what is working well (contact Mosaic for recommendations and introductions).

2. Ensure props and training yards match equipment in the field.

3. Invest in simulators for the practice of high risk tasks, working in abnormal operating conditions or other potentially hazardous working environments

4. Where dedicated training facilities don't make sense because of broad geographic reach or other reasons, consider developing partnerships with other energy or utility companies that do have facilities to rent their space for centralized training events.

"Our classrooms are set up to incorporate a high percentage of hands-on learning using props, tools and equipment that matches what we employees use in the field."

SUMMARY

Our benchmark identified that there is a significant amount of good work being done in the energy industry. There is also opportunity for improvement. If you would like to speak to us about this study, or learn how Mosaic can help you on your journey to training excellence please reach out.

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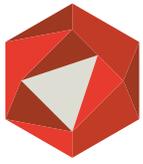
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