

# White Paper - Bridging the Electrical Skills Gap in Manufacturing

## *Why Training Is the Only Sustainable Solution*

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### The National Skilled Trades Shortage — Data You Can Trust

#### Electrician Demand Growth

According to the **U.S. Bureau of Labor Statistics**, employment of electricians is projected to grow **9% from 2024 - 2034**, much faster than the average for all occupations, with about **81,000 job openings each year** on average due to growth and replacement needs.

#### Why This Matters for Manufacturers

- Electrical systems are foundational to modern production and automation.
- Controls technicians and maintenance techs are increasingly needed to support advanced systems.
- Shortages in these roles directly affect uptime, productivity, and quality.

#### Structural Causes

- **Retirements outpace new entrants:** For example, more experienced electricians retire annually than new apprentices complete training.
  - **Broad skills mismatch:** Federal research highlights shortages across skilled construction and trades jobs - including roles critical to manufacturing operations.
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### Visualizing the Electrical Skills Challenge

#### Electrician Job Growth vs. All Occupations

Metric	Projected Growth (2024–2034)
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Electricians	+9%
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All Occupations	~3% National Avg
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#### Interpretation:

Electricians are among the fastest-growing skilled trades - yet the pipeline of trained workers is insufficient to meet demand without structured workforce development.

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### Annual U.S. Electrician Openings (2024–2034)

81,000 projected openings annually, <https://www.bls.gov/ooh/construction-and-extraction/electricians.htm>

These openings reflect not just growth, but **replacement needs** as experienced workers retire or exit the workforce - driving a deeper skills gap.

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### Why Hiring Alone Doesn't Fix It

Job postings and recruiting only solve the *head count*, not the *skill depth*. Even when positions are filled, many new hires lack the competencies needed for:

- Troubleshooting electrical faults
- Interpreting ladder logic and control systems
- Maintaining automated equipment
- Diagnosing root causes with confidence

This leads to:

- Increased downtime
  - Higher reliance on outside contractors
  - Safety risks
  - Productivity loss
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### Training as the Strategic Bridge

#### Training Eliminates the Core Gaps

Training that's targeted, hands-on, and role-specific, delivers outcomes that hiring alone cannot:

- ✓ Builds applied troubleshooting ability
- ✓ Reduces dependency on a small number of experts
- ✓ Creates predictable competency across the team
- ✓ Retains institutional knowledge as senior workers depart

This aligns with **federal workforce development goals**, which increasingly emphasize competency-based skills and alignment between employers and training providers.

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## What Forward-Looking Manufacturers Are Doing

Successful organizations are investing in:

- **Structured technical training programs**
- **Internal apprenticeships and mentorships**
- **Skill assessments mapped to workplace needs**
- **Continuous upskilling aligned with automation trends**

This isn't a perk - it's a **risk reduction strategy for operational continuity.**

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## Bottom Line

The data is clear:

**The U.S. is not producing enough skilled electrical and controls talent to meet demand.**

Training isn't just helpful -

**👉 It's the only scalable, sustainable way to close the electrical skills gap in manufacturing.**

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## Sources

1. Growth in electrician jobs projected to **9% through 2034** with ~81,000 openings each year - Bureau of Labor Statistics.
2. Skilled trades shortages and government workforce initiatives context — research briefs.
3. Broader occupational growth projection (all occupations ~3%).
4. Retirement outpacing new entrants in trades.

### About the Author



**John Nappa** works with manufacturing employers across Western New York to help close electrical, controls, and maintenance skill gaps that impact uptime, productivity, and workforce stability, <https://www.cncts.com/about-us.html>.

With deep experience supporting manufacturers in developing electricians, controls technicians, and maintenance personnel, John focuses on **practical, hands-on training** aligned to real plant-floor challenges - not theory-driven instruction. His training centers on helping organizations reduce reliance on outside support, shorten ramp-up time for technical staff, and preserve institutional knowledge as experienced workers retire.

John regularly collaborates with manufacturers, workforce partners, and economic development organizations to address skilled trades shortages through structured, competency-based training approaches that align workforce capability with modern manufacturing demands.

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