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Clean Energy Workforce Section
Department of Climate Change, Energy, the Environment and Water

Introduction

The Australian Industry Group (Ai Group) is pleased to contribute to the development of a National Energy Workforce Strategy (NEWS). The energy transition will have far-reaching impacts across the economy, affecting the energy sector, businesses, and households alike. As the energy system and businesses strive to decarbonise, it is essential to plan for and address the workforce challenges that will arise in manufacturing and construction, operations and maintenance. To ensure the success of this transition, the NEWS must tie into several critical aspects of education and training reform currently underway. Ultimately, the scale of workforce development needed will depend on the ambition and pace of decarbonisation efforts.

The energy industry will bear the brunt of these challenges in the run up to 2035, by which time the Australian Energy Market Operator expects at least the vast majority of current coal fired power stations to have retired. The sector will have to navigate a prolonged period of substantial investment and widespread construction of low-carbon technologies, along with decommissioning of legacy infrastructure. The wider challenge of decarbonising our industrial base will require further effort through 2050. The challenge continues when factoring in the need to ensure there is workforce ready to then maintain and operate this new infrastructure as it comes online. Furthermore, the skilling challenge for the energy sector intersects with existing shortages and unmet demand for key occupations across the Australian economy, which are in demand by sectors such as construction, manufacturing and defence.

To ensure Australia can access a workforce equipped to take on the energy challenge across states and in particular regions, **better coordination is needed**. The coordination effort should ensure that initiatives to date and forthcoming are coherent and consistently work toward meeting the workforce needs of the energy industry. This requires both monitoring of implementation, as well as identification of gaps.

Occupations in demand

In recent years, there have been several resources published that attempt to quantify the workforce requirements to develop the future energy system. In 2021, RACE for 2030 published their E3 Opportunity Assessment: Developing the future energy workforce, which pointed to the need for a detailed mapping of the skilling needs going forward. The Clean Energy Council's Skilling the Energy Transition 2022 built on this need and demonstrated the unmet demand in specific occupations where employers in the sector were struggling to find the skills they needed. More recently, the Jobs and Skills Australia's (JSA) Clean Energy Capacity study and Powering Skills Organisation's (PSO) 2024 Workforce Plan add national data and rigour to our understanding of the size of the issue and recommendations that should be considered as part of the NEWS. Some jurisdictions also have their own projections and strategies, such as Queensland's Clean Energy Workforce roadmap.

Powering Skills Organisation has identified need for an additional 32,000 electrical trades workers. Modelling by Jobs and Skills Australia (JSA) across a range of scenarios suggests that average annual change in employment will be in the range of 7.9%-8.4% for Telecommunications Trade Workers and 6%-6.5% for Electronics Trade Workers in the 2023 to 2030 period. The modelling also suggests that the job growth and demand will peak in the run up to 2030 and then slow to a more manageable pace in the 2030-2040 period before easing considerably in the final decade to 2050. The timeframe to meet the challenge and supply the workforce required for the clean energy transition is tight. It is vital that these initial stages of workforce planning rapidly transition to execution.

Ai Group members have been reporting skill shortages across clean energy core occupations for some years, including skilled tradespeople and energy professionals. Key occupational roles are required across multiple segments of the clean energy industry. Operational and maintenance roles will grow and be re-shaped by new technologies. Dynamic growth means that new and hybrid roles will continue to emerge that require new skills. This places importance on building deep, technical skills but also generic and transferable skills. Ai Group's own research has found that businesses are implementing changes because of the transition to a clean economy, and they expect the transition to drive emerging or increased skill needs over the coming year. However, many said they did not have the skilled employees or teams to navigate the transition. Support is also needed for smaller businesses who can lack the capital and time to invest in the workforce planning that prepares them for the clean economy changes.

Ai Group's recent 2024 Skills Survey confirmed the growing demand for specific skills and qualifications across the country, many of which are needed for the clean energy transition. Employers surveyed reported the tight labour market continues to drive increased difficulty for businesses finding and training staff – particularly Technician and Trades workers (79% up from 71% in 2022 and 39% in 2020). The specific occupations in high demand by businesses surveyed included: Electrical trades, Fitters, Turners, Welders, Plumbers and Field Technicians. The survey also identified increased difficulty finding or training Professionals and Managers. Key roles included: Project managers, Engineers (of all specialisations), Trainers and assessors, IT and software professionals.

Jobs and Skills Australia's 2023 Skills Priority List Key Findings Report showed that occupations that have systematic gender imbalances – such as Technicians and Trade workers – significantly constrains the supply of workers and contributes to the severity of skills shortages. Perhaps most pertinent to the energy sector, the Electrician (general) occupation is in shortage and is one of the largest male dominated workforces, with 98% male representation. Lifting the diversity of the electrical workforce along with others critical to the energy sector is another key part of addressing shortages. It is time to fast track the commitments made in 2023¹ to address the structural barriers to increased gender equality in the sector, and coordinate with the education and training system to devise ways to increase the uptake of these skills across all genders.

¹ Australia pledges gender equality for clean energy sector - DCCEEW

Supply considerations and workforce planning

JSA's Clean Energy Capacity study provided a welcome base and directions to ensure the nation develops the workforce required to achieve net zero emissions by 2050. While progress is being made, much of the hard work identified on education and training system reform is underway or yet to be realised. Many of JSA's recommendations mirror reform needed across the whole tertiary education system, and indeed reform advocated by Ai Group. They include a fully implemented, revised Australian Qualifications Framework; a better connected tertiary education system; ongoing data collection and analysis of Australia's skill needs; a strengthened and extended apprenticeship system, including higher apprenticeships; broader work-based and work-integrated learning; improved levels of partnership between industry and the education and training sector; and increased access by industry to shorter programs to support reskilling/upskilling and to transition existing workers from emissions-intensive sectors quickly. While the report covered these reforms through 'opportunities', the issues must be tackled through implementation of the report's recommendations.

The National Skills Agreement has direct scope in 'supporting the Net Zero transformation' as a national priority requiring focused effort to address critical skills and workforce shortages. Given its whole of economy, this should take account of occupations in demand across a range of sectors for example in the construction phase. Recent efforts to support the number apprentices in the pipeline developing these skills, such as the New Energy Apprenticeships program announced in the 2024-25 Federal Budget, are a step in the right direction.

Additionally, there is an opportunity to enhance and refine training packages and their delivery to ensure that the VET sector's output aligns with the improved perceptions and outcomes it aims to promote. This effort must also include strengthening the VET workforce, particularly in areas critical to the clean energy sector. PSO's 2024 Workforce Plan identified that VET providers are currently not providing clean energy electives, often because specialised teaching staff are not available to deliver them. Moreover, they also identified that apprentices are struggling to gain exposure to diverse clean energy skills through their single employer arrangement.

The JSA Clean Energy capacity study also highlighted the impact of the clean energy transition on regional communities and workforces. As we move further into the critical period of decommissioning transitional fossil fuel generation and its associated supply chains, transitioning the workforce out of the fossil fuel sector becomes crucial. Developing training pathways for these workers and potentially creating pathways to in-demand roles within the clean energy sector is worth further exploration. Planning for this cohort may also bolster the supply of workers prepared to reskill and redeploy back into the energy sector and across the economy. It is in the national interest that policies are developed to successfully transition these cohorts to new employment opportunities. The new Net Zero Economy Authority has relevant responsibilities, but other parts of the government have relevant capabilities. Close cooperation across government with the NZEA will be essential.

Many roles currently in shortage have considerable training gaps and require years to build sustainable pipelines of these skills, for example 4-year full time electrical trades apprenticeships and 3–5-year full time bachelor's degrees for project managers and

engineers. In some cases, particularly for professional roles, employers still need to invest considerable time and resources to build on these formal qualifications by providing on-the-job experience to maximise the productive potential of workers. Concerted effort to increase the concentration and prevalence of work-integrated learning can help bridge this gap. Ai Group is a strong advocate for work-integrated learning opportunities, which provide students with valuable work experience during their studies and give employers access to a skilled workforce. However, as noted in our position paper in May 2024, these initiatives require a collaborative approach and significant time and resources to implement.² Achieving this will require time and improved policy measures to address these skill gaps effectively.

There is also the challenge of supporting businesses who are needed to maintain consistent investment in these skill pipelines across business cycles, particularly apprenticeships / traineeships which involve businesses signing employment contracts for the duration of training. More substantial and consistent support for businesses (such as building on the success of the Boosting Apprenticeship Commencement program) that are investing in these skills consistently for current and future skill needs may help iron out the boom-and-bust cycle of apprentice pipelines. There is an imperative for government to respond quickly to the Strategic Review of Apprenticeship Incentives, so that industry can have certainty in the support available.

Ai Group emphasises the need for the VET sector to better attract learners to in-demand skill areas. With the support of key stakeholders (including schools, parents, and career advisors) efforts must be made to enhance the esteem and visibility of the pathways available to those leaving secondary school and those looking to retrain. Consistent efforts to increase awareness of the opportunities in the sector, such as the Clean Energy Council's Careers for Net Zero Fairs,³ are key to attracting new entrants and are opportunities to highlight the diverse and abundant career opportunities in the clean energy industry. Particularly given the gendered nature of many of the occupations needed, effective and sustainable diversity and inclusion measures will be critically important.

Skilled migration is also a crucial component of Australia's skill mix, especially when strategically implemented to support large-scale projects like the Clean Energy transition. The role of skilled migration in meeting Australia's clean energy workforce needs will need to be considered and reflected in efforts to coordinate workforce supply.

Coordination and monitoring of Clean Energy workforce initiatives

The current labour market conditions and ongoing Australia-wide demand for trade skills pose a significant risk to the clean energy transition. Without a coordinated effort to increase the supply of these skills, the clean energy sector may continue to find itself competing with the rest of the economy for a limited pool of in-demand skilled workers. As more policy action rolls out to drive positive changes to support the clean energy workforce, it is important to identify a coordination mechanism to provide oversight of implementation and impact of federal and state initiatives. Consideration

² Connecting to maximise knowledge and skills Companies and universities working together, Ai Group Centre for Education and Training 2024

³ New energy grants build on Queensland's renewable energy momentum - Ministerial Media Statements

should also be given to formative evaluation and identification of remaining gaps to be addressed. The NZEA's theoretical remit is broad enough to include this, but in practice it may need to concentrate on managing transition impacts on coal generation regions for some time to come.

The Commonwealth is well placed to lead these coordination efforts, potentially through Skills Ministers and implementation of the National Skills Agreement. While each state and region across the country will be developing their clean energy sectors at a different pace and in different ways, a nationally consistent approach to data collection and reporting (particularly of workforce training data as identified by PSO) is worth prioritising.

If you have any questions about this submission, please contact Dr Caroline Smith, Centre for Education and Training, Ai Group on caroline.smith@aigroup.com.au.