



**Lighting the way
to a brighter
future together**

Lighting the Way to a Brighter Future: The Case for a Standalone Electrotechnology Industry Skills Board (ISB)

Executive Summary

New Zealand stands at a critical juncture in the energy transition, with electrotechnology at the heart of innovation, increase productivity and sustainable growth. The rapidly evolving nature of the electrical, energy, data, and enabling technology industries demands a tailored, industry-led approach to vocational education and training. The current framework, which groups electrotechnology with the construction sector has not served the best interests of the industry or Aotearoa's broader economic and environmental goals. The current framework also departs from international best practice, where governments are putting electrotechnology at the forefront of driving workforce changes.

We propose the establishment of a standalone Electrotechnology Industry Skills Board (ISB) to lead the development of qualifications, workforce planning, and industry alignment. This paper outlines the evidence, industry consensus, and strategic imperatives for this critical change.

1. Introduction: The Urgency for Change

The electrical industry is facing a once-in-a-life-time wave of transformation driven by electrification, digitalisation, and decarbonisation. From installing EV infrastructure and solar systems to integrating smart grids, industrial and home automation and IoT-based control systems, today's electrical workforce is vastly different from that of a decade ago. Electrotechnology is much bigger than just construction. Yet the current vocational training system fails to keep pace. Grouping electrotechnology under the Construction and Infrastructure ISB has led to outdated curricula, fragmented industry engagement, and a mismatch between training outcomes and real-world needs.

This paper puts forward the case for a standalone Electrotechnology ISB, led by industry and designed to meet the unique demands of a sector experiencing exponential change.

2. Rationale for an Electrotechnology-Specific ISB

2.1. Electrotechnology has significant scale Electrical by itself had 23,000 trainees in 2023. This is three times higher than the combined number of trainees in both Automotive (3,000) and Infrastructure (4,100). Yet Automotive and Infrastructure were able to justify a stand-alone ISB. An electrotechnology ISB will not be a “niche sub scale ISB.”

2.2. Distinct Regulatory and Safety Requirements The electrotechnology sector is governed by rigorous statutory frameworks, including:

- Electrical Workers Registration Board (EWRB) licensing
- Compliance with NZS/AS standards
- Mandatory Supplier Declarations of Conformity

The Electricity Act governs works, appliances and installations, but electrotechnology is split over 3 ISB's (Construction, Infrastructure and Manufacturing). The risk to public safety alone justifies all parts of Electrotechnology being in one ISB.

These safety expectations far exceed those in construction. Failure to maintain compliance in electrical work can result in fatal consequences. An ISB with sector-

specific governance is essential to maintain alignment between training, standards, and regulation.

2.3. Cross-Sector Integration and Industry Convergence Electrical contractors now operate across multiple domains, including:

- Renewable energy (solar, wind, battery storage, EV charging)
- Data cabling and networking
- Electronic security
- HVAC and refrigeration
- Enabling technologies (AI, industrial and home automation, IoT)

No other trade sector demonstrates this degree of convergence. The industry is also seeing significant overlap with ICT, embedded systems, and industrial cyber-physical systems. Only an ISB with full oversight of electrotechnology can adequately develop qualifications to match these complex, multi-disciplinary realities.

2.4. Misalignment Under Construction-Centric Governance Waihanga Ara Rau and ConCOVE research, alongside TEC and MoE data, confirm that:

- Electrical training qualifications lag supplier technologies by 2—5 years
- The pace of change is such that standard training is not equipping the industry to the level required today, let alone tomorrow.
- Current governance models delay curriculum updates
- Construction-centric ISBs are not equipped to keep pace with rapid technological innovation

Electrotechnology is much more than just construction, but the focus and resources of the WDC and CONCOVE have been almost solely directed at the builders. This has led to industry disengagement and qualification being 2-5 years behind technology. An ISB dedicated to electrotechnology will enable qualification refresh cycles that align with the pace of market change.

3. Workforce Demand, Skill Gaps, and Training Performance

3.1. Shortage of Qualified Electricians

- New Zealand is currently short 6,000 electricians
- Workforce attrition (aging population) and rising demand exacerbate the shortfall
- EECA's December 2024 survey reports that 78% of contractors expect to increase renewable installations, but only 10% feel adequately skilled

3.2. Training System Failures

- TEC performance data shows electrical apprenticeship completions and activity rates are among the lowest since 2011
- EarnLearn (formerly Connexis) has underperformed in supporting the electrical sector post-Te Pūkenga reforms
- Existing PTEs are overburdened and not incentivised to embed innovation or respond to industry needs

3.3. Skills for the Energy Transition The industry needs training aligned with the following emerging areas:

- Smart grid integration
- Battery energy storage systems (BESS)
- EV charging infrastructure
- IoT, building automation, and demand response systems
- Ethical data management and cyber-resilience

These are not general construction skills. They are electrotechnology-specific and require tailored qualifications and CPD systems.

3.4 Lack of pathway from schools to work Electrotechnology have large well developed group employers, providing a unique pathway from school to electrotechnology employment. The pathway to construction roles is very different to the pathway to a highly-regulated electrotechnology apprenticeship. The current construction-led governance has let the pathways languish. An ISB dedicated to

electrotechnology will enable a strong industry-supported pathway from school to electrotechnology employment.

4. Strategic Alignment with Government Priorities

4.1. Climate Change and Emissions Reduction

- Electrotechnology is a key enabler of emissions reduction (e.g. electrified transport, energy-efficient buildings, renewables)
- Government investment in electrification should be matched by investment in training systems

4.2. Economic Transformation

- The sector supports high-value jobs with strong SME and export potential
- Unlike construction, the sector has strong links to digital transformation, ICT, and innovation

4.3. School-to-Work Transitions and Equity

- Research from the Trades Routes Paper and MoE shows students are increasingly interested in careers involving robotics, engineering, and ICT
 - Electrotechnology naturally aligns with these interests and offers future-proof career pathways
 - A standalone ISB can strengthen school engagement and attract diverse entrants
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5. Industry Scale and Capability to Govern

5.1. Industry Size and Scope

- Over 1,300 businesses
- 12,000+ electrical workers
- Industry turnover that exceeds automotive and many construction subsectors

5.2. Governance and Advocacy Readiness

- Master Electricians has formed the Electrical Industry Advisory Council (EIAC) to coordinate across suppliers, manufacturers, and contractors
- Trade Master has been launched to support future-focused CPD and training delivery
- The sector is already undertaking workforce strategy and investment initiatives

5.3. Proven Appetite for Reform

- Industry feedback overwhelmingly supports a separate ISB
- Concerns about existing models (WDCs, Te Pūkenga) show readiness for change
- Industry is willing to co-invest (e.g. via levies) to ensure outcomes

6. International Best Practice is Allowing Electrotechnology to Drive Innovation, Increased Productivity and Sustained growth

In the EU and Australia, they have electrotechnology workforces strategies supporting electrification, renewable energy early adoption, smart infrastructure and ICT convergence. An ISB dedicated to electrotechnology is the best approach the government can take to ensure the NZ economy is prepared to maximise innovation, productivity gains and achieve environmental targets. (refer appendix for examples)

7. Recommendations and Next Steps

7.1. Establish an Electrotechnology ISB

- Dedicated to the electrical, energy, HVAC/R, electronic security, data cabling, and enabling tech sectors
- Governed by a board of industry, regulatory, and educational stakeholders

7.2. Enable Co-Investment and Accountability

- Industry to contribute to co-funding and governance
- Government to provide baseline funding with performance-based outcomes

7.3. Strengthen Provider Partnerships and Pathways

- Support a regional ITP network

- Align ISB efforts with CPD, supplier training, and micro-credential development
 - Partner with schools to build pipelines from STEM to trades
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8. Conclusion

The future of electrification, decarbonisation, and digital transformation depends on a skilled, adaptive, and innovative electrotechnology workforce. New Zealand cannot afford a governance model that fails to keep pace. The establishment of a standalone Electrotechnology Industry Skills Board is not only a logical next step — it is a national imperative.

We welcome the opportunity to further discuss this proposal with the Minister and TEC.

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APPENDIX

INTERNATIONAL WORKFORCE STRATEGIES FOR THE ENERGY TRANSITION

European Union: Green Skills Agenda and Electrification

The **European Union** has embedded workforce development into its climate and digital strategies. Under the European Green Deal and related initiatives, the EU emphasizes that achieving climate targets “*goes hand in hand with equipping people with the right skills*”year-of-skills.europa.eu. Several key EU strategies illustrate this approach:

- **Green Deal Industrial Plan — Skills Investment:** The EU is channelling significant funding into training programs for the green and digital transition. Approximately **€65 billion** from EU funds is being invested to support workforce upskilling and reskillingyear-of-skills.europa.eu. These investments target sectors vital to electrification and smart infrastructure, ensuring workers can install solar panels, retrofit buildings with energy-efficient systems, deploy smart grids, and more. Notably, the booming battery and electric vehicle industry is a major focus — an estimated **800,000 workers will need to be trained or retrained by 2025** to meet the demand in Europe’s battery sector aloneyear-of-skills.europa.eu. Similarly, in the automotive sector (including EVs), around **700,000 workers per year** in supply chains are expected to undergo training in new sustainable and digital technologiesyear-of-skills.europa.eu.
- **Sectoral Skills Partnerships:** As part of the EU’s Pact for Skills (a component of the **European Skills Agenda**), large-scale partnerships have been launched in ecosystems like **construction** and **energy**. These bring together industry associations, training providers, and governments to develop curricula and certification standards for emerging needs — for example, training programs for **smart building technologies** (IoT-based building management, energy management systems) and **renewable energy installations**. The construction and building sector partnership alone aims to **upskill or reskill 3 million workers in five years**, about 25% of the sector’s workforce, to handle new green building techniques and digital toolsyear-of-skills.europa.eu. This includes electricians and technicians gaining competencies in areas such as building automation, smart lighting, and integration of photovoltaic and battery storage systems into homes and commercial buildings.

- **National Programs and EU Funding Mechanisms:** EU member states have utilized funds like the European Social Fund Plus (ESF+) and Recovery and Resilience Facility to finance vocational training aligned with electrification and digitalization. For example, countries like **France** and **Germany** have rolled out initiatives to train thousands of **heat pump installers and energy efficiency technicians** to replace gas heating — a critical skill for electrifying heating in buildings. Many EU states also offer **incentives for apprenticeships** or short-term reskilling courses in clean energy trades (solar PV installers, wind turbine technicians, EV charger installers), often subsidized by government grants. These programs are frequently developed in collaboration with industry to ensure relevance. The emphasis on smart infrastructure is evident in curricula updates — e.g. adding modules on smart grid operation, electric vehicle charging systems, and building energy management to electrical engineering and technician training programs.

The **EU's approach** illustrates how policy, funding, and partnerships can drive workforce readiness for energy transition. By investing in targeted upskilling, Europe aims to prevent skill shortages from undermining climate goals. Importantly, the EU recognizes that electrification and digital convergence (e.g. the merging of electrical and ICT skills in “smart” systems) require new training content and continuous curriculum renewal. This European experience supports having a sector-specific focus — a lesson that can inform New Zealand's approach.

Australia: Workforce Development for Electrification and Smart Systems

Australia is undergoing its own energy transition and has recently developed strategies to build a skilled workforce for renewable energy, smart infrastructure, and the electrification of transport and buildings. Several noteworthy Australian initiatives and policies highlight how government and industry are collaborating in this space:

- **National Energy Workforce Strategy:** The Australian Government is formulating a National Energy Workforce Strategy to ensure the country has “*the skilled workforce needed to achieve its net-zero emissions targets*” dcceew.gov.au. Although still being finalized (as of 2024), this strategy's intent is to coordinate efforts across the energy sector — from generation (solar, wind, batteries) to transmission (grid upgrades, smart grids) to end-use (building electrification) — focusing on skill development. Early communications emphasize addressing *global labour shortages* in key trades and the need for multi-stakeholder action dcceew.gov.au.

- Clean Energy Workforce Planning:** A landmark study by Jobs and Skills Australia (JSA), “*The Clean Energy Generation: workforce needs for a net zero economy*” (2023), provided a comprehensive analysis of Australia’s future skill needs. It identified significant workforce gaps and made over **50 recommendations** to reform training and education voced.edu.au. One headline finding was that by **2030 Australia will need an extra 32,000 electricians** (beyond the current supply) to support renewable energy and electrification projects cleanenergycouncil.org.au. This is part of a broader need for **decarbonization workers**, including engineers, technicians, and construction workers, to deliver the transition — for example, an estimated **450,000 jobs** will be created in constructing and operating clean energy infrastructure, representing roughly one-third of all new jobs nationally by 2030 cleanenergycouncil.org.au. The JSA report urged swift action to “*reform our education and training offerings*” to create **inclusive and streamlined pathways** into these trades cleanenergycouncil.org.au. This includes updating vocational qualifications, introducing **micro-credentials** for emerging technologies (like battery storage installation and EV charger maintenance), and attracting a more diverse workforce (including women and mid-career workers) into electrotechnology fields cleanenergycouncil.org.au.
- Funding Programs for Skills in Electrification:** The Australian government has backed its strategy with targeted funding. A prime example is the **New Energy Apprenticeships program**, launched in 2023, which allocates **AUD \$95.6 million over 9 years** to support 10,000 new apprentices in clean energy and electrification trades energy.gov.au. Under this program, eligible apprentices (in trades such as electrical, solar installation, renewable energy tech) receive up to **\$10,000** over the course of their training to assist with living costs and encourage completion energy.gov.au. This investment not only helps bring new entrants into the field but also signals the value placed on careers in solar, battery, and smart grid technology. In addition, various Australian states have introduced their own initiatives — for example, Victoria’s *Clean Economy Workforce Development Strategy 2023–2033* outlines investments in training for solar installers, energy auditors, and hydrogen technicians, while New South Wales has funded **EV charger installation courses** to quickly upskill electricians for the rapid roll-out of charging infrastructure.
- Curriculum Updates and Digital Convergence:** Australia’s vocational training framework has been adapting to technology convergence in the

electrotechnology sector. The national **Electrotechnology Training Package (UEE)** — which defines qualifications for electricians, electronics techs, instrumentation, etc. — is regularly updated by industry-led committees. Recent updates have added or expanded units on **solar PV and battery storage system installation, electric vehicle supply equipment (EVSE), data and communications cabling, and automation and control programming**. This ensures apprentices and workers are learning skills like programming smart controllers, integrating ICT networks with electrical systems, and applying cyber security basics to industrial control systems. Such integration of ICT/digital skills into electrical training reflects the broader trend of digital systems convergence. By maintaining a modern training package, Australia enables faster adoption of technologies like home automation, smart metering, and IoT-based energy management, since the workforce is trained to implement and service these systems.

Australia’s experience demonstrates the importance of proactive workforce planning and the value of **targeted funding** and **industry-driven curriculum design**. The combination of broad strategy (to identify needs), concrete programs (to fund training and apprenticeships), and continuous qualification reform (to update skills content) provides a useful model. New Zealand can draw on these lessons to ensure its electrotechnology training keeps pace with global standards and emerging technologies. In particular, Australia’s use of **industry advisory bodies** in vocational education highlights how giving the electrotechnology sector a direct voice can lead to more responsive training systems — a point explored further below.

Comparative Snapshot of Initiatives

To illustrate how different jurisdictions are supporting electrotechnology workforce development amid the energy transition, **Table 1** provides a snapshot of select international initiatives:

Region/Country	Initiative / Program	Focus Area	Key Features / Targets
European Union	<i>Green Deal Skills Initiatives</i> (e.g. Pact for Skills — Construction/Energy)	Upskilling for renewable energy, energy-efficient construction, smart	— €65 billion investment in training programs for green and digital skills year-of-skills.europa.eu . — Up to 3 million workers in construction to be upskilled

Region/Country	Initiative / Program	Focus Area	Key Features / Targets
Australia	<i>New Energy Apprenticeships (2023)</i>	Apprenticeship support for clean energy and electrification trades.	<p>infrastructure, and digital skills integration.</p> <p>within 5 years year-of-skills.europa.eu (incl. electricians for smart buildings).
— ~800,000 workers to be trained by 2025 for the battery industry boom year-of-skills.europa.eu; ~700,000 auto sector workers retrained yearly for EV and digital tech year-of-skills.europa.eu.</p> <p>— AUD \$95.6 million program over 2023—2032 energy.gov.au.
— Supports 10,000 apprentices with up to \$10k each to enter electrical, solar, EV infrastructure, and related trades energy.gov.au.
— Aims to alleviate skill shortages in solar installation, battery storage, EV charging, and grid modernization by incentivizing new workforce entrants.</p>
	<i>Clean Energy Workforce Capacity Study (2023)</i> (Jobs & Skills Australia)	National workforce analysis and training reform roadmap for	<p>— Identified need for 32,000 additional electricians by 2030 to meet renewable and smart grid demands cleanenergycouncil.org.au.
— Projected</p>

Region/Country	Initiative / Program	Focus Area	Key Features / Targets
		net-zero economy.	<p>~450,000 new jobs in clean energy construction by 2030 (one-third of all new jobs)</p> <p>cleanenergycouncil.org.au.</p> <p>
— 50+ recommendations including updating qualifications, introducing micro-credentials for new tech, and boosting diversity in electrical trades</p> <p>cleanenergycouncil.org.au.</p> <p>
— Emphasizes government—industry coordination to rapidly address skills gaps.</p> <p>— Government—industry taskforce identified skill gaps in EV charging, heat pumps, and offshore wind; stressed embedding “green skills” across apprenticeships.</p> <p>
— Led to a Green Jobs Delivery Group to implement recommendations, including new and revised apprenticeship standards (e.g. for heat pump installers and EV charge-point installers) and increased funding for training in low-carbon sectors.
—</p>
United Kingdom (for comparison)	<i>Green Jobs Taskforce & Net Zero Strategy (2021—2022)</i>	Aligning vocational training with climate targets and emerging electrification jobs.	

Region/Country Initiative / Program	Focus Area	Key Features / Targets
		Focus on retrofit skills for buildings (electrical and HVAC) and digital skills for smart energy management as part of net-zero workforce planning.

Table 1: Examples of international initiatives supporting electrotechnology workforce development and energy transition skills. (Sources: European Commission year-of-skills.europa.eu, Australian Government and JSA [energy.gov.au](https://energy.gov.au/cleanenergycouncil.org.au) cleanenergycouncil.org.au, UK Green Jobs Taskforce report)