Charged Up

Strategies for Addressing the Skill Shortage in Electrical Trades for the Clean Energy Transition

Sarah McKenzie
and Emma Dawson

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Centre for New Industry
A Per Capita initiative

ETU
Electrical Trades Union

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About The Centre for New Industry

The Centre for New Industry is an applied research centre within public policy think tank Per Capita, which aims to propose policy solutions that support a mission-oriented approach to industrial policy, and advocate for economic diversification, decarbonisation and democratisation.

We believe that Australia needs a vision of the future that provides greater employment opportunities for workers and their families, greater stability and security for regional communities, and better equips Australia to respond and adapt to economic and industrial change.

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Executive Summary

The Federal Government has a big agenda to drive Australia's transition to renewable energy with the goal of turning our sunburnt and windswept country into a *Renewable Energy Superpower.* And this is a plan to make sure that we have the workforce to do it.

The Federal Government's ambitious plan to transform Australia into a Renewable Energy Superpower requires a corresponding ambition to fix critical shortages in the electrical workforce. This crisis, long in the making, took root during the almost decade-long failure of the previous Federal Government to prepare for the inevitable shift towards renewable energy. Without a workforce, our nation's energy future can't be built.

Wilful inaction and climate scepticism left Australia woefully unprepared for the massive workforce demands of a clean energy future. Now, the current Labor government faces the daunting task of playing catch-up. The nation must grapple with a forecast shortfall of nearly 100,000 electricians by 2050.

The consequences of this neglect are stark: without swift and decisive action, Australia cannot meet its emissions reduction targets, potentially facing international censure and economic repercussions. While the transition may still happen in the long run, it will be bumpy, expensive and delayed.

To become a *Renewable Energy Superpower* the government needs to charge up its electrical workforce.

The Government is already investing an unprecedented $91 million to invest in skilling the clean energy workforce. This funding begins to reverse decades of neglect in the VET sector. It is a downpayment on the workforce investment needed to deliver the energy transition. But it only gets us to the starting block.

The problem is clear: employers aren't hiring apprentices, and training centres are already operating at capacity. And the issues don't stop at enrolment.

Electrical apprentices are abandoning their training at an alarming rate. Poor wages, toxic workplace cultures,

and inadequate support systems are driving thousands away every year. Not only does this jeopardise Australia's international climate commitments, it also threatens its basic energy security.

While some industry-led programs show promise with high completion rates, they remain isolated bright spots in a broken system. Decisive action is needed if we are to decarbonise our economy and build a Future Made in Australia.

Adding to the urgency is the global nature of the clean energy transition. As nations worldwide race to electrify and decarbonize, Australia can no longer rely on the lazy policy solution of importing skilled electricians from abroad. The competition for these workers will be fierce, and Australia must develop its own robust domestic workforce to meet the challenge.

This report outlines the barriers to building and retaining a skilled electrical workforce and charts a comprehensive roadmap to develop the workforce that will light the way to a clean energy future:

Recommendations

1. That the Federal Government implement labour conditionality in all forms of public investment and government funded support to deliver the workforce and social licence needed to drive the energy transition.
2. That the Federal Government funds the expansion of industry-led Registered Training Organisations (RTOs), in partnership with TAFE, including support for infrastructure development.
3. That the Federal Government invest in industry-led apprentice mentoring and support programs.
4. That the Federal Government embed industry-led Group Training Organisations in all Renewable Energy Zones.
5. That the Federal Government implement an industry-led Electrical Industry Labour Agreement, where genuine skills shortages are identified.
6. That the Federal Government develop and implement a wage supplement scheme to support qualified industry professionals from critical clean energy occupations to undertake training, and qualify to work as Vocational Education and Training teachers and trainers.
7. That the Federal Government establish a Clean Energy Jobs Commissioner to support industry and Government to create and support good, well-paid and secure jobs through the transition.

Introduction

Green is not just about renewable energy. It's also about creating a new direction for the whole economy. This requires governments to step up, not step back, creating the kinds of mission-oriented public organisations that will enable us to tackle climate change - as ambitious as those that got us to the moon.[1]

Mariana Mazzucato

Climate change is the most urgent and pressing challenge facing our nation, but the imperative to transition our homes, businesses, vehicles and industrial base away from reliance on fossil fuels also presents us with a game-changing economic opportunity.

Australia is rich in renewable sources of energy. Each year, our sunburnt country receives 58 million petajoules of solar radiation - 10,000 times our average yearly energy consumption.[2] The potential of our offshore wind energy is likely to exceed the capacity of all the coal-fired power stations in the world,[3] and we are on track to be one of the world's largest hydrogen suppliers by 2030.[4]

The Federal Government has recognised this historic opportunity to establish our country as a leading renewable energy superpower: to develop new industries that exploit Australia's abundant natural and renewable resources; to create a vibrant, diverse, and resilient industrial base for the post-carbon economy; and to build a better future for everyone.

Government has a big agenda to drive Australia's transition to renewable energy. Several large initiatives have already been established, with funding in the tens of billions of dollars to support the move away from fossil fuels and towards renewable energy sources.

Australia's international commitments to reduce our net greenhouse gas emissions to 43% below 2005 levels by 2030 and reach net zero by 2050 has been enshrined in law.[5] The Government's national renewable electricity target of 82% by 2030 will be fundamental in reaching this goal.[6] After a wasted decade of wilful inaction, progress is occurring. Emissions in the year to September 2023 were 25.4% below 2005 levels, an improvement from the year to September 2022;[7] and in 2023, an average of 39% of electricity generation came from renewables in the National Electricity Market (NEM), up four percentage points from 2022.[8]

This is positive, but with 2030 just around the corner, targets are not enough. We need a strategy – a clear roadmap to ensure Australia has the capacity and capability to meet these targets.

Already the workforce needed to achieve the transition is strained. Unprecedented labour shortages and competition from both inside and outside the energy sector mean that skilled workers have never been more valuable or harder to find. Attracting and retaining workers is critical, but after decades of neglect current training centres are at capacity. **There simply are not enough rooms or trainers to train the electrical workforce of the future.**

Electricians are uniquely important for the transition to net zero. As the sole occupation found at every point of the energy supply chain, from the power plant to the power point, ensuring a vibrant electrical workforce will be fundamental to electrifying everything. The decarbonisation of our economy will require an additional 10,000km of new transmission lines to be strung, a nine-times increase in large-scale renewable energy generation, and a fivefold increase in household solar.[9] It will also require the electrification of homes, with electric cooktops, heat pumps and heaters replacing their gas counterparts, and EV chargers installed in homes, in offices, and along highways around the country.

Jobs and Skills Australia (JSA) estimates that to deliver *Rewiring the Nation* and 82% renewable energy in the NEM, Australia will require an additional 32,000 electricians by 2030, and a further 85,000 electricians by 2050.[10]

But the Federal Government has its sights set higher than this – on Australia becoming a renewable energy superpower. It is investing $22.7 billion under the *Future Made in Australia* plan to realise this goal, aiming to unlock tens of billions of dollars in private sector investment.[11] This will need even more electricians. JSA estimates that expanding production of renewable energy beyond our own domestic requirement, that would see Australia onshoring green manufacturing, would require an additional 42,500 electricians by 2030, with almost 100,000 additional electricians by 2050.[12]

Australia's future is bright, but we need the workforce to light it, and there is already a dire shortage of electricians across the country.

Based on current completion rates we will either need more than 20,000 additional electrical apprentices to commence apprenticeships each year for the next three years, or urgent strategies to address the low completion rates for apprentices that are hampering efforts to bolster Australia's clean energy workforce.

The Government recently committed an unprecedented $91 million to invest in skilling the clean energy workforce. This funding begins to reverse decades of neglect in the VET sector. It is a downpayment on the workforce investment needed to deliver the energy transition. But it only gets us to the starting block.

This report identifies the barriers to the supply of skilled electrical workers that, if not addressed, will obstruct efforts to meet our clean energy targets. It then sets out solutions and provides practical and necessary steps the Federal Government should take to ensure Australia has enough qualified electrical workers to rewire our nation, meet our international targets, and become a renewable energy superpower.

The Problem: Electricians in shortage

Electricians are in high demand across Australia. They have been in short supply since at least 1981,[13] and have been listed as an occupation in shortage on the Skills Priority List (SPL) for the last three years.[14]

Despite the rise in demand for electricians, the inflow of new qualified electrical tradespeople over the last five years has been flat. This shortage has arisen 'from the gap in demand for these workers and the supply of workers associated with long training gaps',[15] rather than being an issue with worker retention. Today's skills shortage could have been avoided if different decisions and actions were taken at least four years ago.

Although the electrical trades have experienced skill shortages for decades, structurally there has been little change in the capital and operational funding levers for training institutions. Nor has there been a concerted effort to ensure that the public and private sector apply sustained increases in investment year on year in training electrical apprentices. The average annual intake of new apprentices nationally has remained relatively stable for more than a decade, increasing only very recently.

Notwithstanding the longer-term underinvestment challenge, the immediate issue is:

1. Not enough employers are offering new apprenticeships and ensuring that those offered include a diverse intake.
2. Too many people who commence an electrical apprenticeship do not complete.

Across the whole sector **fewer than 60% of electrical apprentices complete their apprenticeships**.[16]

Tackling these issues will require targeted strategies to address causal factors within our education and training system.

Too many electrical apprentices are quitting...why?

The apprenticeship journey can be a difficult one. Electrical work is challenging and technical, and workplaces present unique learning opportunities. Ensuring that apprentices are adequately supported throughout their journey into the industry is critical to driving up completion rates and diversifying the workforce.

Data from the National Centre for Vocational Education Research (NCVER) shows that employment related reasons like poor workplace culture, and inadequate wages and conditions, are the main reasons trades students don't complete their apprenticeships.[17]

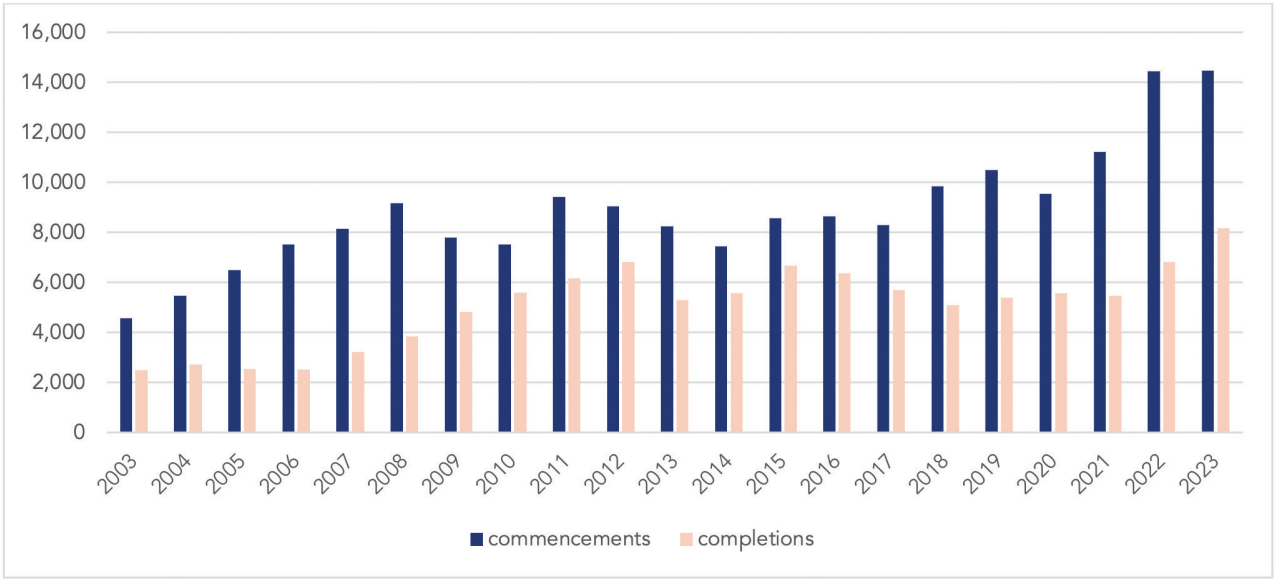
These findings are supported by a 2022 survey of 642 electrical apprentices conducted by Essential Media (*Electrical Apprentices Survey*) which found that more than 37% of electrical apprentices had considered quitting - citing wages, work culture, and cost of living pressures as the top reasons for this.[18]

In the 12 months to March 2023 almost 14,500 students commenced electrical apprenticeships (Figure 1). While this represents an almost 30% increase since 2021, projected attrition rates for this cohort remain stubbornly high. Most who withdraw will do so in their first year.

According to NCVER, of those who commenced contacts for electrotechnology and telecommunications trades apprenticeships or traineeships in the December quarter 2022, one in five (22.7%) will withdraw within their first year, and almost half will withdraw within four years of training (43%) (Figure 2).[19]

Figure 1

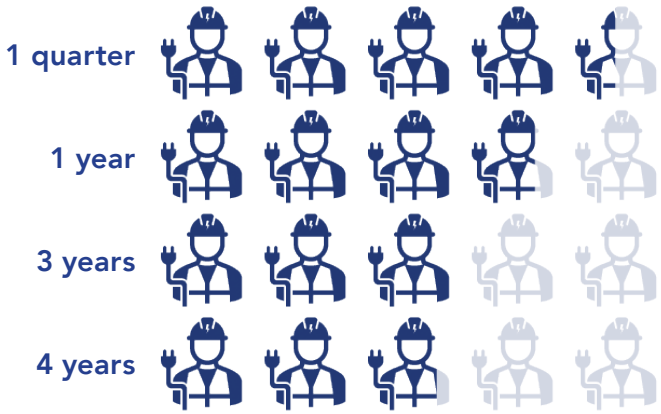
Electrical apprenticeships, total commencements and completions, Australia, yearly (12 months ending 31 March)



Source: VOCSTATS <https://www.ncver.edu.au/research-and-statistics/vocstats>, extracted on 01/05/2024

Figure 2

Almost half of electrotechnology and telecommunications apprentices and trainees will withdraw before completing their apprenticeship



Source: Projected contract attrition rates for contracts commencing in December quarter 2022 - NCVER, *Australian Vocational Education and Training Statistics: Completion and Attrition Rates for Apprentices and Trainees 2022* (Statistical Report, September 2023) Table 6 (Aus).

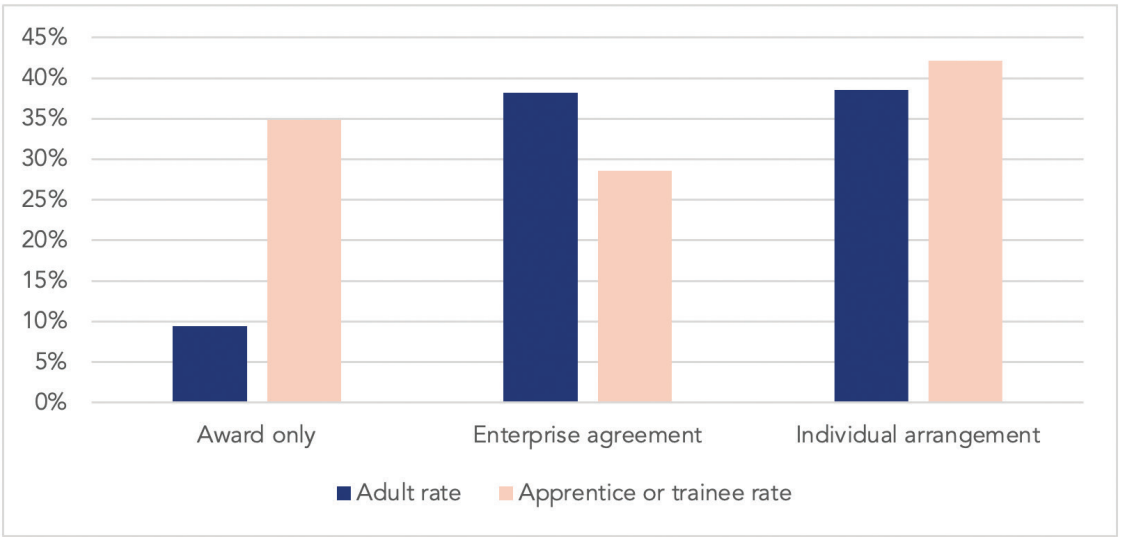
Non-completion driver: low wages and cost of living pressures

The *Electrical Apprentices Survey* found that a third of electrical apprentices did not feel their income was sufficient to cover bare necessities, and that low wages were a leading reason for terminating apprenticeships. Those on enterprise agreements fared better than those on award wages. 76% of apprentices whose wages were set by enterprise agreements said their wages were adequate, compared to just 30% of those paid at award rates.[20]

Most electricians, including apprentices, have their wages set by individual agreements or enterprise agreements – only 13.5% have their wages set by a *Modern Award*. While less than one in ten electricians paid at the adult rate are Award dependent, more than a third of apprentices are (35%) (Figure 3).[21]

Figure 3

Method of setting pay, Electricians, Australia, 2023



Source: Australian Bureau of Statistics, *Employee Earnings and Hours, Australia 2023, TableBuilder*

Low wages paired with other work expenses like transport costs are key drivers of non-completion for electrical apprentices. Four in five survey respondents used their own vehicle to get to and from work and, of those, over half travelled 100km or more and were spending over $100 per week on transport costs.[22] Since the survey was conducted in August 2022, cost of living pressure has only increased, and automotive fuel prices have risen 13.9% in the twelve months to August 2023.[23]

Based on these responses, the Australia Institute's Centre for Future Work estimated that the typical apprentice would incur additional fuel expenses of $6 – 7 per week (more for larger vehicles or apprentices travelling longer distances), resulting in an annual loss of disposable income of $300 - $350 per year.[24]

The transition from fossil fuel to renewable energy means a rapidly accelerating number of workers moving from older to newer energy projects. Alarmingly, it has become clear this often means a step down in wages and conditions.[25]

An unfortunate reality is that fossil fuel jobs pay more than renewable energy jobs. According to analysis presented in the JSA *Clean Energy Generation Report*, electricians in clean energy jobs earn around $10,000 less annually than those in non-clean energy jobs.[26]

Additionally, the ETU has found evidence of serious safety issues facing electricians and unqualified backpackers working on large-scale solar farms in remote sites across Australia. At one project in Queensland, the ETU found that half the workforce were backpackers working on 88-day holiday visas, many of them completing electrical work which they were not qualified to do. At another solar project, non-electrical workers were seen doing high risk work in knee deep water and mud, risking electrocution to themselves and other workers.[27]

Non-completion driver: negative workplace culture

Negative experiences in the workplace, including isolation, poor supervision, and experiences of discrimination, harassment and bullying, are key drivers of non-completion for trades apprentices in Australia.[28] NCVER data on apprentices and trainees shows that one in five completers (21%), and over a third of non-completers (35%), had observed bullying in the workplace. For women, observations of workplace bullying were more likely: one in four women who completed their training (26%) and almost half who didn't (44.7%) observed workplace bullying.[29]

Women are particularly affected by negative workplace culture. Of those who responded to the 2022 *Electrical Apprentices Survey*, almost one in four (23%) said they were considering quitting because of poor workplace culture, compared to only 15% of male electrical apprentices.[30]

Enabling apprentices to change employers, or at least workplaces, during their apprenticeship is particularly important for boosting the participation of women in the trade. This is one of the major benefits of Group Training Organisations (GTOs). Under the GTO model, women who may otherwise quit, due to poor workplace culture, can be rotated to a different site to complete their training without needing to withdraw. However, it will be important to ensure that additional supports are put in place to address the behaviours which have occurred in the former workplace, so it is not simply a case of the apprentice being moved rather than the underlying problem being addressed. The National Electrical and Communications Association (NECA) and the National Apprentice Employment Network both advocate for greater use of GTOs to address concerns associated with workplace culture.[31]

Among electrical apprentices, women are more likely than men to be employed through a GTO. But with less than 12% of all electrical apprentices in training employed by a GTO,[32] opportunities to fully realise the benefits of the GTO model are currently being missed.

One benefit of Australia's GTO (Group Training Organisation) model is that the individual's training contract is with the GTO and not a single employer. This means that if an employment-related issue arises, the GTO can step in to resolve it or find the apprentice a different employer, thereby keeping the individual in training and mitigating the risk of them dropping out of the system completely.

National Electrical Communications Association, Submission to Inquiry into the Perceptions and Status of Vocational Education and Training (February 2024

The GTO network has a zero-tolerance approach to gender-based discrimination and works to ensure respectful language and attitudes toward women. It is one of the reasons that GTOs have become attractive to women in trades and why it is seeing above average representation and completion rates by women.

National Apprentice Employment Network, Submission to Inquiry into the Perceptions and Status of Vocational Education and Training (February 2024)

A good mentoring program should be built around someone going with you through the whole apprenticeship, they should know you personally and be more than just a phone number to text or call when something comes up. A good mentor is one that sets a good example as a role model for what it is to be a professional tradesperson across all aspects of the job.

Zahn Anthony, ETU Apprentice of the Year 2023

Non-completion driver: lack of support and mentoring

Poor support or mentoring during apprenticeships, and a lack of awareness of the mentoring and supports that are available to apprentices, make it difficult for apprentices to complete their training and lead to many dropping out.[33]

Apprentices and trainees need support and mentoring from those within their occupation or industry. Occupational specificity is particularly important in the context of sectors that are undergoing rapid changes as we transition to renewable energy. The Australian Apprenticeship Support Network (AASN) is not fit for purpose.

The AASN model was established in September 2015 to replace the existing apprenticeship centre model. The intention was to:

> *shift apprenticeship services away from paper-pushing to establish outcomes-focused services such as mentoring and job-matching to better support businesses and apprentices through their years of training.*[34]

But since 2015, the AASN model has failed to make a meaningful impact on electrical apprentice completion rates, and too many apprentices are missing out on opportunities to gain experience in emerging technologies.

A key design flaw is that AASN's lack occupational specialisation and industry leadership. This means providers are simply unable to meaningfully assist apprentices in finding appropriate courses. Another issue is the inherent conflict of interest in the AASN relationship. Namely, that AASN's are reliant on employers for their business, and may be unwilling to risk ongoing business through an employer by supporting apprentices who are having issues with that employer. Worse than a lack of support, the ETU also reports on examples of AASNs siding with employers and failing to properly advocate for apprentices in disciplinary meetings, ultimately leading to apprentices

leaving their apprenticeship.[35] While the Government has taken steps to reform the apprentice support services, these reforms do little to address these flaws.

Publicly funded AASN's spent over $255 million of government money in the 2022/23 financial year,[36] but many electrical apprentices were not getting the support they need from AASNs. The *Electrical Apprentices Survey* showed that two thirds of respondents were unsure of who their AASN provider was, half had received no support or regular contact from them, and only one in ten had received any mentoring from their AASN provider. Women were less likely than men to have received support or regular contact from their AASN provider, and only 11% said that their AASN provider had discussed electives with them - despite electives being critical for renewable energy training.[37]

During the House of Representatives Standing Committee on Employment, Education and Training's 2024 *Inquiry into the Perceptions and Status of Vocational Education and Training*, one third-year electrical apprentice told the Committee that she was not informed by her AASN that apprentices could choose their own electives:

> *I found out that, when my AASN signed me up as an apprentice, you can actually choose your electives, but I was never informed of that. They just put me into an elective. They put me into telecommunications when I could have considered renewables.*[38]

Master Electricians Australia (MEA) also made submissions to this inquiry questioning the efficacy of AASNs for ongoing support:

> *It is questionable whether they [AASNs] offer any ongoing support once the signup has been completed. They join a person to a vacancy and get paid to do so. This role could be done by other bodies, such as GTOs, industry associations, unions, and schools with advanced VET in Schools programs.*[39]

AASNs are failing to provide apprentices information about available financial supports. Instead, apprentices are reliant on word-of-mouth from other apprentices or recently qualified tradespeople to find out what they are eligible for.

Zahn Anthony, ETU 2023 Apprentice of the Year reports:

> *[The AASN] only made minimal contact, mostly in the form of text … When I asked what kinds of support they could offer, they only read back their mission statement… I had no ongoing relationships then I had to explain my work situation every time - despite my site, and employer being the same the whole of my apprenticeship… At the start of 2024, I found out about the Australian Apprentice Support Training Payment for the first time and had already completed my CAPSTONE… It was only because the government extended the time to claim, that I could claim for the two previous pay periods. I would have missed out had I not chased it up personally. It was good to finally get the payment, but it would have been more financially useful in a cost-of-living crisis to have gotten it earlier, and to have it paid at proper intervals throughout my apprenticeship, instead of as a total at the end. I'm unaware of what other supports I missed out on throughout my apprenticeship.*[40]

Mentoring and ongoing support is incredibly important in supporting electrical apprentices to stay the course. Completion rates can be dramatically impacted by a successful mentoring and support system. This is seen in industry-led Registered Training Organisations (RTOs) and GTOs, particularly when these are combined and able to offer wrap around supports across all aspects of training.

Electrical education in crisis

The net zero transformation presents an unprecedented opportunity to revitalise the Australian education and training sector, working with industry to develop a more diverse workforce and create sustainable employment for generations to come.[41]

Jobs and Skills Australia, The Clean Energy Generation: Workforce needs for a Net Zero Economy

Revitalising Australia's education and training sector is not merely an opportunity but a *necessity* if Australia is to meet its clean energy workforce needs. The skills and capabilities, nationally portable and/or transferable qualifications and broad education that TAFEs and the vocational education and training system deliver are vital for workers facing a changing workplace and industry.

To boost Australia's electrical workforce, more electrical apprentices need to start and finish their training. But after decades of neglect many training centres are at capacity - there are not enough rooms or trainers to train the electrical workforce of the future.

Not enough trades schools

Australia lags the rest of the world in training outcomes due to long term underinvestment in electrical trades education. In many cases, apprentices are waiting months between commencing their apprenticeship and their first block of training. The waiting period to commence off the job training now routinely extends beyond 18 months.[42]

Across Australia there are 64 RTOs approved to deliver Certificate III in Electrotechnology Electrician (UEE30820), including 27 TAFEs, skills institutes, polytechnics, or universities, and 34 privately operated RTOs, industry associations or professional associations, servicing the 27,450 apprentices currently training (in all years) in this qualification.[43]

Industry-led, not-for-profit RTOs are uniquely placed to develop and invest in specialised training required in emerging industries. Collaborations between unions and industry in the delivery of training results in higher completion rates and training that is responsive to the changing needs of energy industries. Industry-led RTOs and GTOs training and employing electrical apprentices have achieved completion rates averaging upwards of 92%, compared with completion rates of under 60% across the broader sector.[44]

Renewable Energy Electives Not Being Taught

Existing training packages contain nearly all the skills that would be required by new workers who may be interested in entering the clean energy workforce. However, the ETU reports that there are more than 100 elective modules that are not being taught. This is due to a combination of AASNs not making employers and apprentices aware of them, and RTOs not offering these electives to apprentices because they are ultimately loss making as they are both capital intensive and low volume. In other words, very few VET providers in Australia, private or public, are equipped or willing to offer renewable energy electives to electrical apprentices undergoing Certificate III training.

Skill shortages in the VET sector

Preparing the next generation of the workforce will require industry expert trainers who can impart necessary knowledge and skills. Addressing the shortage of electricians requires a concurrent focus on addressing the shortage of qualified educators and trainers.

The Vocational Education Teachers/ Polytechnic Teachers occupation has been in shortage on the SPL for two years.[45] As the federal Minister for Skills and Training, the Hon Brendan O'Connor MP noted, this 'shortage of trained and skilled teachers, trainers and assessors in the VET sector is hampering efforts to overcome persistent skills shortages across our economy'.[46]

Attracting industry experts to roles in teaching is an ongoing challenge and an under-appreciated brake on workforce growth. Left unaddressed the problem will only get worse as existing trainers age out of the sector. The JSA Clean Energy Generation Report noted that:

> *Anecdotal evidence from TAFE practitioners working in the sector suggests that the workforce of trainers delivering many of these high-demand qualifications is ageing, meaning a large amount of training capacity may soon leave the sector.*[47]

The skill shortage across clean energy occupations underscores the importance of an effective VET sector - but it also makes it more difficult to find trainers who can train future workers. As the energy system transitions, we need trainers with first-hand working experience in the latest renewable technologies and energy systems, but it is difficult to incentivise industry professionals with these skills to make the shift into teaching and trainer roles because the high demand for these skills in the workforce is seeing many trainers 'back on the tools'.[48]

To move out of electrical work into teaching currently brings the prospect of a significant salary cut. When comparing median weekly earning for full-time non-managerial electricians and VET teachers paid at the adult rate, the difference per week is over $300.[49] But in some parts of the industry electrical workers can earn over $150,000, further increasing the salary gap and disincentivising them to move into training.

The requirement to undertake a Certificate IV in Training and Assessment (TAE) is an additional deterrent to experienced industry professionals moving into teaching and training roles, 'especially if they have not engaged in formal learning themselves for some time'.[50] It often requires workers to take a significant amount of time off work to complete their certification or undertake long periods of night school. Despite many such workers already supervising apprentices and conducting on the job training, that experience is not recognised when seeking TAE certification.

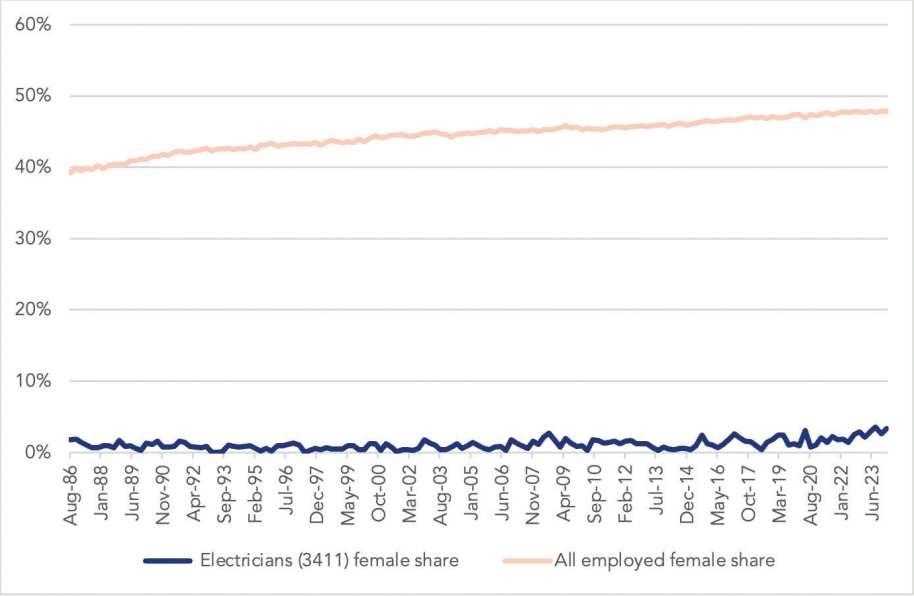
Not enough women in electrical trades

One way to address skill shortages in electrical trades is to tap into a largely under-utilised cohort of workers: women.

While there have been attempts to increase the proportion of women in electrical industries through gender equality initiatives introduced by governments at all levels, this has had little impact on the representation of women working in these roles. The female share of employed people across the Australian workforce rose from 39% in August 1986 to 48% in February 2024,[51] but the female share of electricians over that period has remained stubbornly low (Figure 4).

Figure 4

Female share of all employed people and of employed electricians
Australia, August 1986-February 2024



Source: ABS, *Labour Force, Australia, Detailed, February 2024*

The JSA *Skills Priority List Key Finding Report* (2023) found that:

> *A heavily gender skewed workforce may therefore be artificially constraining the labour supply – increasing the likelihood of a skills shortage. Improving the gender imbalance of occupations may be a way to address skill shortages in these areas of the labour market.*[52]

Progressing towards a more gender equal workforce in electrical trades will have positive ramifications beyond addressing the skill shortage. It carries benefits for individuals, businesses, and industry.

For individuals, access to a job as an electrician means access to a secure job with high renumeration. 93% of electricians work full-time compared to only 70% across all occupations and only 5% of employees are casually employed compared to 22% across the wider workforce.[53] Median full time total cash weekly earnings for electricians paid at the adult rate in 2023 was $2204, compared to $1697 across the broader economy.[54]

A critical mass of women at all levels of an organisation has been linked to higher customer satisfaction, greater productivity, and higher profitability; and it has also been widely acknowledged that women bring

different skills and perspectives into male-dominated workforces, which can produce different and improved ways of working.[55]

Interviews with employers undertaken for a 2017 Victoria University study into increasing the participation of women in electrical trades indicated that women brought value to electrical trades businesses by way of improved attention to detail, planning, organisation and communication.[56] Employers in the study observed that 'the presence of tradeswomen and female apprentices resulted in a shift from a traditionally masculine culture to a more civil and a better behaved, more work-focused culture'.[57]

The positive ramifications of increasing female participation in male dominated industries are clear, but there remain significant barriers to women working in these industries along every step of their journey.

An Australian Human Rights Commission report, *Women in Male-Dominated Industries*, found that:

> *Many women are deterred from participation in some of Australia's most thriving and essential businesses, particularly in male-dominated industries, because of the lack of family role models, stereotypes about the nature of 'women's work', discouraging workplace cultures and structural problems within those organisations.*[58]

Structural issues include elements such as a culture of longs hours without allowances for flexibility and work life balance, and a failure to provide amenities that are inclusive of women. In a national survey conducted by the ETU of workers in their industries: almost half of all female respondents said they did not have designated permanent toilets for men and women; and almost half claimed to have raised issues about amenities in their workplace.[59]

The culture of long hours without allowances for flexibility has a particular impact on women. The age profile of electricians is disproportionately in the age group where women are most likely to be having children compared with other jobs.[60]

I started my working life working in hospitality wanting to follow in my mother's career, it wasn't the glamorous career choice I thought it was going to be and was mainly cleaning hotel rooms. After a couple of goes I moved into the retail sector working on checkouts in supermarkets and in the service deli. From there I went on to drive a lunch van until I went on maternity leave. When I came back into the workforce I moved into the early childcare sector until I had my second child. None of these jobs were a career for me and none of them lasted more than a couple of years.

In September 2009, I found myself needing to completely restart my life and after spending 2010 studying at TAFE I discovered an all-female electrical pre-apprenticeship program being offered. I had nothing to lose so signed up. From the first day of the course I was hooked, and every day just got better. I had found myself and my career. I started my electrical apprenticeship in 2012 and I haven't looked back. I went from not being able to pay bills, skipping meals to feed my kids and not being able to afford nappies to a career with promotions. I have continued to excel in my electrical career and never could have guessed where this opportunity could have taken me. The mental load of trying to find money for bills and food no longer exists. I couldn't be prouder of myself and the choices I have made and the opportunities that I have created for myself and my two boys.

Gaynor Maree, CEPU SA Affirmative Action Officer

As part of my apprenticeship, I was required to travel over 1.5 hours from my home on the NSW Central Coast to Sydney in order to attend my TAFE. There was no consideration of how this would affect how I was able to manage taking care of my children with the increased travel requirements to attend TAFE. A lack of early morning childcare options had to be mitigated by changing my husband's roster to accommodate. Even just allowing me to attend block release at TAFE would have made my life easier. If my husband wasn't able to change his shift to accommodate the lack of childcare, I'm not sure how I would have made it work.

Raven Maris, ETU National Affirmative Action Officer

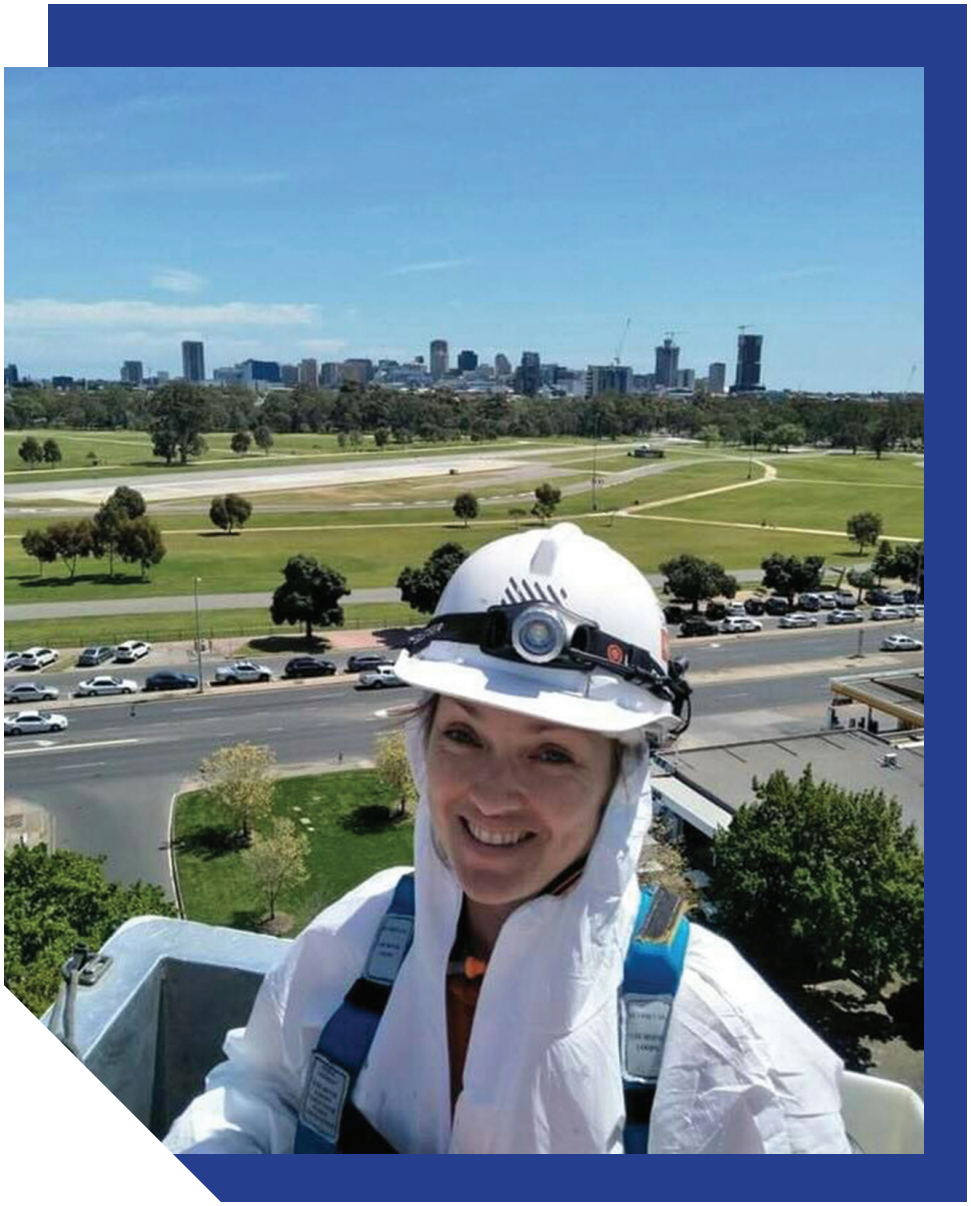
The urgent need to address the skills shortage in clean energy jobs provides an opportunity to address long standing gender disparities in these industries. Unlocking this untapped source of workers is needed to overcome persistent skill shortages, as well as to support economic equality for women.

Increasing the number of women in clean energy occupations will require more assistance targeted at women to support them throughout their training and into the industry, including measures to make workplaces more inclusive and to better mentor apprentices throughout their training journey.

Successful support programs begin before women start their apprenticeship. ETU Victoria's training facility, the Centre for U, has successfully run the Women in Apprenticeships Victoria Electrical (WAVE) program in collaboration with Holmesglen Institute, Victorian Trades Hall Council, Australian Women in Solar Energy, and the Victorian Department of Education and Training. WAVE seeks to attract women to targeted information events, recruit them into women-only pre-apprenticeships, and support them with mentoring through the first year of an electrical apprenticeship.

The ETU has had nearly 50 women complete pre apprenticeships since the WAVE program started in 2021, and over 91% of women that start WAVE and complete the pre-apprenticeship move into successful apprenticeships.[61]

Ambitious change is possible. In late 2021 the ETU along with Energy Queensland (EQL) and Powerlink worked to develop a workforce and skill resourcing plan for submission to the Queensland Government as part of the *Queensland Energy and Jobs Plan*. The submission outlined the parties' commitment to expand the annual apprentice intake at least 10% year on year with a focus on working together to develop strategies for increased recruitment of women and First Nations apprentices. As a result, EQL has achieved a record 50% women and 8% First Nations apprentices in the 2024 intake. These strategies included pre-apprenticeship programs.

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The Solution and Pathway: Investing in What Works

In the first part of this report, we outlined the barriers electrical apprentices face in the successful completion of their apprenticeships. In this next section, we discuss solutions for addressing these barriers, as well as other necessary steps needed to ensure Australia has enough trained electricians for the transition to renewables and to install our nation as a renewable energy superpower.

Utilising industry-led GTOs

The construction of grid-scale renewable generation largely occurs within Renewable Energy Zones (REZs) - areas mandated by state and territory governments to be the focus for renewable energy infrastructure, and which combine generation transmission and storage to deliver stable, renewable energy to households and industry. These REZs will create thousands of renewable energy jobs.[62] REZs already in flight include:

- The Far North Queensland REZ, with 500 – 700 MW of proposed generation.[63]
- The Hunter-Central Coast REZ, which has attracted commercial interest in almost 40 GW of generation and more than $100 billion in potential investment.[64]
- North West Tasmania REZ with 1000 MW of proposed generation, including two wind farms.[65]

Rates of apprenticeships in the renewables sector are particularly low.

Project Energy Connect is Australia's largest energy transmission project, building a new 900km transmission line to connect the power grids of New South Wales and Victoria.

TransGrid and ElectraNet have hired zero apprentices for this project. Green Light Contractors Pty Ltd, a subsidiary of Spanish multinational Elencor, was instead engaged to hire 'up to' 100 trainees completing a Certificate II, which involves training in 'basic operational knowledge' of 'mainly routine work' with 'limited complexity'. There appears to be no commitment to use the opportunity to train a domestic workforce to an advanced standard. When asked if they had made any attempts to recruit women into trade roles or apprenticeships, the ETU was told the work was 'unsuitable' for women because it was 'too physical', and women don't do well at heights.[66]

The sector argues that the low rates of apprenticeships are due to:

- the remoteness of the projects;
- the projects' time-limited construction phase, which is typically significantly shorter than the length of an apprenticeship; and
- individual projects not offering the full scope of on-the-job experience required to complete an electrical apprenticeship.[67]

Except for the remoteness of the projects, these factors are not particular to the renewables sector. No construction job is a *job for life*, with workers made redundant at the end of each project. In the metro and resources sector, this problem has been addressed with the use of GTOs.

Benefits of the GTO model for employers

Employers benefit from the GTO model by gaining access to a reliable source of high-quality apprentices in all stages of apprenticeships, ready to acquire the necessary skills for each project phase.

Small- to medium-sized employers make up a significant proportion of GTO host employers, many of which would struggle to take on apprentices via direct employment. GTOs remove much of the administrative and regulatory burden from host employers because, as the direct employer, they are responsible for meeting all employer obligations, paying wages and entitlements, arranging formal training and assessment and providing support to apprentices. It is therefore no surprise that a recent NCVER study on completion rates found that 'GTO completion rates are substantially higher than [completion rates] for small and medium direct employers'.[68]

GTOs also bring social and economic value to host employers. According to a 2015 study, for every dollar invested by host employers to hire apprentices and trainees from GTOs, and to receive support from GTOs, host employers receive $1.70 in return value.[69] The study, undertaken by Social Ventures Australia, found that 42% of total value created came from the time and money host employers save by using GTOs, including: recruiting and placing apprentices and trainees, managing industrial obligations (inductions, timesheets, payroll and entitlements), and managing work health and safety. The remaining 58% of total value was created because:

> *apprentices and trainees hired from GTOs are of better quality and therefore more productive… [t]his outcome occurs because both the apprentice/trainee and host employer receive mentoring support, which results in the host employer being able to better manage apprentice/trainees.*[70]

Benefits of the GTO model for apprentices

GTOs accounted for 12% of all electrical apprentices in training in 2023, including 20% of all female electrical apprentices and 14.5% of all First Nations electrical apprentices.[71]

Almost one in ten of the electrical apprentices in training in a GTO are female, compared to one in twenty in training in direct employment.[72] As GTOs place apprentices across multiple employers, they have a role to play in ensuring that there is more than one women apprentice on site. The ETU reports that when women – and particularly women apprentices – are placed together onsite, this has a positive impact on broader workplace culture.

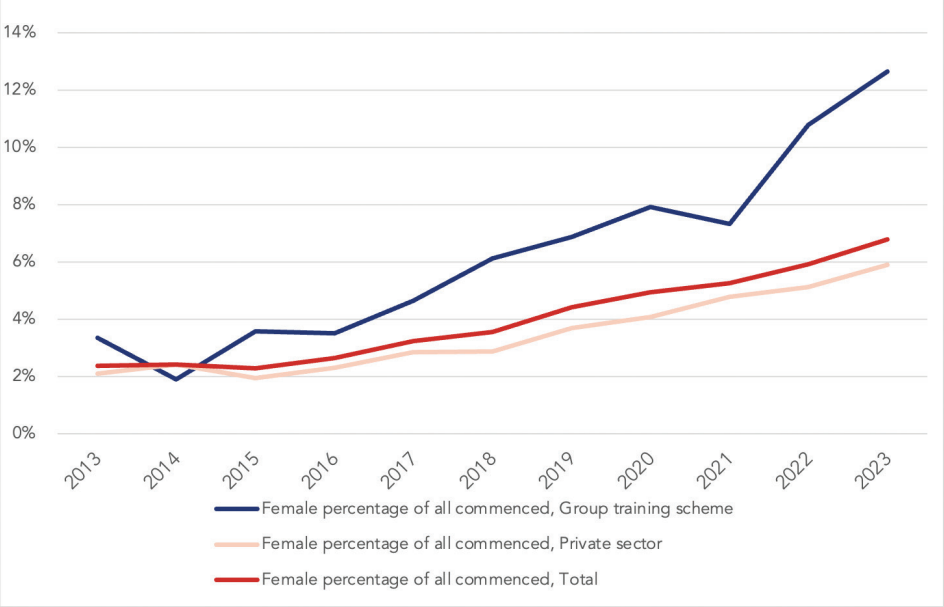
When comparing individual private employers and GTOs, the percentage of women who commence and complete their electrical apprenticeships and traineeships is higher in GTOs (Figure 5 & 6). This is a positive step towards reaching a critical mass of women working in electrical trades, which carries benefits for businesses and the industry as a whole.

GTOs benefit both apprentices and employers and will play a crucial role in ensuring apprentices are trained in new renewable energy technologies. As the direct employer, GTOs organise placements for apprentices across multiple employers and are responsible for ensuring that apprentices gain the full gamut of on-the-job experiences required to complete their apprenticeship. This neutralises objections from the sector about the difficulty of hiring apprentices on shorter projects and where businesses are unable to independently offer the full scope of on-the-job training experiences. Industry-led GTOs in the electrical industry also report much higher than average apprentice completion rates.

Recommendation: That the Federal Government, in consultation with industry, should develop and implement trial projects in which a GTO is appointed to a REZ. All relevant renewables projects within that REZ would be required to either engage apprentices directly or engage apprentices through that GTO, to provide certainty for a GTO to expand into that region and improve the facilitation of workers into apprenticeships.

Figure 5

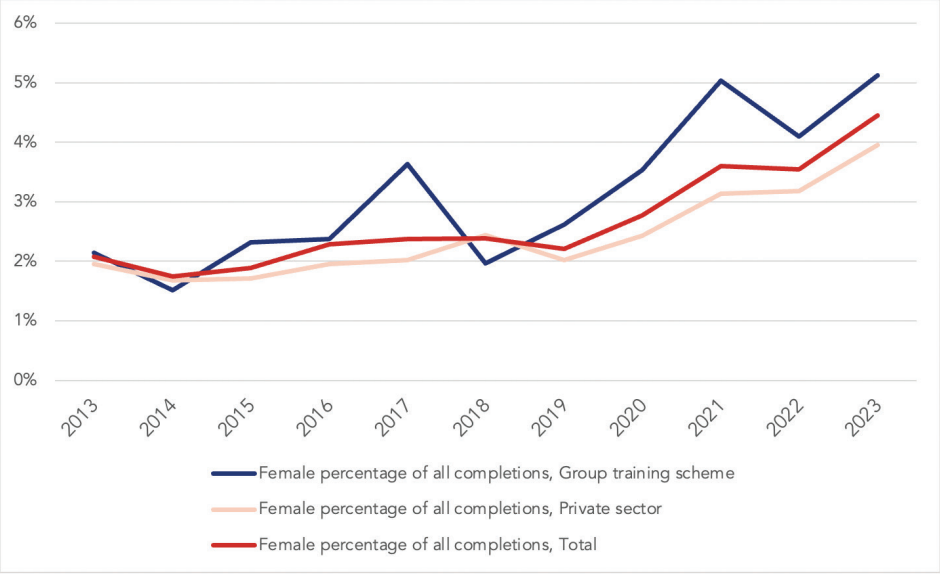
Share of female electrical apprenticeship commencements by selected employer type, yearly, Australia



Source: VOCSTATS <https://www.ncver.edu.au/research-and-statistics/vocstats>, extracted on 01/05/2024

Figure 6

Share of female electrical apprenticeship completions by selected employer type, yearly, Australia



Source: VOCSTATS <https://www.ncver.edu.au/research-and-statistics/vocstats>, extracted on 01/05/2024

Expanding industry-led RTOs

On current completion rates, Australia needs to recruit an additional 55,000 electrical apprentices by 2027 just to keep the lights on while the nation transitions to renewable energy. But the VET sector is already at capacity. There are simply not enough trades schools to train all the apprentices the country needs.

NECA states:

> *Students seeking to commence an electrotechnology apprenticeship are already unable to secure places in most parts of Australia, with RTOs, including TAFEs, at capacity in some cases up to 18 months in advance. In one jurisdiction, even the waiting lists have been suspended.*[73]

It's clear that increased investment in TAFE and industry-led RTOs to significantly expand training capacity for clean energy trades is crucial to meeting our 2050 targets. However, new training centres will take time to build. In the meantime, the only way that Australia will meet our 2030 targets is through increased completions. Industry-led RTOs report significantly higher apprentice completion rates than those reported across the broader sector.

Australia's transition to renewables will be expensive, and maximum value needs to be extracted from every dollar flowing to training. It is essential that the Government invests in approaches that work.

There is an added benefit when industry-led RTOs and GTOs are housed in the same organisation. The collaboration between RTOs and GTOs is essential to delivering solid education and training. While RTOs provide the educational base and formal qualifications, GTOs provide the practical experience and on-the-job opportunities necessary for skills development and career readiness.

The benefit of dual organisations is that they can understand and mentor apprentices throughout their journey, minimise gaps between off the job and on the job training and provide tailored training packages to meet specific employer needs.

Brian Rungie, CEO at PEER, a not-for-profit industry led GTO and RTO with average apprentice completion rates of 92%, told Per Capita:

> *The power of combining an industry focused training organisation and group training scheme can be seen through our better completion rates and the ability to create pathways to an exciting career within Trades. The team effort between our trainers, group training supervisors and hosts means we are able to understand and help our apprentices quicker, especially when something starts to go wrong. Our in-house learning management systems enable us to help those who are at risk of falling behind or celebrate those who are doing really well. Critically we also fund two learning support officers who directly help our apprentices when things become tough, providing another safe space where they can go to get help.*

Many industry-led RTOs and GTOs are at capacity; expanding these models will result in higher rates of completion and more trained and qualified electricians entering the workforce.

Highlighting what works: Electrogroup

Electrogroup in Queensland is both an industry owned and operated RTO and a GTO. Electrogroup Apprentices (EGA) was first established as a GTO in 1998 by MEA and the ETU to address the skills needs of employers in the electrotechnology sector, and Electrogroup Training (EGT) was established as a not-for-profit Industry Skills Centre, an RTO, specialising in training, predominantly for electrical apprentices.[74]

In 2022, EGT in Queensland opened the doors to Australia's first and only Renewable Energy Training Centre: the Pinkenba Renewable Energy Training Facility. The development of this centre was supported by the Queensland Government and industry as part of the *Unite and Recover for Queensland Jobs Plan* to 'lead and future-proof' the state.[75]

Electrogroup has about 700 students-in-training currently in its apprenticeship program. It reports that, through its Queensland program, it has achieved completion rates of around 97%, much higher than the national completion rates from all pathways of around 60%. Accordingly, we can expect around 260 more apprentices to complete across the cohorts currently enrolled in the Electrogroup program than if they were enrolled in other pathways.

Highlighting what works: PEER

PEER is a non-for-profit industry-based organisation, both a GTO and RTO, operating in South Australia. It reports 92% apprentice completion rates and 98% apprentices employed on completion.[76] Currently its GTO component has almost 500 apprentices, of which around 65% are electrical apprentices. In its RTO it trains around 900 electricians in total across its training programs: VET in schools, apprenticeship training, upskilling courses, and skills recognition training.

Around 14% of those in the PEER GTO are women, much higher than the national average female share of 5.6%.[77] PEER works with around 150 employers in South Australia, many of which are small businesses. One of the advantages of the GTO is that apprentices can be rotated from one employer to another and exposed to a variety of workplaces, including renewable energy projects, so they can get a sense of what the industry is like more broadly and obtain relevant skills to complete their apprenticeships. PEER's in-house learning management systems and wrap around supports for apprentices allow them to identify those who are falling behind and provide additional support to those who need it.

Developing a network of renewable energy centres

Industry-led RTOs are playing an important role in bolstering the clean energy workforce, but these centres are at capacity. Brian Rungie, CEO at PEER says:

> *We have more people wanting to become an apprentice then we are physically able to train, as we do not have the space. Even with these full classrooms our training program still struggling to make enough money to breakeven, let alone making enough money to invest in more facilities because the costs to deliver the training is high and the government subsidy rate is too low. This makes the training of our future generation of apprentices not actually economically viable.*

NECA reports a similar sentiment, noting that industry members across Australia are adamant that 'we need more tradespeople, but we need more trade schools as well'.[78]

If these industry-led dual RTO and GTO models were replicated nationally to create five additional training centers, all with the capacity to train and employ 500 electrical apprentices each, then - based on a completion rate of 92% - we would expect almost 1000 additional completions than if these cohorts were trained and employed through other avenues.

Expanding the success of the Pinkenba Renewable Energy Training Facility to five additional centres operating across Australia would bring the success of industry-led models to the national energy workforce and ensure electrical apprentices are supported from commencement to completion.

The Federal Government has committed $50 million to upgrade and expand clean energy facilities in the 2024-25 Budget. In the first instance, the Federal Government should work with state and territory counterparts to develop spare capacity in the existing TAFE sector, by retrofitting sections and working with industry to deliver training in these facilities.

NECA has identified that there are existing TAFE campuses in NSW that do not currently offer electrotechnology electives or renewables training, and that have capacity (in terms of space) to introduce these qualifications with some retrofitting of facilities.[79] Given the urgency of introducing new training capacity into the system, and that not-for-profit RTOs have up-to-date and specialised expertise in new energy industries due to their collaborative operation by unions and industry, the government should facilitate an agreement between industry and TAFE NSW to lease and renovate sections of under-utilised campuses and fund the necessary capital works upgrades to deliver electrotechnology and renewables training on up-to-date equipment.

This investment would be a critical first step in delivering short-term increases in electrical apprenticeship completions, but it will not be sufficient to address the workforce shortage.

Government also needs to work with JSA to identify sites to build new state-of-the-art facilities, where they are most needed to deliver the government's ambitious plan for the energy transition. For example, the ETU, Master Electricians and Electrogroup identified a significant need for increased training capacity, and new training offerings in vital solar and renewable electives and post-trade qualifications. Together they developed a proposal for a new training centre in Rockhampton, costed at $15 million. The federal government should work with the Queensland state government to fund this and other new training centres where they are most needed.

Recommendation: Two options are recommended. Firstly, that the Federal Government invest in building new state-of-the-art industry-RTOs where they are most needed to deliver its ambitious plan for the energy transition. Secondly, and in addition, the Federal Government should work with state and territory governments and industry to retrofit and lease existing and under-utilised TAFE assets to industry-RTOs for the provision of electrotechnology training. Money spent should be weighted towards proposals that can be rapidly implemented.

Recommendation: Job and Skills Australia (JSA) should undertake comprehensive mapping of existing training places, and any current backlog of apprentices waiting to access training. This should be done in close consultation with industry and unions. JSA should look to disaggregate total demand for electrical workers by region, taking into account current policy settings for the energy transition. JSA should identify critical gaps in training capacity that are likely to put the energy transition at risk, including the VET sector's capacity to put sufficient trainers in classrooms. It should then make recommendations to Government about where new places and/or new training centres should be created.

Financial support to boost the number of electrical trainers

As we have shown, the shortage of electrical technology trainers is a significant brake on workforce growth. To move out of electrical work into teaching currently brings the prospect of a severe salary cut and little support. According to the ETU, this has led to training being seen as an occupation that electrical workers transition into at the end of their careers, or when they can no longer work on the tools due to injury, resulting in apprentices missing out on the benefits that early and mid-career electrical workers can offer, including up to date knowledge of new technologies and industry practices.

Wage supplements are essential to attracting more electrical trainers. The Australian Government has committed $30 million in the 2024-25 Budget to turbocharge the VET teaching workforce.[80] Some of these funds should be used to implement a wage supplement scheme for qualified industry professionals from critical clean energy occupations to work as VET teachers and trainers while maintaining their current positions within the energy workforce.

The Australian Government has partnered with states and territories to deliver $1.5 billion in funding for 500,000 Fee-Free TAFE and VET places across Australia over 2023-26 under the *Fee-Free TAFE Skills Agreement*. As part of the 2024-2025 Budget, they have also committed to an additional $88.8 million to work with states and territories to deliver a further 20,000 Fee-Free TAFE and VET places to priority areas including the VET workforce from 2024.[81]

This is positive to increase the number of industry professionals becoming VET practitioners in the first place, removing the cost barriers to undertaking the required certificate course is necessary. But perhaps more important, it is addressing the hesitancy barrier of potential trainers - targeting trainers who are interested

in, but unsure about, moving into training. These workers need a clear pathway to becoming a VET practitioner in the first place.

Recently announced reforms, including those that will enable industry professionals to assist qualified VET teachers, trainers and assessors in training delivery, are steps towards illuminating this pathway.[82] This experience should be recognised when workers are later seeking TAE certification.

Recommendation: That the Federal Government invest a proportion of its $30 million budget commitment in co-designing and implementing a pilot program with industry, to support qualified industry professionals from critical clean energy occupations to work in the VET sector. This should include working with employers to provide electrical workers with time away from work to undertake training to qualify to work as VET teachers and trainers. It should also include a period of post-training secondment to the VET sector to work as electrotechnology trainers, either on a full-time or part-time basis. Government funding should be used to supplement the wages of workers undertaking training and during their period of secondment to the VET sector. The shortage of trained electricians is nation-wide. This wage subsidy scheme should be coordinated with state and territory governments and industry, to ensure trainer subsidies are provided consistently across jurisdictions.

Recommendation: The Federal Government should work with industry RTOs, unions, and industry associations connected with the clean energy workforce, to promote pathways to, and improve the attractiveness of, becoming a qualified teacher, and ensure training and teaching experience undertaken outside of a TAE certification are recognised when industry professionals later undertake the required certification.

Additional measures to recruit and retain trainers

Financial incentives alone are not a long-term solution to the trainer shortage. Financial incentives have been shown to increase recruitment levels in other international jurisdictions, but when incentives were not combined with wider supports, these gains were only short term.

In a review of incentive programs aimed at encouraging the recruitment and retention of trainers in the UK, NCVER researchers found that:

> *[S]trategies that combined financial compensation with developing skills and supporting teachers in their roles were most effective in recruiting and retaining teachers… [and] [a] good model may be one where the educational provider is flexible about combining different types of incentivisation (financial and non-financial).*[83]

There are several reasons why industry professionals move into training. Understanding these various motivations and harnessing them in a plan for future recruitment is essential. In the study undertaken by NCVER that surveyed RTOs and VET practitioners to explore approaches to attracting industry experts to become VET practitioners, researchers sought to understand the levels of importance of various factors influencing the decision to become a VET practitioner, including remuneration, work conditions, less physically demanding word and giving back to the industry. They found that the most important consideration cited by VET practitioner interviewees was giving back to the industry by developing the next generation of workers: 32% said this factor was very important and 45% indicated it was extremely important.[84]

In the context of the clean energy transition, trainers are not merely 'giving back' to the industry and passing on skills for the next generation of workers, they are training the next generation of workers who will be essential in fighting the devastating impacts inaction on climate change is having on our planet, nature, society, health, and economy.

They are training the next generation who will save the world.

Ever since working as a technician, I have always wanted to be able to provide others with the vast amounts of knowledge I had gained.[85]

NCVER, Attracting Industry Experts to Become VET Practitioners

I wanted to be able to empower the future generations into an industry that I am so passionate about[86]

NCVER, Attracting Industry Experts to Become VET Practitioners

We are lucky there are passionate trades people within the industry who are wanting to give back and mentor the next generation.

Brian Rungie, CEO of PEER

Recommendation: That the Federal Government work with industry to promote VET practitioner roles, utilising existing industry-related outlets and communication channels such as expos, journals and newsletters, on worksites, and through unions to leverage the motivation to *give back to the industry.*

Encouraging industry-led apprentice support networks

Publicly funded AASNs are not adequately supporting the electricians of the future.[87] There is a critical gender angle to this problem. The 2022 *Electrical Apprentices Survey* showed that men are 50% more likely to have regular contact with their AASNs than women, and women are more likely to have never received any support from them. The ETU reports that when women are supported and mentored through their apprenticeship, over 90% go on to long term employment in the sector.[88]

Good mentoring and support of apprentices is vital, but existing systems are not delivering. Industry-led RTOs and GTOs employ a range of mentoring and support mechanisms and, as a result, achieve higher than average completion rates. They invest in their own support systems, and the outcome is positive, but this creates additional strain on already underfunded organisations.

There is a need for mentoring and support models that foster active coordination and cooperation with industry bodies to provide relevant and up to date training packages.

To address this, the ETU has developed a proposal for an industry-led pilot. This will provide electrical apprentices with support from trained workers in their own industry; and employers with greater confidence to invest in apprentices. This proposal would be implemented by a joint venture of industry partners, building on their existing capacity, and would be designed to augment and expand existing industry schemes.

Implementing programs like this is not a new idea. The House of Representatives Standing Committee on Employment, Education and Training's 2024 *Inquiry into the Perceptions and Status of Vocational Education and Training* recommended that:

> *The Australian Government develop and implement a pilot program for a new, specialised, industry-led network of apprenticeship support providers to deliver industry-appropriate mentoring and support to apprentices and trainees.*[89]

There have been various, industry-specific and focused mentoring programs implemented over the years, with the stated objective of improving retention in the critical first and second years of the apprenticeship program. These include:

- **Industry Specialist Mentoring for Australian Apprentices (ISMAA) 2017-2019:** this initiative provided intensive support to apprentices and trainees in the first two years of training in industries experiencing high demand (electricians) by offering tailored guidance from industry specialists (mentors). ISMAA addressed the specific challenges faced by apprentices, significantly improving completion rates and ensuring a workforce ready to meet industry needs. ISMAA achieved a 90% retention rate.[90]

Energy Industry Apprenticeship Progression Management System (EIAPMS) 2012-2015: specifically designed for the electrical industry, this pilot program paired apprentices with experienced electricians, offering a combination of technical training and soft skills development. EMAPS focused on the critical early stages of apprenticeships, reducing dropout rates and enhancing the quality of newly qualified electricians. The pilot was successful in increasing the retention rate of electrical apprentices to 93%, at the time up from 62%.[91]

Industry-led mentoring pilot program

The industry-led pilot would provide field officers the opportunity to offer focussed and well-informed mentoring to every new apprentice. Field officers would:

- Come from the same trade as the apprentices assigned to them;
- Oversee apprentices they are assigned through the entire course of their training package where possible;
- Maintain an annual minimum number of in-person site visits to each assigned apprentice;
- Be kept to manageable apprentice-to-field officer ratios; and
- Be on the same sites every day and develop relationships with apprentice cohorts.

Every apprentice would be offered an Individual Mentoring Plan (IMP), developed by the mentor assigned to them through the program in consultation and cooperation with the apprentice, the employer and the RTO. Existing AASN providers would refer apprentices to the program.

The objective of IMPs would be to provide holistic support, including attention to academic progression, on-the-job experience and wellbeing issues, with a view to increasing completion rates.

Mentoring services would be available for the entire length of an apprenticeship, however, would be heavily focussed in the first two years of the apprenticeships (when apprentices are at greatest risk of withdrawing).

In the first instance, mentoring would be available for new entrants, and to those enrolled in second year, and would progress with this cohort for the remainder of their apprenticeship.

Significantly, mentoring visit frequency would not be one-sized fits all and would be determined by the identified needs of each apprentice. Where programmed contacts and other monitoring systems indicate difficulties, unbalanced or atypical progress through either the on or off-the-job components of the apprenticeship, active intervention would be initiated.

Recommendation: That the Federal Government work with industry to develop and fund a pilot industry-led apprentice mentoring program that engages field officers with industry experience to oversee and mentor apprentices throughout their training. The pilot must include a funding stream for training of tradespeople in on-the-job apprentice training and mentoring skills. This pilot must include targeted support for women and other marginalised groups at higher risk of non-completion.

Only attractive, fair and inclusive clean energy jobs will deliver the transition

Transitioning away from fossil fuels is not only an environmental necessity – it is also an economic one. Deloitte Access Economics estimates that over the 50 years to 2070, 'unchecked climate change will, in average annual terms, reduce Australia's economic growth by 3% per year and cost around 310,000 jobs per year'.[92]

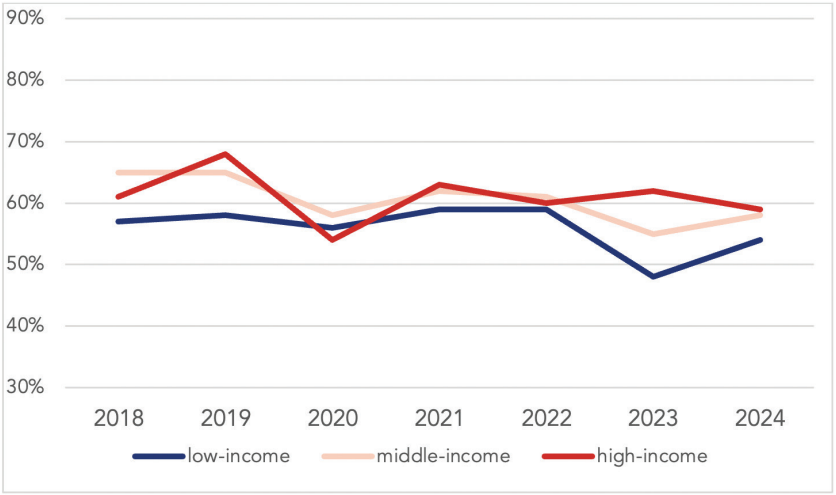
The urgent need to act on climate change also offers an opportunity for governments to fundamentally rethink and restructure public private partnerships. If industrial policy is designed with the goal of enhancing public value, then decarbonising our economy has the potential to generate thousands of good secure and well-paid jobs, foster healthier communities, and enhance national economic prosperity.

The Albanese Government is taking significant steps to drive Australia's transition to renewable energy, including the recently announced $22.7 billion *Future Made in Australia* package. This will promote and facilitate the private sector investment needed to realise Australia's potential of becoming a renewable energy superpower. It is important that Government ensure that the investment of public money generates mutually beneficial outcomes and value for the public - achieved by attaching conditions which maximise public benefit to all taxpayer funded support.[93] This will be critical for recruitment to clean energy jobs, as well as for building and maintaining social licence for the transition towards renewables - which is currently being stress-tested as Australians struggle through a cost of living crisis.

Over the last decade consecutive Lowy Institute Polls have shown that most Australians believe global warming is a serious and pressing problem, and support action even if that involves significant cost.[94] But increased cost of living pressures has seen public support for this proposition fall, particularly among low-income Australians (Figure 7). Just after Australians experienced their largest annual real wage decline on record in December 2022, support for urgent action among low-income Australians fell sharply by 11 points in the March 2023 poll.[95] Economic optimism among those in this cohort has also declined. It is now the lowest it has been in the Lowy Institute Poll's 20-year history, with majority saying in 2024 that they are 'pessimistic' or 'very pessimistic' about Australia's future economic performance (Figure 8).[96]

Figure 7

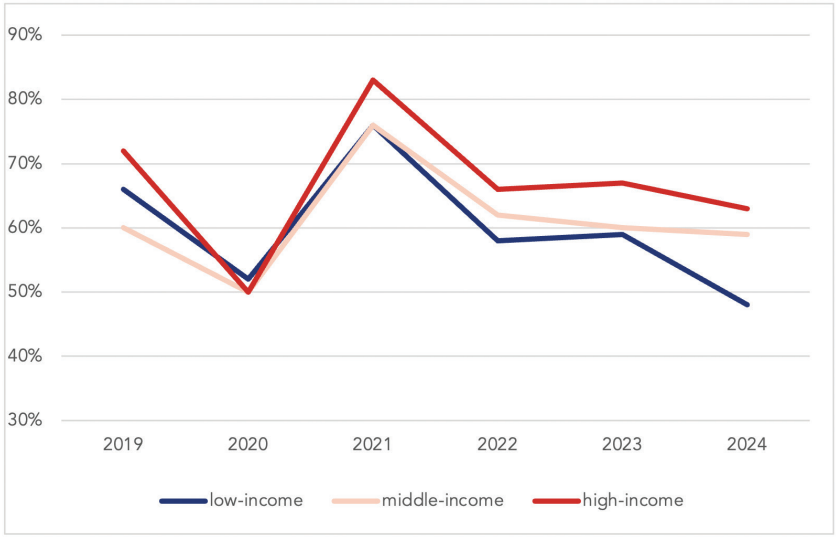
Australians who agree that 'global warming is a serious and pressing problem and that we should begin taking steps now even if this involves significant costs', by income group (%).



Source: *Lowy Institute Poll 2024*

Figure 8

Australians who say they are 'optimistic' or 'very optimistic' about Australia's economic performance in the world over the next five years, by income group.



Source: *Lowy Institute Poll 2024*

There remain significant pockets of resistance to the net-zero agenda in Australia, and much of this resistance is found in key locations for new industries and where the shift from fossil fuel energy systems to renewables must proceed most rapidly. There is some emerging evidence that groups resisting renewable energy projects in regional areas are the product of "astro-turfing,"[97] as apparently grassroots organisations are being manipulated by powerful forces backed by fossil fuel lobbyists, but many of the fears held by residents of coastal and regional centres are genuine.[98]

Local campaigns against renewable energy infrastructure are growing, particularly in regional Queensland and NSW. These threaten the social licence and electoral support needed to ensure the transition to renewables can take place as quickly as needed, and that Australia does not forfeit the opportunity to build good, secure jobs and strong industrial bases for regional communities in the post-carbon economy.

Australia's energy system has been developed, grown, and protected through centuries of strong public investment and ownership of operating assets, and the efforts of millions of energy workers engaged in operations.

As we have shown, there is evidence of poor working conditions jeopardising worker safety in larger renewable energy projects. At the same time, the low, and often non-existent, employment of apprentices on new energy projects, and an over reliance on workers that do not live in the communities hosting new projects, leads some to question whether local workers and communities will benefit from the transition.

Maintaining a strong wage base, safe workplaces, and investing in developing the future workforce for a successful clean energy transition, in critical for maintaining the social licence for the transition and ensuring that every community benefits.

There's no need for any trade-off between climate action and economic growth. In fact, the opposite is true. Modelling by Beyond Zero Emissions suggests Australia can grow its revenue from new green exports (critical minerals, renewable hydrogen, green steel and green aluminium) to $333 billion per annum by 2050, almost triple the current $128 billion exports from fossil fuel.[99] But we need to act fast. As the demand for clean energy around the world accelerates, failure to act on climate change will see Australia miss out of significant economic opportunities. This urgency makes it ever more critical that the Government take steps to build community support and confidence as we undergo this rapid change.

Pro-social conditionalities to deliver the energy transition

For our transformation into a net zero economy to be a success and to ensure the requisite workforce is provided and maintained, the Government needs to ensure that good jobs are created and communities' benefit. This can be achieved by embedding *conditionalities* in all industrial policy. Conditionality is inherent in industrial policy, as 'the framework specifying the responsibilities, commitments, or undertakings of the firm'.[100] Governments will always expect some form of returns from their support to industry and businesses. However, there is significant variation in the nature of the conditions and the extent to which governments aim to maximise public value through them. Mazzucato explains:

> *[s]ocially desirable conditions can function as the strings attached to the use of public funds to ensure a more concrete social return on investment… This is not about government constraining business to make its work harder, but about designing contracts that generate mutually beneficial partnerships, oriented around shared goals that increase public benefit.*[101]

Around the world other nations are embedding pro-social conditionalities in ambitious industrial policies to target firm behaviours. This is to ensure public money delivers maximum public benefit and that profits are reinvesting back into the economy.[102] For example, the US *Inflation Reduction Act* contains pro-social conditionalities, 'with the goal of creating good-paying, high-quality jobs and shared economic growth that will last well beyond the Biden-Harris Administration'.[103] This law provides a combination of grants, loans incentives and other investments to support and build a new clean energy economy. Clean energy tax provisions offer bonus credits to projects who pay prevailing wages and conditions, hire and use apprentices, or meet domestic content requirements. Australia can take similar steps in our own industrial policy. Significantly, the IRA identifies unions as key stakeholders in the decarbonisation of the economy, and a critical to delivering good quality jobs in the transition to a low-carbon economy.

Pro-social conditionalities are not a 'nice to have'. They are critical to ensuring that Australia reaches Net Zero. Workforce shortages and social licence are both key limiters to delivering the legislated 2030 target. Conditionalities that deliver good, high-quality jobs and a pipeline of new apprentices, go directly to creating and retaining the needed workforce while delivering better outcomes for regional Australia.

Actions for Australia

Clean Energy Work Standards

Using government procurement settings is one of the best tools available to ensure government purchasing power and taxpayer money is being used to support businesses that engage in safe, fair, ethical and sustainable practices, and to ensure employers are actively involved in building the future electrical workforce by creating fair, high-quality VET career pathways.

Projects funded through public investments by the Clean Energy Finance Corporation (CEFC), which has access to $30.5 billion in investment capital from the Australian Government, including $19 million for Rewiring the Nation, provide an opportunity for government to socialise the rewards of these investments for workers and communities. This can be done by developing Clean Energy Work Standards (CEWS) and requiring tendering businesses on certain new energy projects to demonstrate their adherence and commitment to these principles.

The CEWS would establish a set of minimum wages and conditions based on industry standards, and workforce development requirements to ensure a skilled workforce is attracted and retained for the life of the project. Tendering businesses would be required to demonstrate a commitment to:

- providing good, industry-rates of pay and conditions in all clean energy jobs including rights to union representation and good faith bargaining;
- safe respectful and inclusive workplaces;
- promoting workforce participation of women, First Nations people and local workers; and
- employing a minimum ratio apprentices, including a minimum ratio of women apprentices, to develop and diversify the future workforce.

Implementation of CEWS specifically addresses apprentice non-completion drivers and other barriers identified in this report, which are hampering efforts to meet workforce needs to reach our clean energy targets. Taking this step would serve to maintain healthy and competitive employment conditions and strong training requirements, improve recruitment into the industry and help to grow social license for new energy projects.

Recommendation: That the Federal Government develop Clean Energy Work Standards in consultation with industry, and direct the Board of the CEFC under section 64 of the *Clean Energy Finance Corporation Act 2012* (Cth), to, in performing its investment function, apply the CEWS for all major projects valued at greater than, or equal to, $100 million and all declared projects.

Recommendation: That the CEFC be instructed to develop evaluation criteria for new tenders that include CEWS, in which tenderers would be required to demonstrate how they will provide terms and conditions of employment which are at least equivalent to these standards. It would not be mandatory that tenderers enter into an agreement with employees or their representatives in the form of a workplace instrument in order to demonstrate that terms and conditions are at least equivalent to these standards.

Secure Australian Jobs Code

All entities that receive Government support, including by procurement, grants, loans, investments, tax incentives and other forms of government assistance should be required to employ workers on fair terms and have open attitudes to their workers joining their union. Where the CEWS would set industry-level wages and conditions as the floor for specific clean energy projects and sectors, the Secure Australian Jobs Code (SAJC) provides an across-the-board set of pro-social conditionalities.

Recommendation: The Federal Government should commence consultations on the Secure Australia Jobs Code and legislate it by the end of 2024.

Gender Inclusive workplaces

As we have demonstrated, negative work culture is also a key-driver of non-completion of apprenticeships, and this has a particular impact of women working towards an electrical qualification and other VET careers. Negative workplace culture was the leading reason identified in the 2022 *Electrical Apprentices Survey* as to why female electrical apprentices were considering quitting.

Any business tendering for a project funded through public investments should be required to demonstrate how they will address these real barriers to female participation and ensure they provide a safe and supportive workplace for all staff. Simply put, businesses that can't afford a safe workplace for all employees indicates 'that business is not being run effectively and should not be competing for Government contracts'.[104]

This should include demonstrating how they will:

- Ensure appropriate amenities for all genders, including sanitary bins and gendered bathroom facilities, are provided;
- Ensure appropriate Personal Protective Equipment (PPE) of sufficient quality and suitable to all genders and body types is provided, to ensure that a worker is able to perform their work safely;
- Allow for more flexible working arrangements to accommodate care responsibilities, recognising the importance of balancing an employee's work responsibilities and private responsibilities; and
- Take steps to eliminate discrimination at work on the basis of race, colour, sex, sexual preference, age, physical or mental disability, gender, marital status, family responsibilities, pregnancy, religion, political opinion, national extraction and social origin.
- Employ and support a minimum ratio of women apprentices on each project.

Government can also apply conditions on eligibility for apprentice incentive programs paid directly to employers. These can include meeting gender targets in annual apprentice, trainee and cadet intakes.

Clean Energy Tax Credits

Under the *Future Made Australia* policy which seeks to install Australia as a renewable energy superpower, the Federal Government is considering the possibility of providing tax credits to key growth industries. Like under the US *Inflation Reduction Act*, the Government should design these credits to maximise social and workforce benefits, including:

- the payment of industry terms and conditions
- access to portability of entitlements
- the promotion of gender equality
- the promotion of employment opportunities for Aboriginals and Torres Strait Islanders
- continuing education pathways for workers, especially in promoting apprenticeships, traineeships, and cadetships.

The ETU has developed a 'dual track mechanism' approach to applying social 'conditionalities' to tax credits. The dual track mechanism mirrors similar approaches used in existing tax incentives, including the *Research and Development Tax Incentive* and the *Producer Tax Incentive* for the local film production industry. Eligibility for the *Research and Development Tax Incentive* requires eligibility confirmation by AusIndustry, while the *Producer Tax Incentive* requires Screen Australia to issue a final certificate for the film in relation to the producer tax offset.

In short, the proposal is that tax credits be linked to the issuing of an "**Clean Energy Fair Work Certificate**" by the FWC that identifies the taxpayer as meeting a set of "Clean Energy Fair Work Principles". These principles would be set out in standalone Act and regulations (similar to the *Industry Research and Development Act 1986*), and would require that in issuing a Clean Energy FWC Certificate the FWC take into account factors, including the payment of industry terms and conditions and the employment of minimum numbers of apprentices, including minimum numbers of women apprentices and support for First Nations apprentices. An EBA including model clauses that meet the Clean Energy Fair Work Principles would be one way for tax payers to indicate compliance with the principles.

Recommendation: The Federal Government should implement this Clean Energy Fair Work Certificates proposal to any clean energy/industry tax credits provided by the Government including under the Future Made Australia Policy.

Recommendation: That the Federal Government consider how it can implement labour conditionality in the energy transition more broadly, including through other Special Investment Vehicles such as Export Finance Australia.

Supporting workforce needs in the short term: migration

As we have seen, Australia will require at least an additional 32,000 electricians by 2030 and 85,000 by 2050 to deliver Rewiring the Nation and a NEM with 82% renewable energy; and at least an additional 42,500 by 2030 and almost 100,000 by 2050 to realise the Federal Government's goal of becoming a renewable energy superpower.

This report has set out the challenges of recruiting, training and retaining the local electrical workforce that will power our renewable energy future. The opportunities for Australians to qualify or retrain in an electrical trade are vast, and, if done correctly, will be a source of well-paid jobs in the post-carbon economy.

Providing opportunities to local workers must be the primary goal in meeting the coming workforce crunch. However, the scale of the challenge facing the country, aggravated by nearly a decade of inaction under the former Coalition Government, means skilled migration will be used to meet urgent workforce needs, while noting that migration is not a long term answer to Australia's recent failure to invest in industry training.

In the immediate term, skilled migration will be used to meet the demands of our 2030 energy targets and build the essential infrastructure to support the shift to renewables. The current electrician shortage is global, with many countries striving to meet renewable and emissions reduction targets.[105]

In this context, it is imperative that wages and conditions for migrant workers meet established industry standards in order to ensure the maintenance of workers' pay and conditions, and that employers relying on temporary migrant workers to address identified skills shortages are required to invest in training and developing the next generation of electrical workers.

Electrical Industry Labour Agreements

Already we are seeing the exploitation of migrant workers on Australian renewable energy projects.[106] To crackdown on this exploitation and ensure that migrants are not being abused to drive down wages, industry conditions or domestic training opportunities, an industry-based approach to migration standards is needed. Such an approach can ensure that good, secure, well-paid jobs and the rights of electrical trades workers are not undermined in the rush to ensure we have the workforce capacity to meet the challenge of the shift to renewable energy. Union involvement in labour agreements to underpin the recruitment of migrant electrical trades workers will reduce worker exploitation and ensure that migrant workers have the appropriate skills and training to work safely in Australia.

In May 2023 the government announced the new *Aged Care Industry Labour Agreement* to address workforce shortages in aged care. This Agreement lays out a comprehensive and sensible path to skilled migration in a critical industry, to support the recruitment of suitably experienced and qualified workers and to promote retention in the industry. To access this agreement, employers must have made recent and genuine attempts to recruit from the domestic workforce pool, and employers must enter a Memorandum of Understanding with the relevant union that includes union-access to inductions for migrant workers.

A similar agreement for the electrical industry should be developed as a matter of urgency, under which employers who enter a union endorsed agreement get streamlined access to any *Electrical Industry Labour Agreement*. This approach will create a common floor for all workers in the energy sector, ensuring migrant workers cannot be paid below industry standards.

The Electrical Industry Labour Agreement must:

1. Ensure that migrant workers are employed on the same conditions as the domestic workforce;
2. Establish strategies to develop domestic workforce capacity through investment in skills and training by establishing union collective agreement terms which provide for:
   a. minimum apprentice ratios of not less than one apprentice to five tradespersons,
   b. initiatives to engage women, First Nations people and other underrepresented cohorts on projects,
   c. a genuine transfer of knowledge to the domestic workforce; and
   d. application of a robust offshore and onshore technical skills assessment pathway for any overseas workers engaged on projects;
3. Involve the union in all stages of onboarding migrant workers from the skills assessment and verification processes through to on job access, to remove all forms of worker exploitation; and
4. Provide for pathways to permanency after two years for migrant workers engaged on projects.

Recommendation: That the Federal Government work with unions and employers to develop an *Electrical Industry Labour Agreement* that includes requirements to train the next generation of Australian electrical workers and provide secure, industry conditions to all workers irrespective of migration status.

Streamlining the application process for skilled migrants

Electrical trades work is included on the Medium and Long-term Strategic Skills List (MLTSSL)[107] and there are various visa options available for skilled energy sector workers to work in Australia.

In general, eligibility for skills visas is open only to people under the age of 45 who can demonstrate the necessary training and experience, and proficiency in the English language, among other criteria. The wait time for visa processing is currently between nine and 12 months.

For an electrician and air-conditioning and refrigeration mechanic skills visa, Trades Recognition Australia sets out a clear process, endorsed by the Electrical Regulatory Authorities Council and supported by industry, which includes the requirements for an applicant to have six years' experience working in either of those occupations with no formal training or four years' experience with relevant formal training. 12 months of work experience must be within the last three years, and applicants are required to provide documentary evidence of qualifications, employment, income history and employer references.

While the knowledge and skills of many overseas workers is very high, there are differences in the manner in which this technical expertise needs to be applied, a difference that represents a critical skills gap. Electrical Regulators are especially concerned that this gap be addressed in regulated trade vocations such as electrical, refrigeration and air conditioning, electricity linework and cable jointing, where the work context

may differ markedly in overseas countries and where such differences could endanger lives, infrastructure or systems.

Following an initial assessment based on the documentation supplied by applicants, applicants for skilled migration to Australia must undertake an Offshore Technical Skills Assessment (OTSA), which includes an interview and a practical assessment of their skills. On successful completion of the OTSA, the candidate then receives an offshore technical skills record (OTSR).

This first part of applying to migrate to Australia costs applicants a minimum of $4,640, rising to $6,960 if a partner is included in the application, and an additional $1,160.00 for each child aged under 18. On top of these direct migration costs, applicants (or their sponsoring employer) will face further costs for the OTSR.

On successful receipt of an OTSR and subsequent arrival in Australia, independent visa applicants must apply through the relevant state regulation body for a Provisional License, which allows migrant workers to work under the general supervision of a fully licensed tradesperson. Employer-sponsored applicants will undertake these elements through their sponsoring employer, but all migrant workers are required to undertake additional training once in Australia to gain the full license needed to work independently as an electrician. This training can only be undertaken in Australia and includes a combination of technical gap training and 12 months on the job experience applying their skills in an Australian setting.

A key gap in the system is the lack of established processes for energy qualifications outside the electrician and air-conditioning and refrigeration mechanic qualification. Further aggravating the challenge was the decision in 2019 by the Morrison Government to abolish the Trades Recognition Services (TRS) program which provided a pathway for migrant workers already in Australia to have their skills assessed and verified onshore. The abolition of TRS has resulted in an increase in migrant workers being targeted by unscrupulous training providers promising quick skills verification processes that ultimately do not lead to a licensed outcome leaving the migrant worker both out of pocket and unable to work in their profession.

The 2024-25 Federal Budget included provisions for streamlining the application process for skilled migrants in the construction trades in order to meet the workforce shortages that are holding back residential construction and

The ETU was contacted by a Nepalese worker who could not obtain a license from the state licensing board as his qualifications were deemed useless.

The worker had paid a private RTO more than $30,000. The RTO had then awarded him both a Certificate III and IV electrical qualification based on 'recognition of prior learning' (RPL) for almost all units.

The licensing board determined that the RTO did not provide sufficient training and assessment resources, equipment or infrastructure to offer proper training and assessment or recognise competency in all the units required.

Additionally, the worker had only performed electrical work with solar installations and could not respond to basic electrical technical questions.

contributing to infrastructure bottlenecks nation-wide. This funding announcement presents a clear opportunity to reinstate a program for onshore technical skills assessment pathways, as well as to alleviate some of the significant costs associated with offshore technical skills assessments. If carefully co-designed with industry, not only could the existing systems be streamlined for electricians and air-conditioning and refrigeration mechanics, but the system could be expanded to include clear pathways for other energy sector trade qualifications.

As part of its *Future Made in Australia* policy, the Federal Government has allocated AU$1.8 million over four years to:

> *…streamline skills assessments for around 1,900 potential migrants from countries with comparable qualifications who want to work in Australia's housing and construction industry, and prioritising processing of around 2,600 Trades Recognition Australia skills assessments in targeted construction occupations.* [108]

A similar investment should be made in the 2024 Mid-Year Fiscal and Economic Outlook (MYEFO) budget revision process to extend this approach to migrants in all skilled electrical trades.

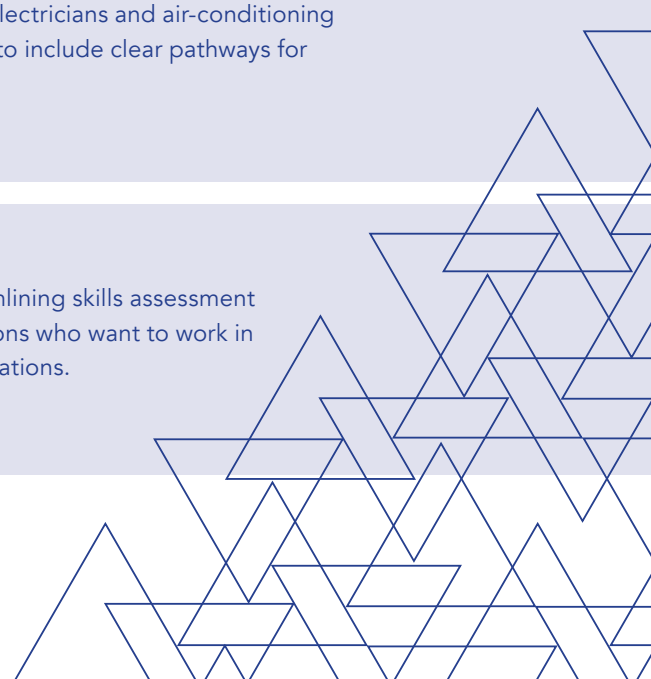
Given the need for qualified electricians to augment the existing workforce, and for highly experienced electrical tradespeople to train and mentor the next generation of electrical workers, the government should consider raising the age cap for priority skills needed to power the shift to renewable energy. Lifting the cap by five years, to 50, would provide opportunities for workers who still have up to two decades of working life ahead of them, coinciding with the critical window for Australia to achieve net-zero.

As it is likely that skilled electrical workers will be entering their 30s before they accrue the necessary work experience to meet skilled visa requirements, the government should also consider waiving the partner and/or dependent children visa processing fees and/or cutting the cost of visa processing fees for skilled migrants in key skill areas linked to the post-carbon economy.

These measures would make the process of migrating to Australia to work in electrical trades simpler, cheaper and more attractive to the skilled workers we need to power our net-zero future.

Recommendation: That the Federal Government reinstate a program for OTSA pathways to alleviate some of the significant costs associated with OTSA. If carefully co-designed with industry, not only could the existing systems be streamlined for electricians and air-conditioning and refrigeration mechanics, but the system could be expanded to include clear pathways for other energy sector trade qualifications.

Recommendation: That the Federal Government invest in streamlining skills assessment for potential migrants from countries with comparable qualifications who want to work in Australia's clean energy industry in skilled electrical trades occupations.



Coordinating actions: A Clean Energy Jobs Commissioner

The decarbonisation of the Australian economy is amongst the most ambitious transformations since the industrial revolution. As argued throughout this report, it will take a huge investment in training the future workforce, and taking steps to invest in communities to ensure that they all share in the benefits of this transition. It will also require a laser focus on coordination of energy workforce policy across commonwealth agencies and all levels of government, and to advocate for and embed secure, well-paid clean energy careers at the heart of the government's transition plan. A failure to do this will mean that the workforce becomes a handbrake on transitioning our economy and delivering the benefits of the green energy revolution.

In the USA, under the Biden Administration's bold agenda to create new jobs and domestic industries as part of the shift to renewables, the Department of Energy has reinvigorated the Office of Energy Jobs (OEJ) under the direction of Betony Jones. The OEJ works with stakeholders, particularly labour unions, to support the creation of jobs in the energy sector and leads efforts to align energy workforce building and training programs.[109]

Similarly, the Queensland Government has recently established the role of the Renewable Energy Jobs Advocate to:

> *…provide advice to the Minister in relation to opportunities for employment and workforce development in the energy industry, undertaking relevant research, and promoting the benefits of projects relating to renewable energy to the community.* [110]

Similar to the Renewable Energy Jobs Advocate or the Office of Energy Jobs, the Federal Government should establish a national *Clean Energy Jobs Commissioner* to work collaboratively across all Commonwealth agencies and all levels of government to coordinate energy workforce policy and advocate for secure, clean energy careers.

The *Clean Energy Jobs Commissioner* would be a dedicated, statutory role with responsibility to support and assist government through the energy transition and provide planning and coordination of work programs across departments and all levels of government. The *Commissioner* would work with all stakeholders, including unions and employers, to coordinate and facilitate access and uptake by industry and training bodies to ensure that training places are created where they are needed, and to support further workplace learning and development.

The *Commissioner* would also be responsible for promoting electrical and other clean energy trades as a positive career choice, especially amongst diverse cohorts of potential apprentices, including women and First Nations people.

There are two pathways for the establishment of this role, either as a newly established office within the Net Zero Economy Authority (NZEA) or as a standalone statutory role, housed within an existing office or department.

Pathway 1: Net Zero Economy Authority (NZEA)

As part of the 2024 Federal Budget, the Government announced an investment of $91 million over five years 'to help skill the new energy workforce for the transition to Net Zero'. This includes provision for 'establishing advocacy and promotional work for clean energy careers'.[111]

At the same time, the Government announced '$399.1 million over five years…to support workers, regions and communities in the economy-wide net zero transformation'.[112]

Many of the functions of the NZEA, as set out in the legislation,[113] are closely aligned with the objectives for the role of the Commissioner, including:

1. Supporting investors and companies to engage with opportunities in the net zero transformation and facilitating public and private sector investment in decarbonisation projects, particularly in industrial regions and where there is a clear role for government;
2. Coordinating across the Australian Government to promote consistency and organisation in the design and implementation of net-zero related policies, programs, and plans;
3. Developing and delivering educational and promotional initiatives for the purpose of promoting public understanding of, and enabling participation in, Australia's transition to a net zero emissions economy; and
4. Supporting First Nations people and communities to participate in, and benefit from, Australia's transition to a net zero emissions economy.

However, under the current proposed legislation, the work of the NZEA is limited to four transitioning regions and does not extend to newly established Renewable Energy Zones (REZs). Housing the Clean Energy Jobs Commissioner role within the NZEA will require an expansion of the scope of the Authority to include workers in new industries associated with the decarbonisation of the economy.

The expansion of the scope of the NZEA should be considered at the 12-month review of the Act, with a view to housing the Commissioner within the NZEA to coordinate workforce planning and clean jobs advocacy across transitioning fossil fuel regions and renewable energy zones.

Pathway 2: Standalone Statutory Role

Noting the current limitations with housing the *Clean Energy Jobs Commissioner* within the NZEA, the *Commissioner* role could be established as a standalone statutory role, housed within an existing office or department, such as the Department of the Prime Minister and Cabinet, or Department of Employment and Workplace Relations. The establishment of the role could be modelled on the approach taken to establishing the office of the now devolved National Skills Commissioner.[114] In establishing the office of the *Commissioner*, the functions should explicitly include working with relevant unions, RTOs and industry.

Recommendation: That the Federal Government establish a *Clean Energy Jobs Commissioner* as a dedicated statutory role with responsibility to support and assist government through the energy transition and provide planning and coordination work programs across departments and levels of government. The *Commissioner* would work across all levels of government and with all stakeholders, including unions and employers, to coordinate and facilitate access and uptake by industry and training bodies to ensure jobs created are in roles that are needed, sustainable, and support further workplace learning and development.

Conclusion

Australia's future is bright, but we need the workforce to light it.

If we can reach renewable energy targets, not only will Australia be on track to meet its commitments under the Paris Agreement, but it will also be poised to become a world leading renewable energy superpower.

Ensuring there is a workforce to provide this is vital, but already the workforce is strained. Critical occupations across the clean energy sector are experiencing skill shortages and, without targeted action to increase the workforce, we risk our clean energy targets falling out of reach.

The skills shortage in electrical occupations has not come about from worker retention issues, it is caused by problems with long training pathways, exacerbated by the large number of electrical apprentices not completing their apprenticeships.

The key drivers of non-completions are avoidable but require targeted action by Government to address.

A workforce development plan tailored to Australian energy system needs, as outlined in this report, would unlock enormous potential economic value in the transition and provide secure and decent jobs to thousands of Australians in the clean energy economy.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List of detailed recommendations

Group trainer coordination

Recommendation: That the Federal Government, in consultation with industry, should develop and implement trial projects in which a GTO is appointed to a REZ. All relevant renewables projects within that REZ would be required to either engage apprentices directly or engage apprentices through that GTO, to provide certainty for a GTO to expand into that region and improve the facilitation of workers into apprenticeships.

Expansion of Industry-RTOs and TAFE campuses

Recommendation: That the Federal Government invest in building new state-of-the-art industry-RTOs where they are most needed to deliver its ambitious plan for the energy transition. In addition, the Federal Government should work with state and territory governments and industry to retrofit and lease under-utilised TAFE assets to industry-RTOs for the provision of electrotechnology training. Money spent should be weighted towards proposals that can be rapidly implemented.

Recommendation: Job and Skills Australia should undertake comprehensive mapping of existing training places, and any current backlog of apprentices waiting to access training. JSA should look to disaggregate total demand for electrical workers by region, taking into account current policy settings for the energy transition. JSA should identify critical gaps in training capacity that are likely to put the energy transition at risk, including the VET sector's capacity to put sufficient trainers in classrooms. It should then make recommendations to Government about where new places and/or new training centres should be created.

Increased support for electrical trainers

Recommendation: That the Federal Government invest a proportion of its $30 million budget commitment in co-designing and implementing a pilot program with industry, to support qualified industry professionals from critical clean energy occupations to work in the VET sector. This should include working with employers to provide electrical workers with time away from work to undertake training to qualify to work as VET teachers and trainers. It should also include a period of post-training secondment to the VET sector to work as electrotechnology trainers, either on a full-time or part-time basis. Government funding should be used to supplement the wages of workers undertaking training and during their period of secondment to the VET sector. The shortage of trained electricians is nation-wide. This wage subsidy scheme should be coordinated with state and territory governments and industry, to ensure trainer subsidies are provided consistently across jurisdictions.

Recommendation: The Federal Government should work with industry-led RTOs, unions, and industry associations connected with the clean energy workforce, to promote pathways to, and improve the attractiveness of, becoming a qualified teacher, and ensure training and teaching experience undertaken outside of a TAE certification are recognised when industry professionals later undertake the required certification.

Recommendation: That the Federal Government work with industry to promote VET practitioner roles, utilising existing industry-related outlets and communication channels such as expos, journals and newsletters, on worksites, and through unions to leverage the motivation to give back to the industry.

Industry-led apprentice mentoring

Recommendation: That the Federal Government work with industry to develop and fund a pilot industry-led apprentice mentoring program that engages field officers with industry experience to oversee and mentor apprentices throughout their training. The pilot must include a funding stream for training of tradespeople in on-the-job apprentice training and mentoring skills.

Pro-social conditionalities

Recommendation: That the Federal Government develop a New Energy Standards Guide in consultation with industry, and direct the Board of the CEFC under section 64 of the *Clean Energy Finance Corporation Act 2012* (Cth), to, in performing its investment function, apply the Clean Energy Work Standards for all major projects valued at greater than, or equal to, $100 million and all declared projects.

Recommendation: That the CEFC be instructed to develop evaluation criteria for new tenders that include Clean Energy Work Standards, in which tenderers would be required to demonstrate how they will provide terms and conditions of employment which are at least equivalent to these standards. It would not be mandatory that tenderers enter into an agreement with employees or their representatives in the form of a workplace instrument in order to demonstrate that terms and conditions are at least equivalent to these standards.

Recommendation: The Federal Government should commence consultations on the Secure Australia Jobs Code and legislate it by the end of 2024.

Recommendation: The Federal Government should implement this Clean Energy Fair Work Certificates proposal to any clean energy/industry tax credits provided by the Government including under the Future Made in Australia Policy.

Recommendation: That the Federal Government consider how it can implement labour conditionality in the energy transition more broadly, including through other Special Investment Vehicles such as Export Finance Australia.

Preventing exploitation of migrant workers

Recommendation: That the Federal Government work with unions and employers to develop an *Electrical Industry Labour Agreement* that includes requirements to train the next generation of Australian electrical workers and provide secure, industry conditions to all workers irrespective of migration status.

All of government coordination to deliver the transition workforce

Recommendation: That the Federal Government reinstate a program for OTSA pathways to alleviate some of the significant costs associated with OTSA. If carefully co-designed with industry, not only could the existing systems be streamlined for electricians and air-conditioning and refrigeration mechanics, but the system could be expanded to include clear pathways for other energy sector trade qualifications.

Recommendation: That the Federal Government invest in streamlining skills assessment for potential migrants from countries with comparable qualifications who want to work in Australia's clean energy industry in skilled electrical trades occupations.

Recommendation: That the Federal Government establish a Clean Energy Jobs Commissioner as a dedicated statutory role with responsibility to support and assist government through the energy transition and provide planning and coordination work programs across departments and levels of government.
The Commissioner would work across all levels of government and with all stakeholders, including unions and employers, to coordinate and facilitate access and uptake by industry and training bodies to ensure jobs created are in roles that are needed, sustainable, and support further workplace learning and development.

Endnotes

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