

ESI TRANSMISSION, DISTRIBUTION AND RAIL IRC SKILLS FORECAST 2019 - SUMMARY

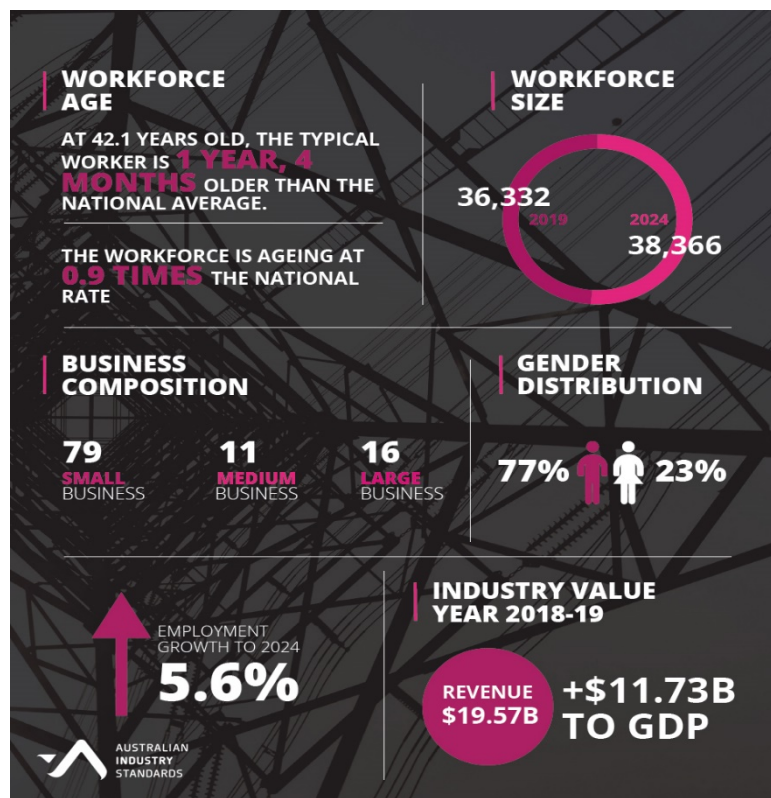
SUMMARY

The ESI Transmission, Distribution and Rail Industry Reference Committee (IRC) Skills Forecast identifies the priority skill needs of the ESI Transmission, Distribution and Rail industry following research and stakeholder consultation.

The IRC, made up of industry leaders and experts, acts as a conduit between the ESI Transmission, Distribution and Rail industry and the Australian Industry and Skills Committee (AISC). It proposes Training Package development work to ensure that skills standards and qualifications are contemporary, as well as future focused, to meet the skill needs of industry.

INDUSTRY TRENDS AND OVERVIEW

The ESI Transmission, Distribution and Rail (ESI TDR) industry refers to Australia's infrastructure networks that are used to transport high-voltage electricity from generators to distribution networks; and then directly to domestic and industrial users. The transmission network is inclusive of power lines and substations. The Transmission industry alone accounts for nearly \$3 billion in revenue and employs more than 4,500 people. However, the Distribution industry is significantly bigger generating \$19.57 billion in revenue and employing over 31,800 people.



INDUSTRY CHALLENGES AND OPPORTUNITIES

The ESI-TDR delivers vital services that support the daily operations of Australian businesses and homes. Australia's ESI-TDR industry is being rapidly transformed by new technological developments, providing unique opportunities and changing the traditional methods of electricity provision to consumers.

NEW TECHNOLOGIES

The electricity network in Australia is amid major transformations due to rapidly changing technologies, consumer preferences, and environmental concerns. Installing sensors and wireless communication gateways will collect and process data, enabling higher resolution (real-time) data collection of electricity use. Cutting-edge software technologies can optimise the operations of distributed energy assets, such as battery energy storage and solar, by forecasting moments of peak demand on the grid through the use of Big Data and Machine Learning. These innovations offer consumers the chance to view and analyse electricity demand and enable them to monitor and adjust their electricity use. IoT and Big Data can also improve asset management and enable predictive maintenance by anticipating when a fault might occur as opposed to reactive maintenance where faults are dealt with as they arise. The data allows remote condition monitoring by measuring temperature, vibration, voltage or current via sensors. Other technologies such as Unmanned Aerial Vehicles or drones use Light Detection and Ranging (LiDAR) technology to collect asset condition data and inspect power lines.

THE CHANGING GRID

Innovations such as solar systems have enabled consumers to be 'prosumers' (consumers of electricity who are producers as well). Electricity consumers can send their excess solar power energy back into the grid. Thus, the grid power is changing from a one-direction network to a bi-directional one which can flow in both directions due to integrated renewable systems and battery storage. A Virtual Power Plant (VPP) trial is currently underway in Adelaide to connect solar photovoltaic (PV) and battery storage in homes and businesses together through a digital distribution network. The batteries will be able to communicate through a Cloud-based platform using smart controls, forming a connected system that will be able to operate as a virtual solar power plant. The 'virtual network' will monitor and feed electricity into the grid as required. This is anticipated to save each contributor an estimated \$500 per annum in electricity charges.

RENEWABLE ENERGIES

Pumped hydro is the most widely deployed large-scale energy storage technology. It involves pumping water from a storage reservoir at a lower elevation to a storage reservoir at a higher elevation, and later releasing it through turbines to generate electricity. Wind and solar power made up 5.7 and 3.4 per cent of the national total

electricity generation in 2016-17 respectively. These technologies for dispatchable power require the industry workers to upskill as they will need new training in the production and maintenance of emerging renewable technologies. There is also a project in Western Australia to build a facility which generates electricity from waste. In this facility, which is the first in Australia, waste can be gasified or combusted to produce electricity.

INDUSTRY-SPECIFIC CYBER SECURITY

Cyberattacks are a common risk to many industries including the TDR sector. The unique nature of TDR technologies and innovations such as Big Data, IoT, and renewables generates large amounts of data which can expose the industry to growing cyber security risks. It is therefore imperative to have a tailored cyber security training program to give the workforce the skills and competencies to be able to identify, block or remediate against any malicious cyberattacks.

DIGITAL LITERACY

Advancements in Artificial Intelligence, computer technology, automation, the Internet of Things, cloud computing, big data, and customer-service platforms are generating a massive volume of data and information, offering a range of benefits such as improved customer service and operational efficiency. Demand for analytical skills, digital literacy, and information management will continue to rise, making digital literacy one of the most significant areas for the new and existing workforce.

SOFT SKILLS

In addition to technical and digital skills, soft skills will be equally important. Non-technical skills such as teamwork, problem-solving, and creativity are integral to the successful adoption and implementation of disruptive technologies. Creativity and problem-solving skills will help individuals to explore new technologies and deploy them effectively in the workplace.

SKILLS RELATED INSIGHTS AND OUTLOOK

Nearly 27.7 per cent of AIS survey respondents reported experiencing a skills shortage in the last 12 months. The occupations reported as being in shortage were: educators/trainer/assessors, line workers, electricians, cable jointers, and transmission (overhead/underground). The TDR industry employers identified the following reasons for the shortage:

1. Ageing workforce / current staff retiring
2. Cost/time to achieve the required qualification
3. Competition from other organisations
4. Wages / salaries considered too low
5. Geographic location of the vacancy

UET 12 TRANSMISSION, DISTRIBUTION, AND RAIL TRAINING PACKAGE

The UET12 Transmission Distribution & Rail Sector Training Package provides the only nationally recognised Vocational Education and Training (VET) qualifications for occupations involved in transmission structure and line assembly, national broadband network cabling, asset inspection, power systems – transmission overhead (erection of towers, poles, structures and associated hardware), power systems – distribution overhead (installation, maintenance and inspection poles, structures and associated hardware), power systems – distribution cable jointing, power systems and power systems operations. The UET12 Transmission Distribution & Rail Sector Training Package comprises 16 qualifications, 18 Skill Sets, and 224 Units of Competency and associated assessment requirements and covers overhead lines (distribution), overhead lines (transmission), overhead traction wiring systems (rail), cable jointing and equipment installation.

TRAINING PACKAGE REVIEW AND DEVELOPMENT – PRIORITY WORK

*The following projects were proposed and submitted to Australian Industry and Skills Commission for consideration on 30 April 2019.

2019-20 INDUSTRY SKILLS – REVIEW AND DEVELOPMENT

The proposed project will review and develop seven qualifications and associated Units of Competency to ensure that the skills and knowledge requirements to support the

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operations, management and systems support of the electricity supply transmission & distribution within Australia. In addition, the IRC has also identified five high priority units from the Cert IV qualifications for review and development. This project will also update superseded or deleted imported Units of Competency within these qualifications to ensure these skills are contemporary with wider industry practice.

2019-20 RENEWABLE TECHNOLOGIES – REVIEW AND DEVELOPMENT

The Renewable Technology project will include renewable technologies within the UET Transmission Distribution and Rail Sector Training Package within qualifications and Units of Competency.

The full TDR IRC Skills Forecast can be accessed at:

<https://www.australianindustrystandards.org.au/industry-reference-committee-irc-skills-forecasts-2019/>

AUSTRALIAN INDUSTRY STANDARDS

Australian Industry Standards (AIS) is a Government appointed Skills Service Organisation (SSO) that partners with industry to shape the workforce of the future through the development of skills standards.

We work under the direction of Industry Reference Committees that represent the following sectors: aviation, transport and logistics, maritime, energy, water and utilities, public safety, police, fire, defence and corrections. Together, these industries keep Australia productive, powered and secure.

AIS supports IRCs through industry engagement, research and analysis to prioritise the skill needs of their industry. We help to develop contemporary, future focused and world class qualifications for the workforce, create career pathways, and support industry growth and productivity.

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