



National Energy Workforce Strategy

Submission by the Australian Council of Trade Unions in response to the
National Energy Workforce Strategy Consultation

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About the ACTU

Throughout our country's history, Australian Unions have always been at the forefront of winning a fair go.

The Australian Council of Trade Unions is the peak body for Australian unions, comprised of 34 affiliated unions representing over 1.7 million workers. We provide a single representative voice for working people. Since its creation in 1927, the ACTU has spearheaded some of the most fundamental workplace and social struggles in Australia's history. The workplace improvements are many: real wage increases, safer workplaces, greater equality for women, improvements in working hours, entitlements to paid holidays and better employment conditions, the establishment of a universal superannuation system, paid parental leave, and paid family and domestic violence leave.

Introduction

Meeting the Australian Government's greenhouse gas emission reduction targets of 43 percent below 2005 levels and reaching net zero by 2050 will require a growing, skilled workforce across clean energy supply, demand, and enabling occupations. Addressing clean energy workforce needs is a national challenge. Skills shortages in the energy sector are already reported in Australia and internationally and are expected to worsen in key trades necessary for the energy transition as many countries around the world work to transform their energy systems and reduce their emissions. In addition, many of the trades required for clean energy are also needed to address the needs of other industries, such as construction & housing.

The high demand for energy workers presents an opportunity for many Australians to benefit from the clean energy transition. This could include increased engagement of previously underrepresented workers, including women, First Nations Peoples, culturally and linguistically diverse (CALD) communities, and people with a disability, as well as workers in regional areas and those transitioning from high-emissions industries. As well as providing good jobs for Australian workers, the clean energy transition provides a valuable opportunity to diversify our energy workforce, bring more employment to regional areas, and progress social objectives such as closing the gap and gender equity.

The National Energy Workforce Strategy (NEWS) presents a unique opportunity to ensure Australia has the workforce it needs to meet its net-zero ambition. Structuring this foundational strategy on the principles of fair and just transition for all is key to its implementation and longevity. ACTU emphasizes that the best way to grow a clean energy workforce of the future at the speed and scale necessary is to make clean energy jobs attractive: i.e., well-paid, safe, and secure.

This submission discusses key challenges faced by the Australian Clean Energy workforce while providing recommendations for effectively tackling them for a successful just and fair energy transition that delivers benefits for workers and communities.

Summary of Recommendations

ACTU welcomes the consultation process of the National Energy Workforce Strategy and gives the following recommendations for the strategy's framework. The recommendations are summarised below and covered in full in the final section of this submission:

- Embed well-paid, safe, and secure clean energy jobs in all Commonwealth net zero policies and investments as a core element of the NEWS framework.
- Amend JSA's 2024-25 work plan to include a comprehensive analysis of the clean energy sector and its workforce needs.
- Conduct a detailed national stocktake and mapping of post-secondary education and training needs for clean energy occupations
- Initiate a comprehensive mapping of future clean energy skills and occupations through a sectoral approach aligned with sectoral decarbonization plans
- Update ANZSIC and ANZSCO codes for critical clean energy occupations, involving consultations with workers, trade unions, and employers

- Invest in retrofitting existing TAFE assets and building new TAFE assets to expand training infrastructure for the energy transition
- Adjust the apprentice wage setting in critical clean energy occupations in alignment with industry standards
- Ensure employers provide a safe, supportive workplace and allow apprentices to change employers to boost participation and completion rates
- Implement a robust mentoring and support system through collaboration between RTOs and GTOs
- Implement a multi-dimensional strategy to increase collaboration between Jobs & Skills councils for the regional workforce development for Net Zero
- Facilitate long-term planning by the NZEA to successfully transition workers from traditional energy sub-sectors into the clean energy workforce
- Support women apprentices by setting procurement targets, funding mentoring, linking incentives to amenities, and offering dedicated pre-apprenticeship programs with female mentorship
- Adopt FNCEN recommendations to maximize Aboriginal and Torres Strait Islander worker participation in the Clean Energy Workforce
- Create a federal Clean Energy Jobs Commissioner to support the energy transition and coordinate work programs across all government levels
- Align with the government's Migration Strategy to ensure that clean energy workforce needs are met, and the rights of migrant workers are protected.

Attracting workers through well-paid, safe, and secure jobs

Global energy employment grew by more than 5% over the 2019-2022 period, besting the average for recovery of economy-wide jobs post-pandemic¹. In response to this increased demand for energy-skilled workers, many economies worldwide are undergoing restructuring exercises to expand their energy skills frameworks while considerably investing in upskilling and attracting the global clean energy talent pool.

In most advanced economies, the energy sector is competing directly with other industries for workers. For example, employment in building retrofits, already one of the fastest-growing sectors, is set to soar – based on the IRENA NZE Scenario - with 50% of existing buildings to be retrofitted to zero-carbon-ready levels by 2040². With over 90 countries now having net zero targets and intensifying transatlantic competition on clean energy from the EU Green Deal to the US Inflation Reduction Act, there are more opportunities abroad for Australian clean energy workers, with Europe and North America emerging as the top destinations for worker relocation³.

In new energy industries, ensuring clean energy jobs are well-paid, safe, and secure is the primary means by which Australia can quickly attract, train, and retain the workforce necessary to take on the net zero challenge. As the NEWS consultation process tries to collate ideas and inputs to retain and attract skilled workers to be part of the clean energy workforce, the ACTU would like to emphasize that building frameworks and long-term strategies that ensure clean energy jobs are well-paid, safe, and secure should be developed as an essential element of the framework.

¹ World Energy Employment 2023. International Energy Agency. [World Energy Employment 2023 – Analysis - IEA](#)

² IRENA (2020) Measuring the socio-economics of transition: Focus on jobs, International Renewable Energy Agency, Abu Dhabi

³ Global Energy Talent Index Report 2024. [Global Energy Talent Index \(getireport.com\)](#)

This is crucial to ensuring that Australia remains an attractive place for global talent in renewable energy sectors, filling in critical occupations that are inevitable for our energy transition to succeed. 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 also. The NEWS framework cannot succeed unless these enforceable conditionalities are consistently embedded in all Commonwealth net zero policy and investment supports, including a Future Made in Australia, the reformed Capacity Investment Scheme, and other special investment vehicles such as ARENA, CEFC, NRF, PRF, and EIF.

Recommendation: *To swiftly attract, train, and retain the workforce needed for the net zero challenge, ensure clean energy jobs are well-paid, safe, and secure as a fundamental element of the NEWS framework, to be embedded in all Commonwealth net zero policy and investment supports.*

The need for a Comprehensive and Systematic National Assessment of the Clean Energy Workforce

In Australia, there has been an absence of comprehensive and systematic assessments of the clean energy workforce since the NSW Sustainable Energy Development Agency (SEDA) survey in 2001/2003⁴. The lack of robust, systematic, comparative annual/ biennial data on clean energy employment means that it is not possible to adequately track the clean energy sector's contribution to employment and the Australian economy over time. This is critical for demonstrating the role and impact of clean energy across a wide range of sectors, both now and into the future, for managing the transformation of the national workforce, and for

⁴ Developing the future energy workforce. Opportunity assessment for RACE for 2030. 2021.

maximizing the jobs and opportunities offered by the transition while ensuring that the transition is on track.

The *JSA Clean Energy Generation Report* offered an Australian-first definition of the clean energy workforce, what it currently looks like, and what it needs to look like to ensure the workforce grows at the pace and scale required⁵. The report identified the emerging skills gaps across different clean energy sectors and the opportunities for growth in the regions where new clean energy industries will emerge.

However, the scope of the report was limited due to its focus on a sample set of critical occupations that would generate the highest number of employment opportunities. As the clean energy transition would require a substantial shift in skills and occupations of the existing and emerging workforce, the JSA report is inadequate in assessing the potential and projected gap in many emerging and crucial clean energy occupations that are critical to the transition. Moreover, the report's modelling focused on predicting future jobs and skills needs while not providing a comprehensive picture of the current clean energy workforce. The modelling of the future clean energy workforce by the report includes projections for key occupations such as Electricians but does not indicate where in the economy they are likely to work – i.e., how many Electricians are needed in the energy sector as defined in the report compared with adjacent sectors that might also require Electricians⁶.

Hence the need to develop a systematic national framework for measurement and monitoring, that is designed to effectively track and forecast clean energy jobs over time is paramount for the Australian clean energy transition to succeed. This Australian National Assessment of the Clean Energy Workforce can be modelled on the U.S. Energy and Employment Report (USEER) which is seen as the gold standard around the world and has proved to be of considerable benefit to the countries which have adopted a similar approach⁷. The USEER provides nationwide coverage of the entire energy sector, including renewable energy and energy

⁵ The Clean Energy Generation. JSA Australia, June 2023

⁶ Powering Skills Organisation, Powering Up: PSO Initial Energy Workforce Scan Extended Summary, 2023

⁷ Developing the future energy workforce. Opportunity assessment for RACE for 2030. (2021)

efficiency and it covers several employment-related indicators including total direct employment numbers. For such a study to succeed in Australia the following factors should be included in the scope:

- 1. An occupational breakdown and a subsequent skills audit are needed to complement the wider workforce survey:** The workforce assessment exercise should develop a program for detailed surveys of the occupational composition that cover each sub-sector of the transition i.e. clean energy supply, clean energy demand/performance and clean energy enabling as outlined by the consultation paper. These surveys should conduct a detailed audit of job types to the Australian and New Zealand Standard Classification of Occupations (ANZSCO) 6-digit level – with additional categories added where necessary – and an audit of skill shortages in these sectors. It is proposed that these sector surveys be undertaken in order of size and urgency in terms of employment generation and skills gap in the transition.
- 2. The study should incorporate methodology/data collection structures for ongoing energy employment and labour market size projections over the transition:** This would facilitate the process of undertaking annual and 5, 10- and 20-year projections for energy sector employment identifying the data requirements to ensure that the baseline annual survey process is equipped to collect all the data that is needed.
- 3. Aligning the process with broader energy planning frameworks:** The study should be designed to be in alignment with broader energy planning processes such as the Integrated System Plan (ISP) process to provide data and direction to inform emerging workforce skills and training needs of the economy.

As the federal agency that provides inputs on the labour market, workforce skills, training needs, and priorities to assist with government policy development and program delivery, JSA is well placed to conduct such a scoping study of the clean energy workforce. Maximizing the economic opportunities offered by the clean energy transformation is a key policy priority of the commonwealth government thus making the clean energy workforce assessment a core area of work under JSA's ambit.

Furthermore, *preparing capacity studies for emerging and growing industries and occupations* like clean energy is a core function under the Jobs & Skills Australia Act 2022, which established the JSA⁸. This would need an amendment to be made to JSA's 2024-25 work plan to include a comprehensive analysis of the clean energy sector and its workforce needs.

Recommendation: *Amend JSA's 2024-25 work plan to include a comprehensive analysis of the clean energy sector and its workforce needs, based on the model of the U.S. Energy and Employment Report*

The need for mapping the Training Infrastructure for the Energy Workforce

The trajectory and pace at which the clean energy workforce grows and adapts is foundational to the success of Australia's clean energy transition. Despite this, Australia lacks a coordinated approach to developing the skills required for the green economy. In a first global comparison of green skill policies, the International Labour Organization (ILO) ranked Australia lower than many developed nations with similar environmental performance and as the lowest ranked amongst OECD countries⁹. Considering that many developing nations with weaker environmental outcomes have outperformed Australia's green skills policy ecosystem, Australia's skill crisis in the clean energy sector reflects a lack of initiative from the industry and a gap in public investment in building skills and training infrastructure.

The JSA Clean Energy Generation report highlights the urgent need to boost the number of apprenticeships started and completed². However, it falls short of assessing whether our current Vocational Education and Training (VET) system can meet these demands swiftly and in the necessary locations for the energy transition. Additionally, it doesn't evaluate the industry's

⁸ [Federal Register of Legislation - Jobs and Skills Australia Act 2022](#)

⁹ Skills for a greener future: A global view based on 32 country studies International Labour Office – Geneva: ILO, 2019

capacity to hire more workers, especially apprentices. This crucial information is essential for guiding government investment in the VET sector and considering the right incentives and conditions. Such measures are vital for Australia to achieve and exceed its renewable energy goals.

The primary step in tackling this crisis would be to undertake a detailed national stocktake and mapping of existing post-secondary education and training needed for clean energy occupations. There is not currently a nationally consistent approach to tracking training program pathways (commencements, completions, and transitions between qualifications), which could assist in determining the scale of shortcomings in the energy training packages. JSA - being the primary body that provides independent advice to the Australian government on current and future workforce needs - is well positioned to do the additional mapping that should be undertaken to support ongoing workforce planning efforts and to properly inform government investment in the training ecosystem.

Such a mapping exercise should comprehensively detail the existing infrastructure and the number of clean energy professionals that the training ecosystem matriculates and graduates each year in each relevant professional and/or skill category. When conducted in alignment with the proposed National Assessment of Clean Energy workforce, this mapping exercise will reveal the current and future gaps in the training infrastructure, relative to existing and forecast demand. The results of this process would form the base for rectifying the gaps in clean energy training infrastructure through increased investment and industry participation.

Recommendation: *Conduct a detailed national stocktake and mapping of post-secondary education and training needs for clean energy occupations to inform government investment and workforce planning.*

Identifying Skills and Skilled Workers of the Future

As the clean energy transition will lead to significant changes in our energy systems, such as growing diversity of energy generation, increased prominence of Consumer Energy Resources (CER), increased digitization of energy management, etc., all these changes will require significant shifts in energy employment and skills. Building an energy system dominated by decentralized clean energy technologies requires new skills from prospective and transitioning workers and greater clarity on and visibility of clean energy career pathways. Up to 80% of the renewable energy jobs are currently in design, manufacturing, and installation, but by 2030 almost 50 percent of those jobs could be in operations and maintenance¹⁰. Thus, any process of mapping the future of skills requirements for the clean economy needs to consider the skills needed across the entire clean energy value chain and emerging occupations across the temporal arc of the transition. This process should track and forecast emerging technologies and associated skill needs.

The NEWS framework should explore the potential and necessity of a comprehensive mapping of clean energy skills/occupations of the future. This process can be undertaken along with the comprehensive national assessment of the clean energy workforce as recommended in the earlier section but needs to primarily focus on scanning the horizon for potential new skills/occupations that wouldn't make it to the national assessment as these skills/occupations will only emerge in the near future. This can be undertaken through a sectoral approach that considers the role each industry plays in a decarbonized economy which can provide a useful lens for considering the required skills and jobs. This approach can be well aligned with the ongoing process of sectoral decarbonization plans that have identified workforce pathways and engagement as a key enabler to achieving sectoral decarbonization goals.

¹⁰ Clean Energy Council (2020) Clean Energy Australia Report 2020

The Australian Skills Classification Framework also needs considerable investment and coordination to provide clarity in the definition of critical energy occupations essential for the transition. There is a significant discrepancy between official occupation profiles defined by the framework (i.e. ANZSCO) and the type of roles required by industry. Current classification codes about the energy sector are ill-suited to the modern energy sector. For example, ‘electricity generation’ is only separated into hydro, coal, and gas¹¹. The classifications only list occupations generally with terms such as electrician, electrical engineer, or electrical technician. With this approach, it would be difficult to detect a shortage of qualified solar installers through the general classification of ‘electrician’ as there is no specified industry code for solar installation occupations. The sections of ANZSIC and ANZSCO codes that relate to energy need to be updated to make them suitable for the modern energy sector and to be reflective of changes in industry and occupational structure.

Thus, the NEWS framework should direct the federal government to initiate and fund a comprehensive process for redrafting ANZSIC and ANZSCO codes as they relate to critical occupations essential for the clean energy transition. This process should include a consultation process with workers, trade unions, and employers across relevant industries to determine the occupations that are most important to track, to identify the energy-related technologies and sub-sectors that can be usefully included in the framework, and to improve comparability with global measurements of energy-related industrial skills and occupations such as the NAICS (North American Industry Classification System) codes¹². The process should also cater to the need to create new certifications and curricula to reflect emerging skill requirements, especially for new industries like green hydrogen, etc. The ACTU has made submissions and taken part in consultations in the recently concluded ANZCO Comprehensive review process which offers the right opportunity to embed and develop skills frameworks needed for net zero occupations of the future.

¹¹ National Centre for Vocational Education Research, Total VET students and courses 2022, 2023

¹² ‘Employment creation potential of renewable power generation technologies: A life cycle approach’, Renewable and Sustainable Energy Reviews, 2017

Recommendation: *Initiate a comprehensive mapping of future clean energy skills and occupations through a sectoral approach aligned with decarbonization plans to complement the AEER's survey and forecasting of existing clean energy occupations*

Recommendation: *Initiate and fund a comprehensive process to update ANZSIC and ANZSCO codes for critical clean energy occupations, involving consultations with workers, trade unions, and employers*

Increased Investment in Training

To date, the general approach to skill development for renewable energy in Australia can be characterized as a fragmented, market-based approach. There exists a huge mismatch between offerings by the education system and industry demand, particularly when considering the number of higher education courses offered against high industry demand for hands-on training¹³.

Concentrated public investment is required to create a training system with the capacity to build an efficient national energy workforce. The clean energy workforce draws heavily on Australia's higher education and VET systems. Both these systems provide many diverse pathways into clean energy occupations, including through upskilling. The *JSA Clean Energy Workforce* modelling shows that most clean energy jobs over the next 30 years will require tertiary-level qualifications². Considering existing bottlenecks in the clean energy training ecosystem, meeting the short-term demand for workers will be highly challenging. With projections estimating that 43,200 (51%) of the 85,000 clean energy workers in occupations vital for the transition being required by as early as 2030, the provision of greater skilling infrastructure is urgent¹⁴.

¹³ Hugo Lucas, Pinnington, Luisa & Cabeza, Education and training gaps in the renewable energy sector, *Solar Energy*, Volume 173, 201

¹⁴ 2022 Skills Priority List, National Skills Commission (2022); National Careers Institute; Accenture Analysis of data provided by Climateworks; ABS; Burning Glass Data

Australia lags behind the rest of the world in training outcomes due to long-term underinvestment in renewable energy trades education. The huge gaps in training investments and correlated poor apprenticeship outcomes in the electrical industry are suggestive of the scale of the issue across the clean energy workforce. Estimates reveal that annual commencements in an electrician apprenticeship are at an 11-year high of ~17,000, but course completions over the past four years are at an 11-year low⁶. In many cases, apprentices are waiting months between commencing their apprenticeship and their first block of training. This trend can be partially attributed to federal policy prioritizing for-profit RTOs over TAFE and not-for-profit industry RTOs, despite their declining performance in delivering the energy workforce over the past decades.

Further, many for-profit providers are not offering the renewable energy electives that many apprentices require to establish a career in the transition. Instead, many for-profit training providers often have hyper-proprietary modules or micro-credentialing courses that limit workers to one facility/machine and thus reduce their mobility and collective bargaining power.

Skills shortages in the VET sector are also a major roadblock in creating the generation of clean energy workers. Attracting industry experts to roles in teaching is an ongoing challenge and an under-appreciated brake on workforce growth. As the energy system transitions, the need for trainers who have first-hand working experience in renewable energy technologies and energy systems will be on the rise, but these trainers may be hard to find if their necessary career shift into pedagogy comes with a significant reduction in pay and conditions.

Industry-led, not-for-profit RTOs are uniquely placed to develop and invest in specialized 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 sector¹⁵.

The Government is already investing an unprecedented \$91 million to invest in skilling the clean energy workforce¹⁶. 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. There is an ongoing and evolving need for significant government funding support for developing and improving the clean energy training infrastructure, crucial to deliver the skills need for the transition.

Thus, the National Energy Workforce Strategy should outline the need for the Federal Government to invest in retrofitting existing and expanding new TAFE assets while assisting the development of 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-utilized TAFE assets and develop industry RTOs for expanding the training infrastructure.

The Commonwealth and WA State Government's initiative to establish Australia's first TAFE Clean Energy Skills National Centre of Excellence in Western Australia is a welcome first step¹⁷. The government's commitment through the National Skills Agreement to establish a network of up to 20 TAFE Centres of Excellence in areas of high-skill needs should be utilized to build new such centers for clean energy skills education. The amount and focus of public training investment should derive directly from the comprehensive training gap mapping recommended in the section above.

Recommendation: *The Federal Government should invest in retrofitting existing TAFE assets and building new TAFE assets to expand training infrastructure for the energy transition.*

¹⁵ National Electrical and Communications Association, Submission to Department of Employment and Workplace Relations, Strategic Review of the Australian Apprenticeship Incentive System (May 2024).

¹⁶ [Skilling the Clean Energy Workforce | Ministers \(dcceew.gov.au\)](#)

¹⁷ [WA to host first TAFE Clean Energy Skills National Centre of Excellence \(www.wa.gov.au\)](#)

Driving apprenticeship completion

Ensuring that the next generation of workers takes up and completes an apprenticeship is vital in bolstering the future of the Australian clean energy workforce. Adequately supporting an apprentice throughout their journey into the clean economy is critical in driving up completion rates and diversifying the workforce. Despite the high demand, the average annual intake and completion rates of new apprentices across the economy– including those into clean energy - nationally have remained relatively stable for more than a decade¹⁸.

Notwithstanding the long-term underinvestment in training infrastructure, this stagnation is a combined result of a lack of initiative from employers to offer new apprenticeships and a lower number of apprentices who go on to complete an apprenticeship. Evidence 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 apprenticeships¹⁹.

To address this challenge and to attract and retain apprentices, the Clean Energy Workforce Strategy must examine these barriers and address them effectively:

Low wages & Cost of Living Pressures

Low pay rates for apprentices often act as a barrier for workers looking to enter/retrain into clean energy industries through the apprenticeship pathway. As with other sectors, apprentice wages frequently lag significantly behind entry-level rates in clean energy jobs. Despite the clear long-term benefits of the apprenticeship model, this pay disparity can strongly discourage young people and mature-age workers from taking up and completing a trade apprenticeship. Evidence shows that low wages paired with other work expenses like transport costs are key drivers of non-completion for most apprentices in clean energy industries¹².

¹⁸ Essential Media, *Essential Research Apprentices Survey* (August 2022).

¹⁹ NCVER, *Apprentice and Trainee Outcomes 2023*, DataBuilder (2024).

In addressing this, the strategy should devote consideration over the longer term to adjusting the apprentice wage setting in clean energy industries where fully qualified workers are, as a rule, paid significantly above award rates. In the short term, this can be achieved by abolishing junior rates for apprentices in clean energy industries which would allow energy apprentices to earn better.

Recommendation: *Adjust the apprentice wage setting in critical clean energy occupations to reach par with industry standards.*

Negative workplace culture

Many trades apprentices in Australia face significant challenges in the workplace, such as isolation, inadequate supervision, and distressing experiences of discrimination, harassment, and bullying²⁰. These negative experiences are major factors influencing an apprentice's decision not to complete their training. 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 workplace¹⁰.

Women are particularly affected by negative workplace culture including discrimination, harassment, and bullying. Research indicates that, in clean energy industries, gender discrimination is the primary reason women abandon their apprenticeships²¹. Additionally, those who begin an apprenticeship often cite insufficient workplace support as a critical factor for withdrawing from their training programs.

Enabling flexibility for apprentices to change employers or workplaces during an apprenticeship can boost the participation of women and can have a positive influence on increasing completion rates. However, in addressing the structural issues of negative workplace culture in

²⁰ House Standing Committee on Employment, Education and Training, Parliament of Australia, *Shared Vision, Equal Pathways: Inquiry into the Perceptions and Status of Vocational Education and Training* (Report, February 2024)

²¹ Department of Education and Workplace Relations, Australian Apprenticeship Services and Supports Discussion Paper, 2022.

the industry, the NEWS framework should focus on the need for employers to take full responsibility and play a proactive role in ensuring apprentices have a safe and supportive workplace that meets their expectations. This can partially be facilitated by removing access to apprentices for the worst offending employers, but by also actively fostering a culture of quality and responsibility among employers who have apprentices or receive incentives.

Recommendation: *Ensure employers provide a safe, supportive workplace and allow apprentices to change employers to boost participation and completion rates.*

Lack of mentoring and support

Inadequate support or mentoring during apprenticeships, coupled with a lack of awareness about available resources, makes it challenging for apprentices to complete their training, resulting in many dropping out²². Support and mentoring from those within the industry is vital for apprentices, especially in sectors such as clean energy where transformational changes are taking place in the context of energy transition. Hence, the support for apprentices must be industry-based and delivered by workers with knowledge about the work.

The performance of the Australian Apprenticeship Support Network (AASN) model has been dismal in making a meaningful impact on the completion rates of energy apprentices while too many apprentices have missed out on gaining experience in emerging clean energy technologies. Surveys amongst apprentices have revealed that AASNs have largely failed in providing apprentices with the right information regarding the choice of electives in their course and on available financial assistance for apprentices¹¹. While appreciating the government's efforts to reform apprentice support services, these reforms seem to do little to address these challenges.

²² House Standing Committee on Employment, Education and Training, Parliament of Australia, *Shared Vision, Equal Pathways: Inquiry into the Perceptions and Status of Vocational Education and Training* (Report, February 2024)

A robust mentoring and support system can significantly boost completion rates, as demonstrated by industry-led Registered Training Organisations (RTOs) and Group Training Organisations (GTOs). For example, 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 apprentices²³. When these entities collaborate to provide comprehensive support across all training aspects, the results are particularly impressive.

Recommendation: *Implement a robust mentoring and support system through collaboration between RTOs and GTOs to significantly boost completion rates.*

A Comprehensive Reform of the Apprentice Incentive System

The ACTU made a detailed submission to the *Strategic Review of the Apprenticeship Incentive System*, which provides a more detailed analysis of the range of issues impacting apprentice commencements and completions²⁴

Labour mobility and regional jobs in clean energy

The rapid build-out of renewable energy and transmission requires the development of a workforce across regions that often have limited existing energy infrastructure. For regional areas hosting energy infrastructure, economic benefits including increased local employment are important components of building social licences for future developments. Consequently, the development of a local and regional workforce is important to minimize the tension and conflicts between rapid clean energy industry development and social license for renewable energy.

²³ NCVET, *Apprentices and Trainees 2023 - March Quarter*, DataBuilder (2023).

²⁴ [Submissions to the Strategic Review - Strategic Review of the Australian Apprenticeships Incentive System - DEWR Consult hub \(converlens.com\)](#)

Training capacity limitations, especially in regional areas, reduce the ability to rapidly upskill local workforces and address skill shortages. Currently, most energy apprentices (around 66%), along with their employers and training providers are in capital cities²⁵. Compared to other industries, the energy sector has the lowest proportion of apprentices training in regional areas²⁵. The for-profit training ecosystem won't focus on developing regional training facilities as these areas are not as lucrative as urban centres and clusters. The combination of short-duration projects and uncertainty on forward demand reduces the willingness of the renewable energy industry to invest in local workforce development²⁶.

Due to the structure and makeup of the regional workforce, building a regional workforce for energy transition will require a multi-dimensional strategy to increase labour supply from a range of pathways across different industries. Managing workforce and skill development across sectors – especially in sectors that need to adopt rapid decarbonization pathways – with a place-based approach can help address barriers to training investment and cyclical, project-based employment.

This would require close collaboration and coordination between relevant Jobs & Skills Councils across different industries. The NEWS process should focus on JSA's role in facilitating an ongoing conversation with the states and territories and Jobs and Skills Councils on a nationally consistent approach for labour market and skills forecasting and improve the coherence of workforce planning across regions and industries.

Recommendation: *Implement a multi-dimensional strategy to increase labour supply, manage skill development, and ensure collaboration between Jobs & Skills Councils for regional net zero workforce.*

²⁵ Briggs, C., Rutovitz, J., Dominish, E., Nagrath, K. 2020. Renewable Energy Jobs in Australia – Stage 1. Prepared for the Clean Energy Council by the Institute for Sustainable Futures, University of Technology Sydney

²⁶ National Centre for Vocational Education Research, VET delivery in regional, rural and remote Australia: barriers and facilitators, 2023.

Pathways for Transitioning Workers

With long-term planning and coordination, Australia could meet a share of future demand for energy trades by successfully transitioning workers from traditional energy subsectors.

Understanding areas of high demand in regions for clean energy jobs and promoting the potential pathways for transitioning traditional energy workers to upskill/reskill into the energy transition is key to addressing the workforce shortage gap. Modelling estimates suggest the time to retrain/upskill these workers for renewable energy occupations would be considerably lower than for new entrants to the clean energy space, for ex: drillers, miners, and shot firers in the traditional energy sector can be reskilled for the same jobs in new critical minerals industry – which is in high demand – through 3-6 months of retraining²⁷.

The NEWS framework should devise pathways by which this process can be facilitated by working with the Net Zero Economy Authority. The NEWS process should inform the process to:

- Map the skills of the existing traditional energy workforce to properly recognize prior learning, including company-endorsed certificates and competencies. This mapping should be done first in the four priority regions specified by the NZEA
- Map and create a register of required skills as the region transitions.
Map existing and needed training capacity in existing regions.

Recommendation: *Facilitate long-term planning by the NZEA to successfully transition workers from traditional energy sub-sectors into the clean energy workforce.*

²⁷ Employment, Skills and Supply Chains: Renewable Energy in NSW – Final Report. Sydney: University of Technology Sydney and SGS Economics and Planning, 2022

Diversifying the energy workforce: Opportunity & Equity

Women workers

A major workforce supply constraint in net zero industries is the lower participation of women in energy trade roles. Women's participation in both the energy workforce and energy-related apprenticeships is the lowest across all sectors - women account for only 2.3% of energy trade roles, and 4.9% of all energy apprentices.²⁸ There are several systemic cultural and practical barriers for women in the workforce - at various stages of a woman's career journey into and through the energy trades - which desperately need to be addressed. For example, specific workplace barriers include a lack of adequate amenities (including workplace toilets), personal protective equipment not designed for women's physiques, and inadequate corporate or governance processes to raise gender-based workplace discrimination²⁹.

The NEWS Framework should urge the government to take urgent action to fulfill its commitment to ILO recommendation R208, sections 21 and 22 which call on governments to take measures to promote quality, diversity, and social inclusion including in apprenticeships and to promote gender equality.

These measures can include, but are not limited to:

- Set procurement targets for women apprentices as a condition for incentive eligibility for employers, with continuous monitoring and enforcement

²⁸ NCVET, Australian vocational education and training statistics: apprentices and trainees 2022, 2023. Department of Education and Workplace Relations, Australian Apprenticeship Services and Supports Discussion Paper, 2022.

²⁹ Queensland Training Ombudsmen, Review of support provided to Queensland Apprentices and Trainees, with a focus on female apprentices in male-dominated occupations, 2022. <https://trainingombudsman.qld.gov.au/wp-content/uploads/2022/06/Review-of-support-provided-to-Queensland-Apprentices-and-Trainees-FINAL-with-attachments.pdf>

- Provide financial support to industry-led apprentice mentoring programs that offer direct support to women apprentices, including regular contact, mentoring, and worksite monitoring for safety compliance
- Link incentive programs to employers' performance in providing suitable PPE, bathrooms, changerooms, and other amenities for women at all worksites.
- Support industry-led RTOs in offering dedicated pre-apprenticeship programs for women, including mentorship from female industry leaders.

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.

Recommendation: To support women apprentices, set procurement targets, provide financial support for mentoring, link incentives to workplace amenities, and offer dedicated pre-apprenticeship programs with female mentorship.

Aboriginal & Torres Strait Islander workers

Aboriginal and Torres Strait Islanders encounter significant barriers even before considering workforce participation. They often lack knowledge, exposure, and experience with available energy sector jobs, and face limited access to high-quality, relevant training. Preferences for community-based training and work are frequently unsupported by the VET sector and structural barriers such as transport, driver licenses, housing, educational attainment, and health conditions further hinder their success. Hence Aboriginal and Torres Strait Islanders account for 1.9% of the energy workforce (below the national average of average of 2.2%), and 3.6% of energy apprentices (the lowest of any sector surveyed)^{30 31}. Similar to the challenges faced by women in the energy sector, the challenges faced by Aboriginal and Torres Strait

³⁰ Australian Bureau of Statistics, Census of Population and Housing, 2021.

³¹ NCVET, Australian vocational education and training statistics: apprentices and trainees 2022, 2023

islanders are systemic and are also repeated across similar industries such as Construction, Manufacturing, and Mining.

ACTU has engaged with and supported the work of the *First Nations Clean Energy Network* (FNCEN) which is a network of First Nations people, community organizations, land councils, unions, academics, industry groups, technical advisors, legal experts, renewables companies, and others, working in partnership to ensure that First Nations communities have a fair share in the benefits of the clean energy revolution. FNCEN has recently published the *Powering First Nation Jobs in Clean Energy Report* that identifies pathways and options for First Nations to be supported to enter the workforce in the clean energy sector and be able to access quality job opportunities and career pathways as they emerge³². The report recommends an action plan for increasing First Nations employment and training in clean energy that includes:

- **‘Demand-side’** measures to increase clean energy employment opportunities for First Nations Australians
- **‘Supply-side’** measures to increase the volume of First Nations Australians with the right skills
- **‘Enabling’** measures that connect industry, employment, and training resources and First Nations people
- **‘Cross-cutting’** measures to increase the capacity of First Nations organizations and change the culture of the Clean Energy industry

ACTU fully endorses these recommendations and urges the NEWS framework to adopt these actions maximising First Nations participation in the Clean Energy Workforce.

Recommendation: Adopt FNCEN recommendations to maximize Aboriginal and Torres Strait Islander worker participation in the Clean Energy Workforce.

³² [Powering First Nations Jobs in Clean Energy - First Nations Clean Energy Network](#)

Improving Coordination for Workforce Planning

As pointed out by the consultation paper, better coordination of energy workforce policies between all Commonwealth agencies and across all levels of the government is essential for a joined-up approach to address energy workforce challenges. Modelled on best practice international examples, such as the role of *Director of the Office of Energy Jobs* in the US Department of Energy, the NEWS framework should urge the creation of a *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 careers³³.

The *Clean Energy Jobs Commissioner* would be a role dedicated to supporting and assisting governments and industry through the transition by providing planning and coordination of the multitude of important workforce programs involved in the net zero transition. The Commissioner would work with all stakeholders, including unions and employers, to coordinate and facilitate increased access and uptake by industry and training bodies to ensure that training facilities are created where they are required, and to support further workplace learning and development.

The Commissioner would also be responsible for promoting critical clean energy occupations as a positive career choice, especially among diverse cohorts of potential apprentices, including women and Aboriginal and Torres Strait Islander Australians. The commissioner can also lead efforts to facilitate and secure union agreements and MOUs on major clean energy projects receiving Commonwealth support, including transformational projects identified by the Net Zero Economy Authority, ensuring these occupations remain attractive enough to facilitate adequate workforce growth trends.

³³ US Department of Energy, 'DOE Announces New Leader of Energy Jobs Office' (Media Release, 5 August 2022)

A successful Clean Energy Jobs Commissioner would broaden the base of qualified workers available for careers in clean energy, and broaden the selection of well-paid, safe, and secure roles for those workers to fill. This role can be established 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.

Recommendation: *Establish a role in the federal government for a Clean Energy Jobs Commissioner as a dedicated statutory role with the responsibility to support and assist the government through the energy transition and provide planning and coordination work programs across departments and levels of government.*

Migration and Clean Energy Workforce

While skilling up local workers is critical to meeting the workforce needs to facilitate the energy transition, skilled migration will also have a role to play. Energy sector workers who are recent migrants (born outside of Australia and migrated from 2017 to 2021) account for just 2.1% of the energy workforce - the lowest across many similar industries³⁴. Simultaneously, Australia's energy workforce may seek opportunities elsewhere, in countries and regions offering better remuneration and working conditions. Early signs of this drift are evident about engineers going overseas to the detriment of the deployment of projects in Australia's renewable energy sector³⁵.

The Albanese Government's *Migration Strategy*, released at the end of 2023, committed to important reforms to skilled migration, in particular:

³⁴ ABS, Census of Population and Housing, 2021, based on usual place of residence

³⁵ Strachan, C & McManagan, J, 'The engineering brain drain facing Australia's renewable energy sector', ABC News, 13 September 2023.

- Introducing for the first time an evidence-based, tripartite approach to skilled migration where Jobs and Skills Australia will advise on labour market shortages based on rigorous data analysis and evidence from unions and employers to ensure that shortages are genuine and complemented by measures to skill up local workers.
- Engineering-out exploitation from our migration system, including by replacing the Temporary Skill Shortage (TSS) subclass 482 visa with the new Skills in Demand visa which will enable workers' mobility in the labour market and end the bonded nature of the TSS visa which ties workers to a single employer, rendering them heavily dependent on that employer not only for their livelihood but for their ability to stay in the country;
- Measures to end 'permanent temporariness' and restore permanency to the heart of our migration program.
- Measures to tackle migrant worker exploitation and strengthen employer compliance, including supporting migrant workers to report exploitation by introducing protections against visa cancellation, and increased penalties for employers who exploit migrant workers.

Ensuring that clean energy jobs of the transition are attractive, safe, and secure is vital to effectively manage the flow of skilled workers in a manner that does not impact the skills demand of our transition.

To put an end to the exploitation we are already seeing in Australia's renewable energy sector, and ensure fair wages, industry standards, and domestic training opportunities aren't compromised, it is crucial that migrant workers' wages and conditions align with industry

standards to protect their rights³⁶. Employers using temporary migrant workers to fill skill gaps must also invest in training and developing the next generation of energy workers.

The Government's *Migration Strategy* sets the groundwork to ensure that Australia can meet its workforce needs through a combination of domestic skills development and skilled migration that complements the local workforce, where the rights of migrant workers are protected. The NEWS framework must align with these efforts to ensure a safe, well-paid and trained clean energy workforce.

Recommendation: The NEWS framework should align with the government's Migration Strategy to ensure that clean energy workforce needs are met, and the rights of migrant workers are protected.

³⁶ Electrical Trades Union, Submission no 3 to Senate Standing Committees of Legal and Constitutional Affairs, *Migration Amendment (Protecting Migrant Workers Bill)2021 [Provisions]* (27 January 2022).

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