Employer Workforce Preparedness in the Fiber Broadband Industry:

HOW BUILD-READY ARE WE?

NCTI TRAIN UP. | Fiber Broadband ASSOCIATION

When fiber leads, the future follows.

EXECUTIVE SUMMARY

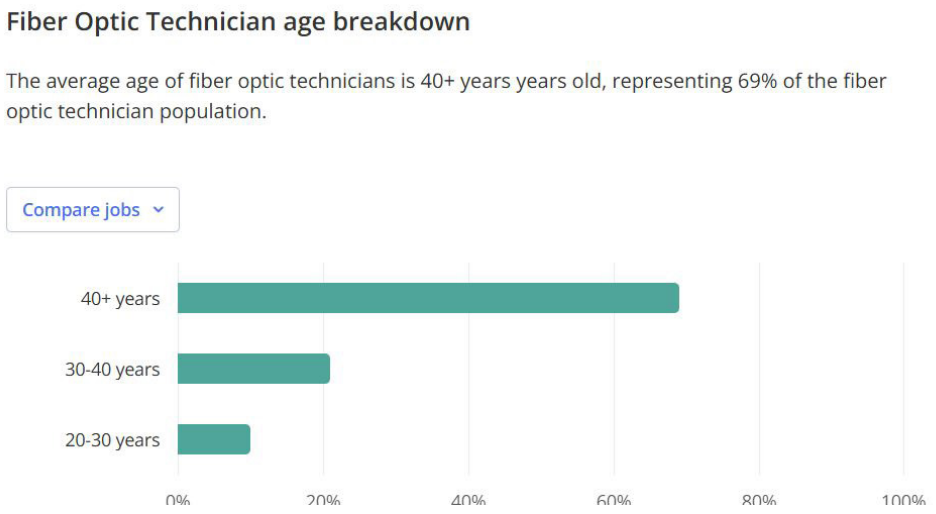
The telecommunications industry stands at a critical juncture. While the demand for robust and advanced connectivity continues its relentless climb, the very foundation upon which this growth is built – our workforce – faces unprecedented challenges.

With almost 70% of fiber optic technicians on the retirement path, according to Zippia, operators are likely facing a pending loss of decades of institutional knowledge and hands-on experience.

In the spring of 2025, the Fiber Broadband Association and NCTI conducted a joint research project to assess the state of fiber broadband workforce readiness, examining the type and effectiveness of current training programs and the existing pool of technicians. ***The Broadband Workforce Training and Development Effectiveness Survey*** revealed that the sector faces significant challenges that require immediate attention and action for sustainable growth.

- **A staggering 87% of respondents rely upon on-the-job training (OJT)**. The OJT model is under threat due to the looming retirement wave and can negatively impact training as it prioritizes practical, hands-on skills over the foundational knowledge and theoretical understanding that are crucial for long-term career growth.
- **73% of in-house training falls short** according to those surveyed, being either somewhat effective or not effective, primarily due to time constraints, pressure to quickly ramp up productivity, and difficulty in measuring training effectiveness.

With approximately 10% of fiber optic technicians landing in the 20- to 30-year-old age range, the industry needs to develop and adhere to career pathways that attract younger talent, including credentialing to demonstrate investment in employees. Issues need to be addressed both in terms of the type and effectiveness of training programs and the impending drastic decline in available technicians.



Source: Zippia

Compounding this demographic shift is the persistent difficulty in attracting young talent to the telecom sector. In an era of rapidly evolving technologies and seemingly more "glamorous" industries, the vital and intricate work of building and maintaining our digital infrastructure often struggles to capture the imagination of the next generation. This reluctance to join our ranks exacerbates the impending workforce shortage and risks leaving us without the fresh perspectives and digital native skills essential for future success.

Furthermore, the telecommunications industry has often found itself in a reactionary posture when it comes to workforce development, addressing skill gaps only as they become critical pain points. This reactive approach is no longer sustainable in the face of such significant and predictable demographic changes and the accelerating pace of technological advancement.

This white paper offers a crucial snapshot of the industry's own perceptions regarding its current workforce and existing training initiatives. By understanding how employers themselves view their present capabilities and development efforts, we can collectively identify the areas demanding immediate attention and strategic action.

To meet this challenge, a clear imperative for the telecom industry exists: it must transition from a reactive stance in workforce development to a proactive and forward-thinking approach. We can no longer afford to wait for the skills gap to widen. Instead, we must actively cultivate the talent pipeline necessary to meet today's demands and tomorrow's innovations. A proactive shift in industry practices and widespread involvement are immediately necessary to prevent a recurrence of current challenges within the next five years.

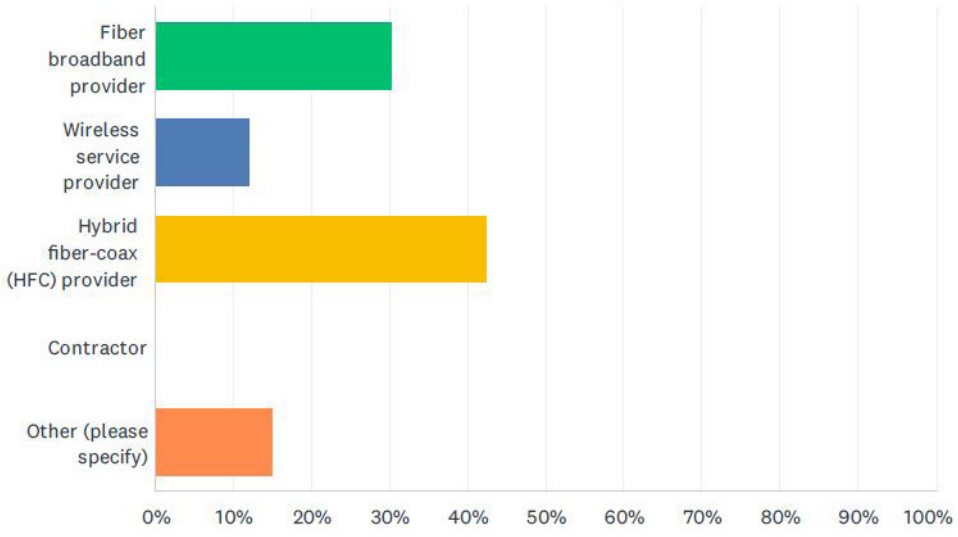
A multi-pronged strategy is required: actively engaging and inspiring young people to consider careers in telecom, empowering current employees to advance their careers through continuous learning and upskilling, and establishing robust, sustainable pipelines of highly trained workers. By embracing a proactive mindset and investing in people, we can ensure the long-term health, resilience, and continued success of the telecommunications industry in a digitally driven world. This report serves as a vital catalyst for that necessary transformation.

This document outlines key findings from a joint survey hosted by FBA and NCTI assessing industry perspectives on workforce preparedness within the fiber broadband industry. The results provide valuable insights into the current skill levels, training practices, challenges, and future strategies employed by organizations in this rapidly evolving sector.

INTRODUCTION

The "Broadband Workforce Training and Development Effectiveness" survey was conducted in the spring of 2025. The largest group of survey respondents (72%) included representatives from fiber broadband providers (30%), and hybrid fiber-coax operators (42%), and 61% of respondents work in companies with more than 500 employees.

Figure 1: Industry Sector Respondents



Data collected in this survey provides a foundational understanding of the current state of workforce preparedness in the broadband industry, highlighting both strengths and areas requiring attention and strategic investment. Topics investigated include the skill level of the current workforce, value of certifications, fiber optic training, in-house training, workforce knowledge, training strategies, and collaboration with stakeholders for meeting training needs.

Skill Level of Current Workforce

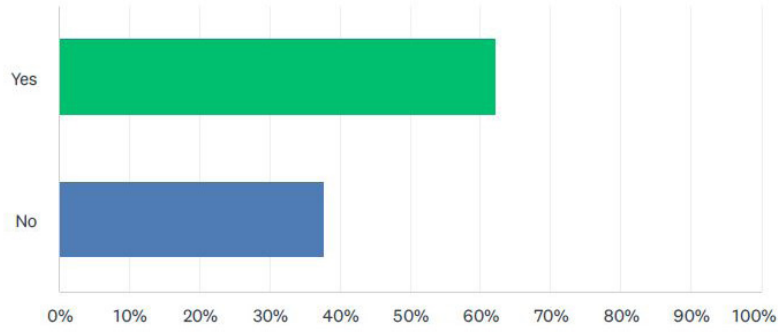
The prevailing sentiment among respondents paints a reassuring picture of the current telecom workforce's capabilities. A significant majority expressed confidence in their current workforce, with a substantial 47% rating their employees' skill level as "Good" and an additional 29% recognizing them as "Excellent."

This collective assessment points to a strong foundational skillset already present within the industry, a valuable asset upon which to build. This positive outlook suggests that the existing workforce possesses a solid grasp of core telecom principles and practices, providing a reliable base for current operations and future endeavors. A generally capable and experienced workforce at the heart of the sector today is welcome news and can be leveraged for training the workforce of the future.

Certifications Are Valued Highly

Within the telecommunications sector, technical certifications are not merely preferred; they are a cornerstone of workforce credibility and operational excellence. A compelling 62% of organizations explicitly prioritize these credentials, demonstrating a widespread recognition of their importance. This strong emphasis highlights a deep-seated understanding that standardized knowledge and rigorously validated skills are paramount in an industry responsible for the very backbone of modern communication and essential utility.

Figure 2: Priorities for Skilled Technical Certifications in the Next 1-3 Years



Technical certifications function as tangible proof of an individual's mastery of specific fiber optic competencies. From the precise techniques of installation and splicing to the critical skills of testing and troubleshooting, these credentials offer a clear and consistent measure of expertise. By actively seeking and valuing certified professionals, organizations are making a deliberate investment in measurable workforce quality. This commitment translates directly into a more reliable and effective workforce, better equipped to navigate the inherent complexities of deploying and maintaining high-performance fiber-optic networks.

Furthermore, attracting new people is easier when you have a credentialing path for them to follow and measure their progress over time. With only 10% of fiber optic technicians landing in the 20- to 30-year-old age range, the industry needs to develop and adhere to career pathways that include credentialing.

The industry's strong preference for certified professionals is a strategic decision that ultimately benefits all stakeholders. It fosters greater confidence in the reliability and quality of fiber optic networks, minimizes errors and service disruptions, and ensures that the infrastructure upon which our digital world depends is built and maintained by a highly skilled and competent workforce.

Fiber-Optic Training Provided by Organizations

A significant commitment to training is evident within the telecommunications industry, with 42% of organizations offering regular, consistent fiber-optic training programs. This proactive approach underscores the understanding that the rapid advancements in fiber technology necessitate continuous learning to maintain a skilled and adaptable workforce. Furthermore, a considerable 40% provide training on an occasional or as-needed basis, demonstrating a responsive strategy to address specific skill gaps, introduce new equipment, or adapt to evolving industry standards. This flexibility allows organizations to target training efforts where they are most immediately required.

Only 18% of respondents do not currently offer fiber-optic specific training. Broader adoption of formal training initiatives within this segment could lead to greater standardization of skills, improved quality and speed of deployments through increased productivity, and enhanced safety across the sector, ultimately benefiting the entire fiber broadband ecosystem and ensuring a consistently high level of expertise.

Organizations within the telecommunications sector are embracing a multifaceted approach to training, recognizing that a single method may not adequately address the diverse learning needs and skill requirements of their workforce. The overwhelming prevalence of on-the-job training (87%) highlights the critical importance of practical, hands-on experience in mastering the intricacies of fiber optic technology.

Such high dependence on OJT, as stated before, can have adverse consequences as it prioritizes practical, hands-on skills over the foundational knowledge and theoretical understanding that are crucial for long-term career growth. Dependence on existing employees for OJT, many of whom may be planning to retire in the near future, presents significant risk for firms to lose skilled training resources and undocumented institutional knowledge.

On-the-job training, under supervision, allows technicians to directly apply knowledge and develop crucial skills in real-world scenarios. Complementing this experiential learning, a significant 73% of organizations utilize online learning platforms, leveraging their flexibility and accessibility to deliver theoretical knowledge, introduce new concepts, and offer continuous learning opportunities at scale.

Recognizing the long-term value of a highly skilled workforce, nearly 50% of survey participants offer tuition reimbursement, actively encouraging employees to pursue formal education and specialized certifications, thereby fostering a culture of continuous improvement. Ongoing investment in education is a multifaceted benefit that enables employees to retain and increase their proficiency and skills in a continually evolving field, as well as provide new opportunities for career advancement.

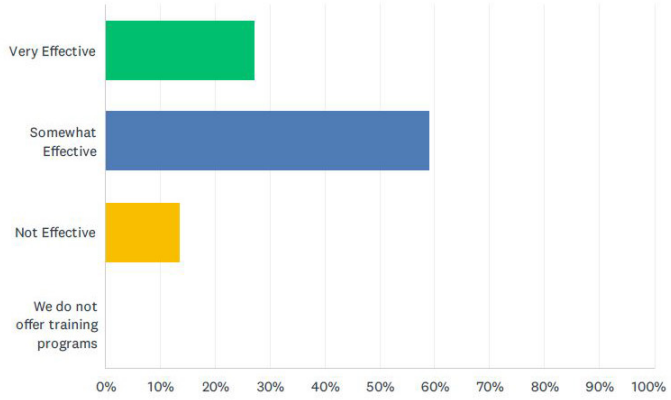
Finally, the utilization of internal workshops and seminars (42%) underscores the importance of knowledge sharing within organizations, allowing experienced professionals to disseminate best practices, address specific technical challenges, and cultivate a collaborative learning environment that strengthens the collective expertise of the team. This comprehensive approach signifies the industry's commitment to building a well-rounded, adaptable, and highly competent fiber broadband workforce.

In-House Training Challenges

While a positive foundation exists, the majority of respondents, 59%, deemed their internal training programs are "Somewhat Effective," indicating a significant opportunity for enhancing internal training programs. The fact that over 25% of programs are already recognized as "Very Effective" suggests the existence of successful models and best practices that could be further analyzed and emulated across the industry.

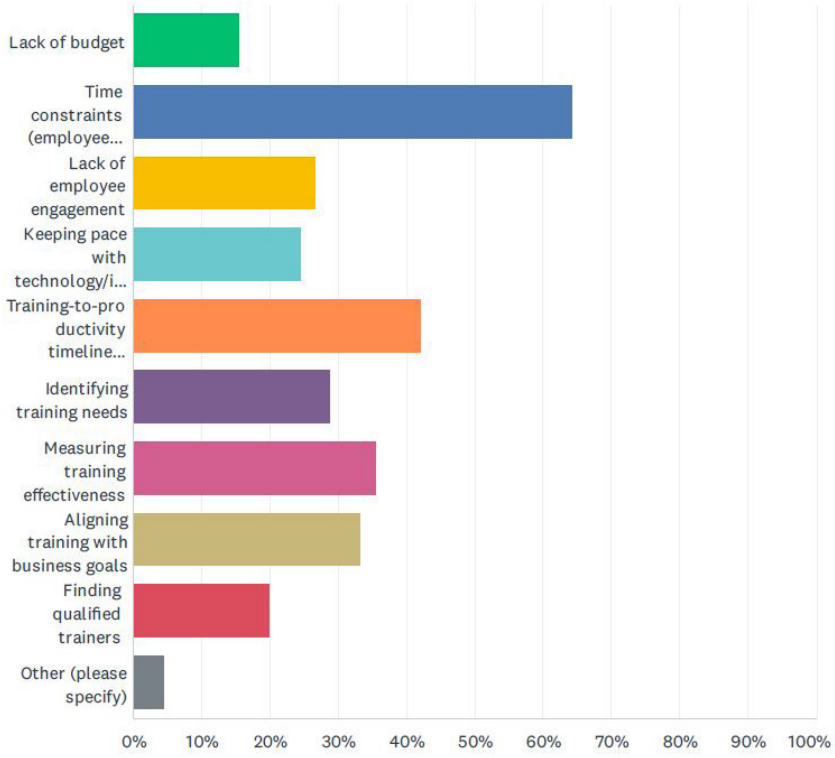
Conversely, the 14% of programs considered "Not Effective" signals a critical need for reevaluation. Organizations with less successful training initiatives should focus on identifying the root causes of this ineffectiveness, which may include outdated content, ineffective delivery methods, lack of engagement, or insufficient practical application. By learning from both the successes and failures within the industry, targeted efforts to refine curriculum, improve instructional techniques, and incorporate more robust methods for measuring training outcomes can elevate the overall effectiveness of workforce development programs, leading to a more skilled and productive fiber broadband workforce.

Figure 3: Perceived Effectiveness of Current Training Programs



Organizations across the fiber broadband landscape encounter several significant hurdles in their efforts to deliver truly effective workforce training. The most prominent is time constraints (64%), reflecting the demanding nature of the industry and the difficulty in allocating sufficient time for employee development amidst pressing project deadlines and operational requirements. Clearly there is a need to underscore the value of professional, formal training. Inadequate or rushed training compromises efficiency and effectiveness, leading to increased staffing needs and costly rework due to incomplete or incorrectly performed tasks.

Figure 4: Key Challenges to Measuring Training Effectiveness



This challenge is closely followed by training-to-productivity timeline demands (42%), which underscores the constant pressure to quickly integrate newly trained personnel into productive roles, often limiting the duration and depth of training programs.

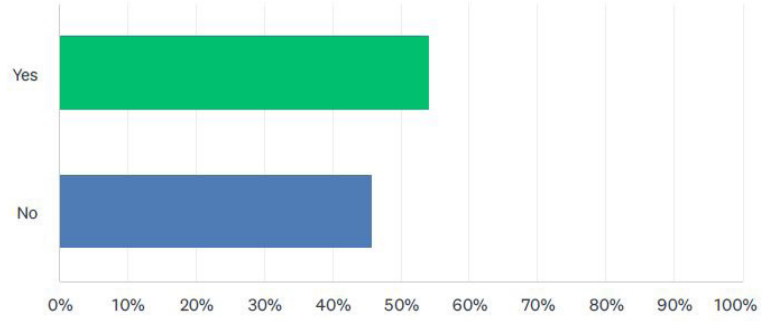
Furthermore, a substantial obstacle lies in measuring training effectiveness (36%). The inability to clearly quantify the return on investment (ROI) of training initiatives and to objectively assess their impact on employee performance and organizational goals makes it challenging to justify further investment and to identify areas where training programs can be improved for optimal impact. Training programs, regardless of type, need sufficient metrics to measure progress towards desired outcomes set by the appropriate supervisor, manager, and/or company and based around safety when applicable, quality of work, attention to detail as needed, and speed to complete designated tasks.

Addressing these interconnected challenges will be crucial for the industry to optimize its training strategies and cultivate a highly skilled and adaptable workforce capable of meeting the growing demands of the telecommunications sector. With 73% of in-house training either "Somewhat Effective" or "Not Effective," there is clearly room for improvement by dedicating more time to training, adding new methods and courses, and implementing appropriate metrics to assess both training effectiveness and skill levels of employees.

Sufficiency of Workforce Knowledge/Skill Level

A nuanced perspective emerges regarding the sufficiency of the current workforce's knowledge and skill level within the fiber broadband industry. While a slim majority (54%) express confidence in the current capabilities of their employees, nearly 46% indicate a perceived lack of sufficient knowledge and skills. This near balance underscores a critical juncture for the industry. The slight majority suggests a generally adequate baseline, likely built upon existing expertise and foundational training.

Figure 5: Assessment of the Current Workforce's Knowledge and Skill Levels



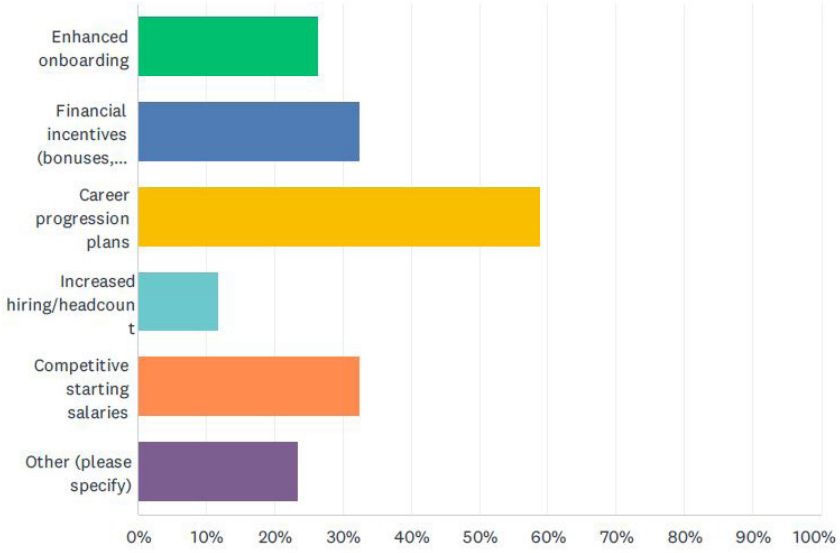
However, the significant proportion acknowledging a deficiency highlights the potential for existing skill gaps to hinder the pace and quality of future deployments, particularly as technology evolves and the demand for skilled technicians intensifies with initiatives like the Broadband Equity, Access, and Deployment (BEAD) program and continued commercial investments. This close division emphasizes the ongoing and crucial need for strategic workforce development initiatives to proactively address these existing gaps, upskill the current workforce, and effectively prepare for the sophisticated demands of the fiber networks of the future.

Without focused efforts, the industry risks facing significant bottlenecks and challenges in achieving its ambitious goals for widespread, high-quality broadband access.

Strategies to Prepare for Future Workforce Needs

Organizations within the telecommunications sector are strategically looking ahead to secure a skilled and engaged workforce for the future. A primary focus lies in career progression plans (59%), recognizing that offering clear pathways for advancement is a powerful tool for retaining valuable talent and fostering long-term commitment. By outlining potential growth opportunities within the company, organizations can motivate employees to develop their skills and envision a future within the organization. Complementing this emphasis on internal development are strategies aimed at attracting new talent.

Figure 6: Strategies for Preparing the Future Workforce



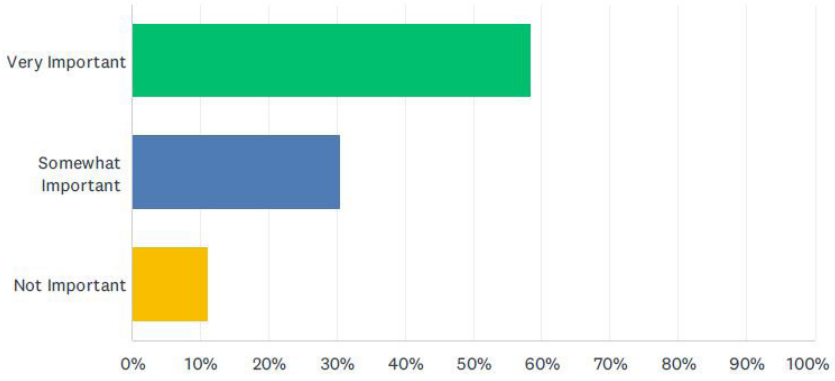
Financial incentives and competitive starting salaries (both at 32%) are acknowledged as crucial for drawing skilled individuals to the industry and ensuring they feel adequately compensated for their expertise. A strong initial compensation package can significantly enhance an organization's ability to compete for top talent in a demanding market.

Furthermore, the implementation of enhanced onboarding processes (26%) reflects a growing understanding of the importance of effectively integrating new hires. A comprehensive onboarding program that provides the necessary tools, resources, and cultural understanding ensures that new employees are well-equipped for success from the outset, contributing to higher engagement, faster time-to-productivity, and improved retention rates in the long run. This multi-pronged approach demonstrates a proactive and holistic strategy towards building a future-ready fiber broadband workforce.

Collaboration with Stakeholders

A strong consensus exists on the importance of collaboration for addressing workforce preparedness challenges. An overwhelming 58% of respondents consider collaboration "Very Important," and an additional 31% deem it "Somewhat Important." This highlights the recognized need for partnerships between industry stakeholders, educational institutions, and government entities.

Figure 7: Importance of Stakeholder Collaboration in Workforce Preparedness



Relevant stakeholders may include, but are not limited to, state broadband offices, state workforce development offices/boards, federal program offices, economic development agencies, internet service providers and cooperatives, industry associations, educational institutions/boards including community and technical colleges and trade schools, labor unions, tribal associations, public utility commissions, vocational non-profits, community partners, and other workforce-orientated non-profits.

CONCLUSIONS

The telecommunications sector must transition from a reactive stance in workforce development to a proactive and forward-thinking approach, given the key findings revealed in the Broadband Workforce Training and Development Effectiveness survey. Results indicate that companies are not measuring training effectiveness against performance goals, therefore they miss the opportunity to link their training investments to business outcomes. The primary effects are a lack of insight, wasted resources, and a disconnected workforce. Ultimately, the goal of training should be to boost business performance and deliver a positive ROI. By not measuring effectiveness against goals, a company cannot identify what is working, what isn't, and how to improve its training strategy to achieve its objectives.This transition needs to happen sooner rather than later, as almost 70% of fiber optic technicians are aged 40+ and likely on the retirement path. At this time of sustained growth and public and private investment in critical infrastructure as the nation transitions from legacy copper to fiber, the sector can ill-afford a dramatic loss of hands-on skills and field personnel. It is not an issue that AI can fix, but a basic issue that needs to be fixed for AI to deliver its full potential.

Formalized courses that measure and document employee skills and progress prior to field deployment as well as internal workshops and seminars to reenforce and enhance existing skills are both valuable tools to build the base for successful OJT and a continually improving workforce. Training should be viewed as an employer asset for increasing productivity over the lifecycle of the employee, and not short-changed on time or budget, as well as one that is objectively measured through quantifiable metrics.

Finally, employers should collaborate with other stakeholders to leverage existing programs and resources in order to defray the various costs associated with ongoing workforce development. A skilled and constantly improving workforce is a benefit to the community, society, and employers.