Kelly Telecom

Powered by NextGen® and GTA

Digital Infrastructure Innovation:
The Human Capital Challenge in AI, Cybersecurity, Electric Power, and Data Centers

Part 1: Workforce Interdependence Across AI, Electric Power, and Data Centers

A Kelly Telecom White Paper on Workforce Challenges, AI's Dual Role in Hiring, and the Future of Talent Acquisition in Critical Infrastructure Sectors

Date: April 2025

Author: Kelly Telecom Digital Infrastructure Insights

Executive Summary
Kelly Telecom is a leader in supporting the rapid evolution of Artificial Intelligence (AI), Electric Power, and Data Centers by delivering workforce solutions that drive innovation, optimize operations, and sustain long-term growth. These industries are deeply interdependent, each requiring a skilled workforce to remain agile and competitive. However, a widening human capital gap threatens to slow progress across all three sectors.

To bridge this gap, Kelly Telecom provides customized workforce solutions that enable businesses to seamlessly design, deploy and integrate AI, strengthen their workforce, and future-proof operations in electric power, cybersecurity, and mission critical digital infrastructure. Addressing workforce shortages holistically—rather than in isolated silos—is essential for maximizing the benefits of AI and ensuring the smooth integration of intelligent automation critical infrastructure

This white paper explores the challenges facing these industries and how Kelly Telecom delivers talent solutions to close skill gaps, enhance AI-driven hiring, and optimize workforce integration. It also highlights recent AI investments, the most in-demand job titles, and practical solutions for building a resilient workforce in the digital age.

Kelly Telecom

Powered by NextGen® and GTA

Contents

Kelly Telecom

Powered by NextGen® and GTA

1. Introduction

AI, Electric Power, and Data Centers are critical to modern innovation, yet all three sectors are facing significant workforce shortages. This paper examines these industries' interdependencies, the impact of AI on hiring, and strategies for closing the human capital gap.

Key Focus Areas:

- AI & Automation Workforce – Talent shortages, skill development, and AI's impact on jobs
- Cybersecurity Workforce – Hiring challenges, certifications, and talent pipeline issues
- Electric Power Industry – Workforce transitions, grid modernization, and labor demand
- Data Centers & IT Infrastructure – Staffing shortages, specialized skills, and labor sourcing

Suggested Research & Data Collection

- Industry Workforce Trends: Hiring rates, talent shortages, and demand forecasts
- Skills & Certifications: Essential qualifications and training programs
- Challenges & Gaps: Recruitment issues, skill mismatches, and workforce aging
- Policy & Workforce Development: Government initiatives, education, and training

The Future of Infrastructure Innovation Depends on a Skilled Workforce

The true potential of AI, Electric Power, and Data Centers will not be unlocked by technology alone—but by the people who design, manage, and optimize these critical infrastructures. Addressing the human capital challenge as a unified effort will determine how quickly these industries can scale and maximize their contributions to global innovation.

This report serves as a call to action, highlighting key industry trends and strategic solutions led by Kelly Telecom. It encourages leaders, policymakers, and educators to collaborate in building the skilled workforce needed to power the next era of AI-driven infrastructure.

Kelly Telecom

Powered by NextGen® and GTA

2. Workforce Interdependence Across AI, Electric Power, and Data Centers

Each industry relies on the other: AI needs massive computing power from data centers, data centers require reliable electricity, and electric grids benefit from AI-driven optimizations. Workforce shortages in any one of these industries can have cascading effects on the others.

Sector	Most in-Demand Roles	Human Capital Challenge
AI & Automation	AI Engineers, Machine Learning Scientists, AI Ethics Experts	AI adoption is growing faster than AI talent development, leaving a **major skill gap**.
Electric Power	Electrical Engineers, Power Grid Analysts, Renewable Energy Technicians	The **aging workforce** and shift to renewables require **new skills & training programs**.
Data Centers	Data Center Technicians, Cloud Engineers, Network Operators	Data centers are expanding exponentially, but **skilled workforce shortages** are delaying projects.

3. Parallel Workforce Shortages in Critical Industries

All three industries are experiencing talent shortages, particularly in engineering, IT, and infrastructure roles. The section below summarizes some of the most in-demand job titles and the key workforce gaps in each sector.

Aging workforce in the electric power sector, rapid expansion of AI-related jobs, and increasing demand for data center technicians are key factors contributing to the growing labor gap.

Industry Workforce Trends and Skill Gaps

Artificial Intelligence (AI):
- **Rapid Job Growth:** AI-related positions are among the fastest-growing in the U.S., with roles like AI engineers topping job growth lists. Despite broader tech industry layoffs, demand for AI expertise surged by 59% in 2024. Source: axios.com
- **Skill Shortages:** The swift evolution of AI technologies has led to a significant gap between industry needs and available talent, particularly in machine learning, data science, and AI ethics.

Cybersecurity:
- **Increasing Demand:** With rising cyber threats, the need for cybersecurity professionals has escalated. However, there's a notable shortage of qualified individuals to fill these roles.

Kelly Telecom

Powered by NextGen® and GTA

- **Diversity Challenges:** Women represent only about 24% of the cybersecurity workforce, highlighting a significant diversity gap. Organizations like Women in CyberSecurity (WiCyS) aim to address this imbalance through targeted initiatives.

Electric Power:
- **Aging Workforce:** The electric power sector faces challenges due to an aging workforce, with many experienced professionals nearing retirement, leading to potential knowledge and skill shortages.
- **Technological Advancements:** The integration of smart grids and renewable energy sources necessitates new skill sets, creating a demand for professionals adept in modern technologies.

Data Centers:
- **Employment Growth:** States like Texas have seen a 38% increase in data center jobs from 2018 to 2024, driven by the expansion of AI technologies and the corresponding surge in electricity demand. Source: axios.com
- **Talent Shortages:** The rapid growth in data center operations has led to a scarcity of skilled technicians and engineers, prompting companies to develop internal training programs. For instance, Blackstone's QTS data centers launched the Data Center Academy to train candidates for specialized technical roles. Source: Business Insider

Illustrative Policy Initiatives and Training Programs
- **National Initiative for Cybersecurity Education (NICE):** Led by the National Institute of Standards and Technology (NIST), NICE is a partnership among government, academia, and the private sector. It focuses on addressing cybersecurity education and workforce challenges through standards and best practices. https://www.nist.gov/itl/applied-cybersecurity/nice
- **National Initiative for Cybersecurity Careers and Studies (NICCS):** Operated by the Cybersecurity and Infrastructure Security Agency, NICCS serves as a hub providing access to cybersecurity resources, including courses and career development, aiming to strengthen the cybersecurity workforce. https://niccs.cisa.gov/
- **Women in CyberSecurity (WiCyS):** WiCyS is a non-profit organization dedicated to supporting the recruitment, retention, and advancement of women in cybersecurity. It offers initiatives like professional affiliates, student internship programs, veterans assistance, mentor/mentee programs, and apprenticeship programs. https://www.wicys.org/
- **IEEE Rebooting Computing:** IEEE's Rebooting Computing initiative sponsors conferences and events worldwide to stimulate discussion on existing and emerging technologies, including challenges, benefits, and opportunities in computing. https://rebootingcomputing.ieee.org/about

Kelly Telecom

Powered by NextGen® and GTA

- **Policy Shifts in AI Development:** Recent U.S. policy changes have impacted AI development, with shifts in executive orders affecting AI, and cybersecurity. These changes underscore the need for a balanced approach to innovation and regulation. Source: The Wall Street Journal
- **Kelly Telecom: Data Center Services: Kelly Telecom** offers comprehensive data center services, including facility management, 24/7 system monitoring and support, scalability and compliance management, power management, and sustainability initiatives. These services ensure efficient and reliable data center operations, aligning with the evolving needs of the digital infrastructure industry. Data Center - Kelly Telecom

4. Our Unified Approach to Addressing the Human Capital Challenge in Digital Infrastructure
Delivering solutions to bridge the workforce gap across AI, Electric Power, and Data Centers requires a strategic, cross-sector approach that includes:

- Collaborative Training Initiatives – AI companies, utilities, and data centers should create shared training academies to develop overlapping technical skills in software, automation, and energy management.
- Interdisciplinary Career Pathways – Electrical engineers should have pathways into data center operations, and AI specialists should receive training in energy-efficient AI deployment.
- Public-Private Workforce Investments – Governments, corporations, and universities must align investments to create scalable talent pipelines for all three industries.
- AI-Augmented Workforce Development – AI can be leveraged to automate training, create adaptive learning systems, and scale apprenticeship models.

Additional Initiatives to Bridge the Workforce Gap:
- **Workforce Readiness & Certification Programs**

  - Expand training academies to include **AI, cybersecurity, cloud computing, and digital infrastructure** workforce readiness programs.

  - Partner with **industry certification providers** (e.g., AWS, Cisco, Google Cloud, CompTIA) to fast-track credentialing and workforce placement in critical infrastructure roles.

- **Data Center Technician & AI Talent Apprenticeships**

  - Develop **apprenticeship models** for **data center technicians, AI engineers, and power grid analysts**, offering hands-on experience in real-world infrastructure settings.

  - Create **on-the-job training programs** with leading data center operators to support direct workforce placement.

Kelly Telecom

Powered by NextGen® and GTA

- **AI-Powered Workforce Analytics & Strategic Reskilling**

  - Utilize **AI-driven workforce analytics** to identify skill gaps, predict labor shortages, and design **targeted reskilling pathways**.

  - Partner with **universities and trade schools** to transition **traditional IT, electrical, and mechanical professionals** into high-demand AI-powered infrastructure roles.

- **Digital Inclusion & Equity Initiatives**

  - Establish **scholarship and internship programs** for underrepresented groups in tech, engineering, and AI-driven infrastructure.

  - Expand **STEM outreach programs** to ensure a diverse and sustainable workforce pipeline.

Without deliberate coordination, these industries will continue competing for the same limited talent pool, delaying innovation and infrastructure expansion. However, by addressing the workforce gap collectively, AI can accelerate advances in electric power and data centers, while those industries supply the infrastructure needed for AI's next breakthroughs.

5. Recommendations for Addressing Workforce Challenges
To address the workforce gap, we recommend interdisciplinary training programs, public-private workforce investments, and AI-assisted talent screening tools to improve hiring efficiency while maintaining quality.

Companies should collaborate with universities and vocational programs to develop cross-sector training in AI, power systems, and data center operations.

6. Conclusion
The future of AI, Electric Power, and Data Centers depends on addressing the human capital challenge through coordinated workforce development, technology-driven hiring improvements, and collaborative efforts between industries.

Strategic investments in AI education, workforce training, and hiring innovation will be critical to maintaining economic competitiveness and sustaining growth.

Kelly Telecom

Powered by NextGen® and GTA

References and Statistics

1. Axios – AI-related workforce growth statistics (2024)
2. Business Insider – AI talent market trends (2025)
3. The Times – AI investment in data centers and electric power (2025)
4. Wikipedia – Overview of Stargate AI investment (2025)
5. CIO Dive – Most in-demand AI and cybersecurity jobs (2025)
6. National Institute of Standards and Technology (NIST) – AI and workforce development (2024)
7. OpenAI Reports – The impact of AI automation on labor markets (2025)
8. Harvard Business Review – The paradox of AI in hiring (2025)
9. WSJ – AI-driven hiring challenges and recruitment statistics (2025)
10. Government workforce initiatives and training programs in AI and cybersecurity (2025)