

# Transforming Victoria's new energy workforce



# Victoria's New Energy landscape

The Australian Government has announced its plans to become a 'renewable energy superpower', move away from the carbon economy and increase its exports of clean energy.

In line with this, the state of Victoria in Australia's south-east is undergoing a new energy revolution.

The Victorian Government has committed to the rapid and wide-scale expansion of renewable energy in the state, as evidenced by the Victorian Renewable Energy Target (VRET) legislated in the *Renewable Energy (Jobs and Investment) Act 2017 (Vic)*.

The VRET will require a rapid expansion that poses significant challenges, including workforce skills development, for the renewable energy industry in Victoria.

Federation University Australia recognises the need for workforce training to achieve Australia's and Victoria's new energy goals and to prepare our communities to transition to the new industries emerging from this shift.

As a dual-sector institution and Australia's only university accredited by the Global Wind Organisation, Federation is poised to become a national leader in workforce transition to renewable energy.

With campuses and renewable energy training, education and research centres in Ballarat and Gippsland, Federation is ideally placed to support the growth of wind farm and battery storage developments in Western Victoria and the transition from coal-fired power generation to renewable energy in Gippsland, in the state's east.

Federation is prepared for both the immediate and coming future of new energy transition. In addition to its wind energy education and training, the University has the expertise to address a variety of new energy-related challenges, from the future fuel and hydrogen economy to the closure and rehabilitation of mines and mining communities.

A dual-sector university with proven project development capabilities, Federation is working to offer end-to-end training, **research-led innovation** in training and seamless career pathways for the renewable energy industry.

Victorian Renewable Energy Target (VRET)

## Countdown to Net Zero

<b>25%</b>	renewable electricity by 2020 (achieved)
<b>40%</b>	renewable electricity by 2025
<b>65%</b>	renewable electricity by 2030 (previously 50%)
<b>95%</b>	renewable electricity by 2035 (new target)

Source: Victorian renewable energy and storage targets, DEECA web page

## Renewable Energy Jobs Growth

<b>26,850</b>	jobs in Australia 2018–19
<b>27%</b>	increase from 2017–18
<b>120%</b>	increase over 10 years
<b>4,000</b>	new renewable energy jobs predicted in Victoria

\*Full-time equivalent (Source: Australian Bureau of Statistics 2019)

Source: Clean Energy Council, Clean Energy Report 2020

## ACKNOWLEDGEMENT OF COUNTRY

Federation University Australia acknowledges the Custodians of the lands and waters where our campuses are located and recognise their continuing responsibilities to care for country at these sites of teaching and learning. We pay our respects to Elders past and present and extend our respects to all Aboriginal and Torres Strait Islander First Nations Peoples.

The Aboriginal Traditional Custodians of the lands and waters where our campuses, centres and field stations are located include:

**Wimmera** | Wotjobaluk, Jaadwa, Jadawadjali, Wergaia, Jupagulk | **Ballarat** | Wadawurrung | **Berwick** | Boon Wurrung | **Euston Station** | Tatti Tatti | **Gippsland** | Gunai Kurnai | **Nanya Station** | Mutthi Mutthi and Barkindji



More information on VRET can be found on the Victorian renewable energy and storage targets website via: [energy.vic.gov.au](http://energy.vic.gov.au)

# Federation University Australia

Regionally located,  
globally significant

Located in the state of Victoria, Federation University is Australia's premier regional university, with campuses in Ballarat, Berwick, Gippsland and the Wimmera.

Federation programs are available internationally via our network of partner providers in Hong Kong, China and Sri Lanka.



Worldwide Rankings for United Nations Sustainable Development Goals<sup>2</sup>

**Top 15%**

Times Higher Education Young Universities 2023 Globally<sup>1</sup>

Ranked in the **Top 200** institutions worldwide for

Good Health & Wellbeing

Sustainable Cities & Communities

Gender Equality

Reduced Inequalities

1. 2024 Times Higher Education Young University Rankings  
2. 2024 Times Higher Education World University Impact Rankings

# Federation trains the wind energy workforce

A report from Global Wind Organisation (GWO) and Global Wind Energy Council forecasts Australia will double the number of people employed on wind energy projects by 2027.

**Federation is helping meet this workforce demand. An example is our Certificate III in Engineering (Composites Trade), a three-year apprenticeship program delivered at the Asia Pacific Renewable Energy Training Centre (APRETC) facility.**

It is Australia's first defined pathway for people to enter the wind generation industry as blade repair technicians.

Wind Turbine Blade Technicians play a crucial role in ensuring wind farms operate at maximum capacity and generate as much renewable electricity as possible by inspecting, maintaining and repairing wind turbine blades at locations around the country, and fixing issues caused by contamination, impact damage, fatigue or weather events like erosion, rain, hail, or lightning.

The Certificate III teaches students to handle and use a wide range of traditional and new materials to create composite items to engineered standards. Completing the course also skills students for careers in the aerospace, marine and other sectors.

Composites and Polymers Instructor James McKenzie comes to Federation with a wealth of experience in engineering, fitting, maintenance and managing complex teams through his work as Armoury Section Head for the Australian Army, Production Manager for Replas Recycled Plastic Products and owner of McKenzie Instruments.

James says, "Primarily with this course, we want students to be looking at the wind industry. However, because it is a trade, all trades should be all encompassing. We don't train people to be very good at one particular thing; we train them to have broad spectrum knowledge so that when they're exposed to things out in the wild, they'll know how to deal with them."

The first cohort to undertake the Federation course are four apprentices with Vestas Wind Technology, a multinational sustainable energy company – Max, Sam, Will and Eden. Like many in the industry they have each taken a sideways step from other trades and occupations to enter the burgeoning renewable energy sector and are enjoying the travel, autonomy, and diversity of their role.

"The industry wants people who are qualified in the trade, and studying the Certificate III makes a big difference to your understanding and general quality of work. Having that under your belt is a pretty good position to be in. You're getting a head-start on a lot of people entering an industry which is only going to keep growing." Eden

"The variation, traveling, meeting different people, working on different sites is all appealing. The wage is pretty good as well, as is getting into it young, as the industry is booming and going crazy." Will

Read more about APRETC in Ballarat on page 6 and our proposed APRETC Gippsland on page 8.



Read the full article in our newsroom, [federation.edu.au/news](https://www.federation.edu.au/news)

Completing the course also skills students for careers in the aerospace, marine and other sectors.



# Connecting **today's students** with the **industries of tomorrow**

The Commonwealth Government's Australian Universities Accord places significant importance on meeting the skill needs of the Australian economy.

To achieve this, a need for a seamless transition for students through all levels of education has been identified.

As a dual-sector university with strong ties to a variety of educational pathways from secondary schools to vocational training, undergraduate, postgraduate and research degrees, Federation is working to ensure that all people in the communities we serve have the opportunity to enter tertiary education and achieve their career goals.

With the Federation Co-Op Education Model, we are creating a suite of programs that will be co-designed, co-developed and co-delivered by industry, providing a pipeline of students that are prepared to work in the new energy sector at all levels.

Through co-op, Federation will be Australia's first university to have integrated learning in the work environment as a formal part of all its degrees relevant in the new energy space including business, engineering, IT and science.

Our students will graduate world and work-ready, through paid placements and workplace experiences that prepare them to help fill vital skills shortages and provide the up-to-date capabilities and knowledge that industry requires.

Find out more about our co-op model: [federation.edu.au/co-op](https://federation.edu.au/co-op)

## Tech Schools

The Ballarat Tech School is hosted by Federation and funded by the Victorian Department of Education to provide STEM and emerging technology programs to local secondary students.

The Gippsland Tech School is also part of the Victorian Government's Tech Schools network and hosted by Federation's vocational training provider partner, TAFE Gippsland.

Our network has access to Victoria's Clean Energy Equipment Fund (CEEF), which allows us to invest into new technologies and equipment to deliver cutting-edge clean and renewable energy education programs to regional students.

[vic.gov.au/tech-schools](https://vic.gov.au/tech-schools)



Federation is proud to have been recognised as the **number one university in Australia** for first generation student enrolments by the 2023 Good Universities Guide.

## Leaders in industry collaboration

Federation's award-winning and internationally recognised 25-plus-year partnership with IBM is an exemplar of our strong history of industry collaboration.

During that time, nearly 400 domestic and international students have completed a 1,600-hour internship at IBM or its spin-off Kyndryl – the world's largest provider in IT technology support services – as part of the Bachelor of IT (Professional Practice). Most have gone on to work for the company in Australia and internationally after graduating. The partnership is also providing opportunities for research collaboration on leading-edge technology, through a bespoke PhD program.

In partnership with IBM, our P-TECH program equips young people with the academic, technical and professional skills required for a range of careers or university degrees. Students are supported by industry mentors as they work towards a science, technology, engineering or maths-related advanced diploma in addition to their senior secondary qualifications.



# New energy transition training and teaching

As renewable energy transitions from the construction phase to the operations and maintenance phase in the coming decades, Federation will prepare the workers to drive this change.

As a dual-sector institution, Federation offers a suite of courses that span vocational training to research higher degrees in new energy. Our dual-sector status enables us to offer innovative study options including higher degree apprenticeships and dual qualifications that span vocational and Bachelor's degrees.

With a considerable energy workforce already existing in Victoria, we are keenly aware of the need to ensure learners and workers can return to study to upskill and reskill in a supportive and expert educational environment so that they can meet rapidly changing industry needs throughout their careers.

New energy will create jobs in the construction, operation, and maintenance of new energy installations and in shifting traditional, fossil-fuel-based power generation to new energy-generating fields.

It will also require workers in diverse areas including consultation, social licence to operate, rehabilitation, business models, IT support, virtual modelling and remote maintenance – training that Federation offers. This variety of employment in renewable energy will require the combination of vocational education through TAFE (technical and further education) and university qualifications that Federation offers.

We are developing bridging and pathways programs to support this, enabling students to work their way from short courses and vocational training to a bachelor's degrees and eventually a higher degree by research if desired.

In this way, Federation is preparing the next generation of new energy workers at all levels, both for the present reality and its foreseeable future.

**We are #1 in Australia for**

**First Generation Student Enrolments<sup>1</sup>**

**We are #1 in Victoria for**

**Social Equity<sup>1</sup>**

**Undergraduate Starting Salary<sup>1</sup>**

**Postgraduate Learner Engagement<sup>2</sup>**

**#1 in Victoria, #5 in Australia**

**HDR Engagement with Industry<sup>3</sup>**

Higher Degree by Research (Masters by Research and PhD) students at Federation University are engaged with industry via internships, co-supervision or co-funding.

**#1 in Victoria and #2 in Australia for**

**Full-time Postgraduate Employment<sup>2</sup>**

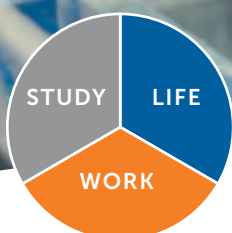
**#2 in Victoria for**

**Full-time Undergraduate Employment<sup>2</sup>**

1. 2023 Good Universities Guide
2. OILT Graduate Outcomes Survey 2023
3. Calculations based on 2022 DOE data for HDR industry engagements (end-user engagement)



CO-OPERATIVE EDUCATION MODEL



With its Co-operative Education Model, Federation will be Australia's first university to have **integrated learning in the work environment** as a formal part of all its degrees, including those relevant to new energy.

# Our new energy programs

Many of our course offerings – particularly those in business, IT and science – prepare students to tackle the transition to new energy.

All of our engineering degrees, for instance, focus on circular economy and sustainability, and our business degrees follow the United Nations' Sustainable Development Goals teaching strategy to ensure all graduates are able to focus on sustainability.

Some of our current programs with a particular focus on new energy transition include:

## Short courses

**Basic Safety Training Course** provides essential GWO working safely at heights training for those looking to work on a wind farm, either in its construction or as a part of the long-term maintenance of a turbine.

**Global Wind Organisation Standard** globally certifies trade qualified students with a passion for the renewable energy sector to work on wind turbines as a technician.

## Technical and Further Education (TAFE)

**Certificate III in Electrotechnology Electrician** enables apprentices to apply for an A Grade Electrical Licence through an approved Energy Safe Victoria examination process.

**Certificate III in Engineering – Composites Trade** is Australia's first defined pathway for people to enter the wind generation industry as blade repair technicians.

**Global Wind Organisation Standard – Basic Technical Training** – prepares participants with the necessary training to perform basic hydraulic, mechanical, electrical, bolt tightening and installation tasks.

**Diploma of Engineering – Technical** prepares students to become technicians highly skilled in turning energy into power and motion.

## Bachelor degrees

**Bachelor of Engineering (Electrical and Information Engineering) (Honours)** provides in-depth knowledge and skills across the interdisciplinary domain of electrical and information engineering.

**Bachelor of Engineering (Mechanical)** provides in-depth knowledge about energy conversion, and wind energy in particular.

**Bachelor of Information Technology (Professional Practice)** gives students an understanding of how to deliver large-scale and complex IT projects including those in new energy, through a combination of study and practical industry experience.

## Postgraduate Certificates

**Graduate Certificate in Community Energy and Micro-Grid** enables students to progress their careers in the energy sector, learning from leaders in energy research.

## Postgraduate by Coursework

**Master of Engineering Project Management** enables students to build in-depth knowledge and skills to plan and execute major projects across the construction, infrastructure, development and energy sectors.

**Master of Engineering Technology (Renewable Energy and Electrical Power Systems)** enables students to advance their careers as professional engineers with the required analytical, technical and leadership skills in renewable energy and electrical power systems.

**Master of Applied Cybersecurity** prepares students with the skills and knowledge critical to the IoT technology underpinning remote monitoring of solar and wind energy assets, among other applications.

## Professional development

We also offer professional development certifications across microgrids, renewable energy grid integration and Australian Energy Market Operator requirements and regulation, power system fundamentals and renewable energy integration, AI applications in power systems and forecasting, community energy and social licencing.

## Research higher degrees

Our research expertise and industry connections in areas including circular economy, future fuel and hydrogen economy, future grid and community energy, microgrids and renewables, net zero initiatives, and stable landforms and mine rehabilitation ensure that Federation is a university where students can engage in world-class research to tackle new-energy challenges.



Explore the full offering of Federation courses at: [study.federation.edu.au](https://study.federation.edu.au)

# Asia Pacific Renewable Energy Training Centre (APRETC) Ballarat

## Powering the renewable energy revolution

Federation is leading the way in providing skills and training to meet Australia's renewable energy needs.

The Asia Pacific Renewable Energy Training Centre (APRETC) was established by Federation University in November 2021 with support from the Victorian Government's TAFE Clean Energy Fund and direct funding from industry. It supports the rapidly growing wind energy sector by meeting the demand for local skilled workers.

Based at our Mt Helen Campus in Ballarat, APRETC hosts the southern hemisphere's first wind turbine training tower, a 23-metre-high facility expected to train up to 600 wind industry workers each year and provide a pipeline of skilled workers for the fast-growing wind energy sector.

APRETC provides:

- **High Risk Working at Heights Training**
- **Blade Repairs**
- **Turbine Maintenance**

As a certified member of the Global Wind Organisation (GWO) and the only GWO-accredited training institute in Australia, Federation University commenced GWO Basic Safety and Refresher Training in 2023. APRETC offers training to industry from across the Asia-Pacific region.

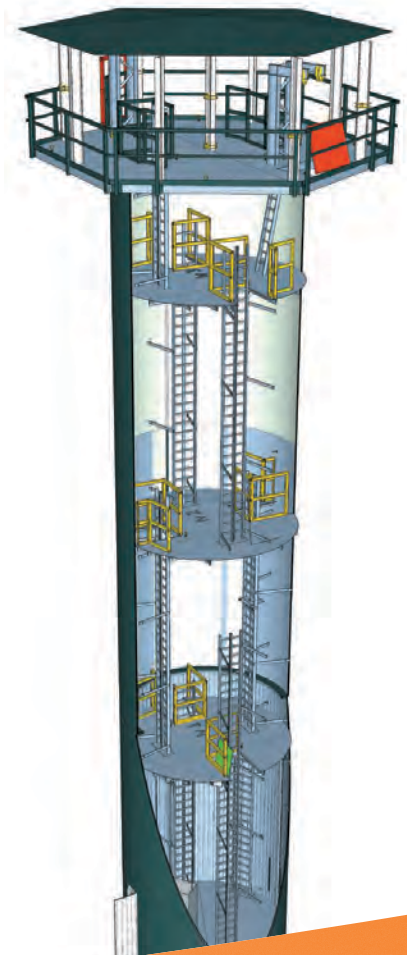
Global Wind Organisation Training currently available from APRETC:

- **Basic Technical Training Course (BTT)**
- **Basic Safety Training Course (BST – Initial) and (BSTR-Refresher)**
- **Basic Safety Training**
- **Certificate III of Engineering (Composites) – Apprenticeship (Blade Repair Technician)**

With an additional \$6 million in funding pledged by the Victorian Government as part of their \$50 million TAFE Clean Energy Fund, planning for Stage 2 of APRETC is underway and will include a classroom, workshop and training equipment to deliver even more specialised training courses.

## Wimmera/Mallee region

Federation is developing opportunities for other renewable energy training in Western Victoria outside the immediate wind energy sector, notably solar through the Wimmera and Mallee regions, where there are significant renewable energy generation projects planned and approved.



APRETC is backed by major global renewable energy companies including **Vestas, Acciona, Global Power Generation** and **Tilt Renewables**.

**apretc**  
POWERED BY FEDERATION UNIVERSITY



Find out more on the APRETC webpage:  
[federation.edu.au/apretc](https://federation.edu.au/apretc)



# BZEE partnership

Federation's exclusive partnership with Germany's Bildungszentrum für Erneuerbare Energien (BZEE) Network is enabling the University to develop and deliver nationally aligned training programs that will place Turbine Technicians with original equipment manufacturers and subcontractors from late 2024.

This BZEE post-trade Turbine Technician Training Course is globally recognised as the world's key qualification enabling employment in the wind industry.



## Federation teacher Australia's first wind turbine technician instructor

Federation automotive teacher Andrew Edwards is Australia's first and only BZEE-accredited wind turbine technician instructor, who is training other teachers to deliver the course.

Andrew travelled to the USA to undertake the eight-week BZEE Instructor Certification program at the Wind Turbine Technician Academy at Kalamazoo Valley Community College (KVCC) in Michigan, America's leading training centre for wind turbine technicians.

Andrew is now equipped to 'train the trainers' who will then, in turn, be able to deliver BZEE accredited Turbine Technician Training Courses at APRETC.

Andrew, a qualified mechanic and auto electrician, saw the opportunity to utilise his existing technical knowledge to help train instructors and technicians at APRETC.

**"The idea of this technical training is to gain the experience to be able to train people in this sector. I saw the opportunity come up and thought, 'this looks really interesting'. Many skills are transferable from the automotive industry and a lot of automotive technicians have moved into the renewable energy sector because they need the mechanical skillset as well as A-grade electricians. They run crews of both."**

# Asia Pacific Renewable Energy Training Centre (APRETC) Gippsland

Victoria is the first state in Australia to develop offshore wind capability, with a number of facilities in development off the coast of Gippsland in the state's east.

The Gippsland Regional Energy Zone was declared in August 2021, and Gippsland is also the first place in Australia to have an Offshore Wind Declared Area, announced in 2022. These initiatives play a crucial role in establishing the necessary energy infrastructure for transitioning the state towards a renewable energy framework and achieving net zero targets.

Based on our APRETC facility in Western Victoria, we are working closely with the international wind energy industry to develop APRETC Gippsland. This training facility is being established in response to the forecast demand for a skilled workforce needed to support growth of the renewable energy industry in Gippsland.

APRETC Gippsland builds on existing capabilities of Federation in electrical and renewable energy engineering as well as working with industry in areas such as course design, content, work placements and development of industry accreditations.

APRETC Gippsland Stage 1 will be a state-of-the-art facility encompassing teaching spaces for higher education, simulators and a research centre all co-located with industry partners to support the offshore wind industry, and other clean energy technologies, e.g. hydrogen, solar, onshore wind and geothermal.

Stage 2 will also include a hydrogen fuel cell training facility, which will have state-of-the-art training systems supporting laboratory activities for specialised higher education programs in electrical, mechanical and chemical engineering aspects of hydrogen fuel cell technologies.



More information on the wide range of new energy projects in the Gippsland region can be found at: [gippslandnewenergy.com.au](http://gippslandnewenergy.com.au)

**To support the establishment of APRETC Gippsland, Federation has signed partnerships with four energy companies who are currently bidding for offshore contracts, with six more currently in progress.**

In addition, Federation's work with these partners in offshore wind forms the basis of our bid to establish an Australian Research Council Industrial Transformation Training Centre, which will enable us to train the next generation of researchers in wind technology.

## Victoria's offshore wind energy targets\*

<b>2GW</b>	by 2032, enough to power 1.5 million homes
<b>4GW</b>	by 2035
<b>9GW</b>	by 2040

\* Legislated March 2024  
(Source: Planning Victoria / Offshore wind energy)

With strong winds coming off the Bass Strait and a skilled local workforce that has a long history in the electricity sector, Gippsland is the ideal location for Australia's offshore wind industry to be developed.



Renewable energy requires global collaboration to find solutions that connect local action to worldwide expertise.

Our international industry and research partnerships are vital to the work we do, and we welcome further opportunities to collaborate on the global transition to new energy.

## Contact

For enquiries about partnering with Federation University on new energy transition training, research and other projects, contact:

### **Leigh Kennedy**

Associate Deputy Vice-Chancellor, Engagement  
Federation University Australia

[advce@federation.edu.au](mailto:advce@federation.edu.au)



Federation.edu.au  
1800 333 864 (1800 FED UNI)  
International phone: +61 3 5327 9018

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