TRAINING THE POWER UTILITY WORKFORCE: CHALLENGES AND OPPORTUNITIES

Morteza Talebi
TRC Companies

ABSTRACT

Keeping up with the growing electricity demand is creating big challenges for the Power industry. The U.S. electric grid is undergoing some major construction and renovation projects to meet the rising electricity demand. With the current retirement rate of the experienced utility workforce and the median age of U.S. workers, staffing these projects with qualified individuals will not be easy. This paper presentation will discuss challenges we are currently facing in terms of the Power industry workforce and training, and how industry leaders must respond to address these challenges.

INTRODUCTION

As grid modernization initiatives expand across the electric power system, it is crucial to have a utility workforce skilled in the engineering, design, and safety concepts and technologies that will control the grid and power assets of the future. But as an older generation of power engineers and technicians retire at a rapid pace, hiring managers report that lack of training, experience or technical skills in new candidates are major reasons why replacement personnel can be challenging to find. In today's fast-paced, complex market, the window of opportunity to train, reskill and upskill the power workforce has become shorter, creating a significant gap between recent graduates' skills and the practical competencies required by a swiftly changing industry.

For utilities to keep pace and maintain reliability and resiliency initiatives for both their customers and regulators, implementing new approaches to workforce development must be a top priority. Strategizing and innovating together will help ensure the utility workforce is prepared for the grid of the future.

RAPIDLY CHANGING INDUSTRY

From increasing electric consumption and rising load growth, to the rapid influx of new grid technologies, the utility industry is grappling with a range of unprecedented changes and doing so with a workforce unprepared to meet them. Grid modernization initiatives, clean energy mandates, and cyber security compliance not only require adequate staff to implement but demand staff trained in the concepts, tools and technologies essential to analyze, protect and control the grid of the future. Workforce shortcomings exacerbate the pressures on utilities to meet project and regulatory deadlines and are even slowing the overall pace of the energy transition, leaving the grid vulnerable to ongoing disruptions.

RETIREMENT, RETENTION, AND KNOWLEDGE TRANSFER

A game-changing generational shift is underway across the utility industry. According to the Department of Energy, 40% of the utility workforce will be eligible for retirement by 2030. Likewise, surveys have indicated that 60% of non-retirement attrition within utilities occurs within the first five years of employment. This turnover, combined with a shift to a work-from-home culture, has meant that the traditional transfer of knowledge between colleagues has been lost. With less one-on-one interaction, and fewer experienced engineers working together with the growing early career employee base, important informal training opportunities are missed.

HUMAN PERFORMANCE ERRORS AND SAFETY

The reliability of the power utility grid is highly dependent on the humans who design, build, test, control and maintain both systems and infrastructure. A single error leading to an outage can cost millions of dollars and cause public image issues. More importantly, utility work is often dangerous, and errors can lead to injury or even death. Without a highly trained and experienced workforce, these highly impactful issues are likely to become more and more commonplace.

NEW APPROACHES ARE NECESSARY TO MOVE FORWARD

While a growing number of utilities are taking more strategic action to address these vital workforce issues, many are still only maintaining the basic practices of relying on professional recruiters, hiring from other utility and power companies and hiring skilled workers from related industries including construction and resident electricians. While these tactics can help, moving more quickly to the desired future state requires new approaches.

IMPLEMENT COMPREHENSIVE CAREER PATHING STRATEGIES

Hiring, training, and retaining the utility workforce of the future requires an investment in better career pathing strategies, tools and resources. A good employee growth program will show employees where they can go and progress within the utility and what skills they need to master to get there. Investing in systems to help prescribe training and measure proficiencies can help track and execute a successful, corporate-wide effort. Leveraging tools to help build skill profiles, job task analyses and growth planning paths for all employees provides direction, aligns training goals and increases employee engagement and retention.

Despite the growing challenges facing the utility industry today, now is the opportune time to prioritize systematic, continuous, and adaptive training programs that attract, retain and develop a workforce capable of meeting current and future demands. Training plays a crucial role in onboarding new employees, teaching existing and experienced workers new skills and maintaining a safe and reliable grid. But to be successful with the younger generation coming into utility jobs right now requires a new way of thinking and ultimately a culture shift when it comes to training. New training programs must be adaptive, rather than prescribe a set way of learning. Leveraging a variety of formats including classroom, online and hands-on exercises, and using a range of tools including augmented reality and gamification can reinforce skills and concepts for many different learning styles.

CONCLUSIONS

There is no magic button to address current and future workforce challenges in the Power industry. An organization's decision on whether to spend money and train its workers affects the overall Power and Energy sector. If all companies and utilities refuse and fail to train their workers because of its cost, the whole sector will suffer—meaning the economy will also suffer. On a more positive note, the current workforce challenge poses a huge opportunity to shape and shift the industry's workforce and culture in the right direction. Facing this challenge, we are all in this together.

ACKNOWLEDGEMENTS

I thank Pam Cannon and Catherine Stanley for their expertise and assistance and for helping in writing the manuscript.

BIOGRAPHY

Morteza Talebi has over fifteen years of experience in engineering and training. He received his B.S. degree in Electrical Engineering from the University of Gilan, Iran, and his M.S. in Electrical Engineering from North Carolina A&T State University. He completed his Ph.D. degree in Electrical Engineering with a focus on Power Systems from the University of Central Florida. Dr. Talebi is a member of IEEE and IEEE Power and Energy Society. He has contributed to research in the Power industry and has authored, co-authored and presented numerous publications on technical subjects as well as training and human performance. His qualifications include industrial design engineering, field experience in testing and commissioning, and experience in designing and developing training and workforce strategy and programs in the Power industry. He currently serves as the Chief of Workforce development of Field Operations at TRC companies.