



Electricity Engineers'
Association

**HEALTH & SAFETY
ASSET MANAGEMENT
PROFESSIONAL
DEVELOPMENT**

Presentation to Electricity Authority Security and Reliability Council - Workforce Management Capability

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EEA.CO.NZ



Presentation will cover

Key capability issues facing the Electricity Sector?

Key issues for New Zealand?

What is EEA doing?

What should a future work program for NZ consider?



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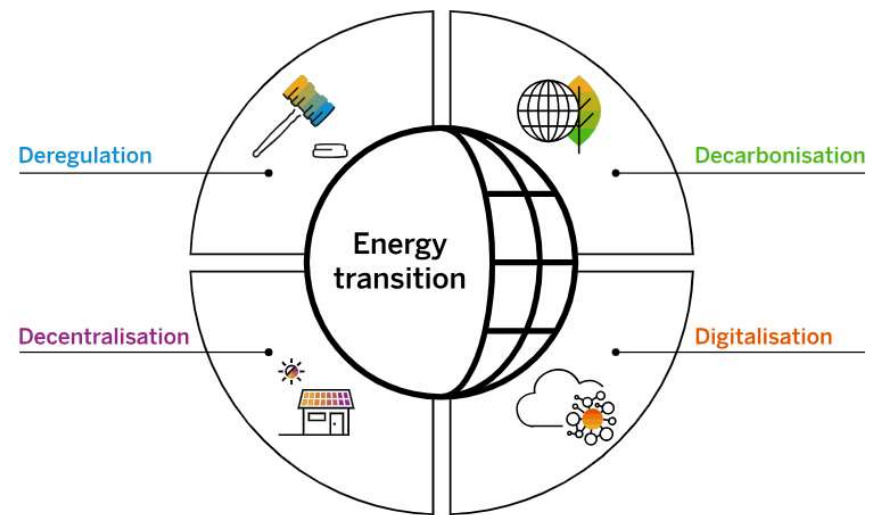
Key Capability Issues Facing the Electricity Sector

The energy transition—and the resulting transformation of our workforce, organisations, regional economies and communities—is one of Aotearoa's greatest challenges and opportunities in the decades to 2050.

This transition is taking place in a complex global context of disruptive change arising from major technology, geopolitical and social trends.

New Zealand has set bold renewable energy targets for 2030 and aims to achieve net zero by 2050. Energised by these targets and driven by their own ambitions, public and private entities are investing in cleaner energy and creating more jobs for a sustainable and affordable energy future.

However, does new Zealand have the workforce and availability of skills needed to achieve these goals when required?



Industry and Workforce Trends

Workforce trends

Certain professions will be most impacted by changes in skills

Distributed energy resources (DER) and other distributed networks will require engineers, technicians and tradespersons to develop greater digital and data literacy to grapple with the complexity of these systems.

Automation and grid infrastructure will have the biggest impact on skills needs

There are existing grid and commissioning project skills shortages, which will continue to be in demand for the next 20 years. Other technical skills related to emerging forms of renewable technology such as battery energy storage, pumped hydro energy storage, and operational technologies in DER will be in high demand.

Energy transition in the next 10-15 years faces blockers for key skills

The existing workforce for renewable energy technologies is small and there are long lead times for training workers. This could limit the pace at which renewable energy projects can be delivered. However, it also means that there are opportunities to transition workers from fossil fuel activities and other sectors to these projects with minimal reskilling and support jobs in regions.

Training pathways may need adapt to address new skills

Skills in automation, operational technologies & managing community impacts are partially addressed by the content of existing nationally accredited training pathways. But they are likely to require review and updating in the future as their technological complexity increases.

Energy industry trends

Power generation is being transformed from a top-down centralised system to one that is much more decentralized, digitalized and diverse, comprising a broader range of variable renewable energy sources. The future energy system will be more financially and operationally complex than before.

Net decarbonisation targets are driving rapid transformation in power and utility businesses. The change in the energy generation mix is key to this, with most scenarios projecting ongoing growth for renewables and earlier timelines for closure of fossil fuel generation, particularly coal.

Electrification of industry household cooling, transportation including Electric Vehicles (EV) will lead to a production gap of green energy when related to global energy demand. These trends will reopen discussions on energy dependency and independence.

Technological innovation is at the heart of the shifts that are occurring in the power sector in response to the need to balance decarbonisation with reliability and affordability. Technology breakthroughs, for example in the cost and practicality of battery storage technology, will have significant impacts.

Demand for skills will increase for both qualified and higher skilled roles in this sector as decarbonisation occurs and new renewable energy generation sites are brought on-line.

Smart grids will deliver the potential for greater interactivity with customers through a combination of the internet, mobile devices, data analytics and cloud computing with smart grids and smart metering.



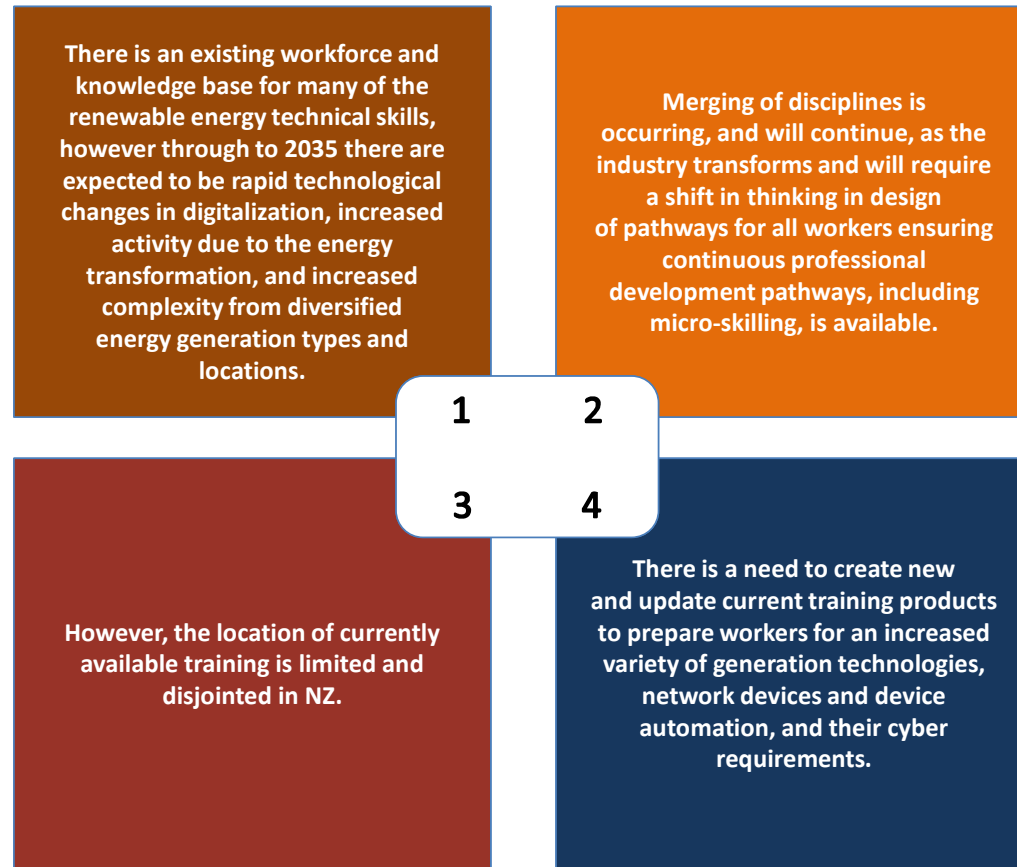
Industry Skills Gaps

High Demand/Shortage Critical Skills
1. Electrical design, installation, commissioning, and maintenance (new and existing plant)
2. Labour demand for wind, solar, and pumped hydro energy generation
3. Grid-scale battery energy storage systems
4. Operating and planning power networks

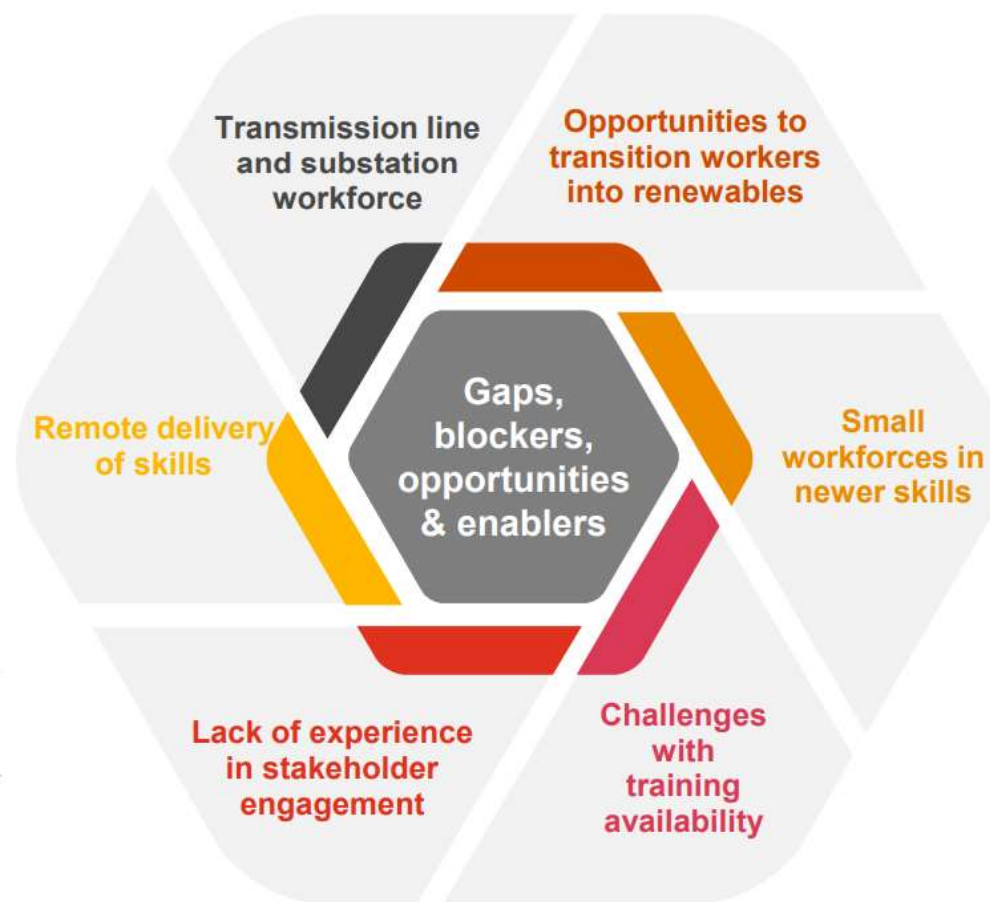
Skills requiring prioritisation for future training pathways	
Overseeing grid connection and integrating DER and smart grid systems	Partially available in existing training pathways for some technologies
Installing and maintaining battery energy storage systems (BESS)	Partially available in existing training pathways (only for distributed PV solar systems)
Understanding of and working with automation	Partially available in existing training pathways but contextualisation to energy may be required
Working with Operational Technology/ Information Technology linkages	Partially available in existing training pathways
Knowledge of effective cyber security practices and procedures	Partially available in existing training pathways but contextualization to energy may be required
Managing the environmental, community and cultural heritage impacts of renewable energy and transmission project delivery and ongoing operations	Partially available in existing training pathways (environmental impacts are well covered, but cultural heritage and community are not)



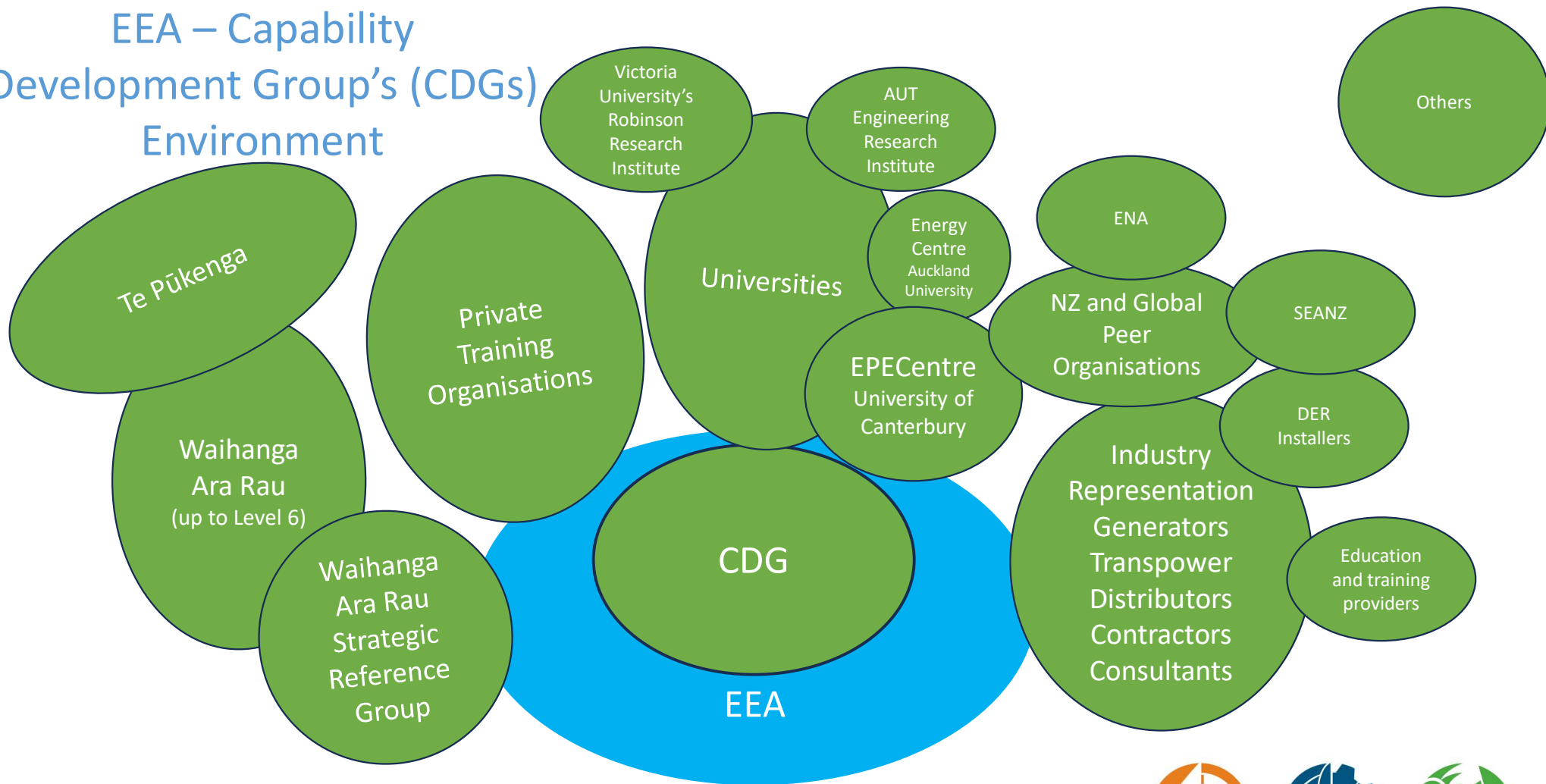
Training Pathway Issues



Gaps, Blockers, Opportunities and Enablers



EEA – Capability Development Group's (CDGs) Environment



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EEA Strategic Transformation

Key areas of focus

Transformation
(supporting
decarbonisation)

Member services
and delivery
(member centricity
and business
continuity)

Relationships and
communication

Service planning and
design

Operational
excellence
(organisational
improvement)

Organisational
values

Campaign in favour of education and industry skills development

Communicate

Showcase

information
about future
skills
requirements

between
sectors

support for quality
education and training
Provision

education and
training
frameworks

industry
capability
initiatives

Proposed purpose of the Capability Development Group



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What should a future work program for NZ consider?

1. Undertake a Future Skills/workforce capability Analysis/Assessment for the Electricity/Energy Sector for New Zealand out to 2050.
 - To mitigate risks of skills gaps appearing within the industry, the commissioning of a regular workforce skills update reports is recommended.
2. Develop a Future Skills/Workforce plan for the Electricity/Energy Sector for New Zealand out to 2050. This would include:
 - Regular workforce skilling report updates
 - Education and training package process and design review/s (Tertiary, VET and micro-credentials)
 - Qualification and licensing reviews (Tertiary, VET and micro-credentials)
 - Awareness campaigns (industry and consumers)
 - Skills investment plans
 - Diversity and inclusion (i.e. Māori and gender etc.)
 - Who is responsible

