

Decarbonisation pathways guide

Australian Capital Territory



Acknowledgement

We acknowledge Aboriginal and/or Torres Strait Islander peoples as the Traditional Custodians of our land and its waters. Ninti One Limited and our project partners wish to pay respects to Elders, past and present, and to the youth, for the future. We extend this to all Aboriginal and/or Torres Strait Islander people reading this document.

Use of sensitive terms

The terms 'Aboriginal and/or Torres Strait Islander', 'Aboriginal', 'Indigenous' and 'First Nations' may be used interchangeably throughout our resources. Using these terminologies, we seek to acknowledge and honour diversity, shared knowledge and experiences as well as the right of stakeholders to define their own identities.

Appreciation

Ninti One gratefully acknowledges the contribution of our project partners Alinga Energy Consulting, Community Works, Humanitarian and Development Consulting Pty Ltd, Building Indigenous Capability Pty Ltd and consultants Dr Dan Tyson and Alanna Reneman to the First Nations Engagement in the Transition to Net Zero project and the development of this resource.

We sincerely thank the Cultural Safety in the Decarbonisation Transition Reference Committee for their invaluable guidance and support throughout the project.

We also extend our heartfelt thanks to all the people who generously shared their time and perspectives during the consultation process – your voices are at the heart of this work.

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Disclaimer

This resource has been compiled using a range of materials. While care has been taken in its preparation, Ninti One and its partners accept no responsibility for the accuracy or completeness of any material contained in this document. All parties involved disclaim all liability to any person in respect of anything, and of the consequences of anything done or omitted to be done by any such person in reliance (whether wholly or partially) upon any information presented in this document.





Artwork story

This artwork is a story that incorporates the project First Nations Engagement in the Transition to Net Zero. It represents the various pathways First Nations people might take to find their feet in a secure workforce.

Each step of the way – from starting out, to becoming successful and eventually guiding the younger generations – is a journey in itself.

Firstly, people will hear about a job and decide if it is right for them. If this is the path they'd like to take, the next step of this journey is getting skilled up and landing the job. Once the job is secured, they will settle in and ultimately grow and thrive, in order to eventually teach new ones coming through.

Each pathway and section of the design has plenty of community symbols. This represents the support of those who are encouraging and helping to build confidence for these First Nations peoples.

About the artist – Kirralee Costelloe

My name is Kirralee Costelloe, and I am a proud Mandandanji / Noonuccal Woman who was born and raised in Rockhampton, Queensland. My art journey started about 7 years ago when I decided to carry on my Elder's legacy of painting and create my own, for my people, for my family and for myself. I thrive when I'm meeting new people in my community and having the opportunities to teach them about my story, while also creating art for them in many different ways.

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Introduction

The Australian Government is working to accelerate the development of clean energy and the skills and capabilities needed to support Australia's transition to net zero. As part of this, increasing participation of First Nations peoples in the decarbonisation workforce has been identified as a priority.

To inform this work, the Department of Employment and Workplace Relations engaged Ninti One Limited to research the opportunities and barriers for First Nations people in accessing training and employment in the decarbonisation workforce.

This research also assessed existing cultural safety measures and identified practical opportunities to create safer, more supportive environments for First Nations learners and workers.

Ninti's research involved extensive engagement with First Nations peoples, organisations, employers, training providers and government stakeholders, with more than 100 consultations conducted nationally.

The project findings are designed to inform the development of tools and resources that will help industry, training providers and government better support participation of First Nations people in Australia's future decarbonisation workforce.

This guide also supports the objective identified in the Australian Government [First Nations Clean Energy Strategy 2024-30](#) (the Strategy) to grow the clean energy workforce, including the priority actions to:

- Coordinate First Nations clean energy workforce development
- Improve First Nations workforce readiness
- Develop a First Nations clean energy job guide

The Strategy was developed through engagement with more than 1,200 people across Australia, including First Nations peoples, industry, government and non-government organisations.

About this guide

First Nations people have long cared for Country – managing resources, protecting ecosystems and passing down knowledge across generations. Now, as the ACT transitions to clean energy, there's an opportunity for mob to lead again – not just by joining the workforce, but by shaping how this sector grows. From rooftop solar in homes to battery storage and electrification of government buildings, decarbonisation work is already happening in the places mob live, work and belong.

Across the territory, new jobs are opening up in solar, batteries, electrical upgrades and energy efficiency retrofits. This includes work on public and community housing upgrades, school energy efficiency programs and small-scale battery installations. There's strong demand for licensed electricians as Canberra leads the shift to all-electric buildings and 100% renewable power.

This document gives details about 3 different jobs that have important roles to play in decarbonising industries in the ACT. These jobs are electrician, electrical engineer and environmental engineer.

The guide will help you explore these roles and see where you fit. For each job, you'll find:

1. a clear explanation of what the role involves
2. a description of why it matters for mob – including how it supports community, protects Country and creates opportunities to walk between 2 worlds
3. out what skills and training are needed, and how to get them
4. the requirements for site readiness, licensing or registration
5. what support is available – including mob-led programs and services
6. where the jobs are across ACT
7. step-by-step guidance to help you take the next step.

This isn't just about joining the clean energy transition – it's about making sure our mob are at the centre of it. Leading, not following. Building futures that are strong, grounded and ours.

Electrician



What's the job?

Electricians (or “sparkies”) install, fix, and test wiring and electrical systems – from homes and commercial buildings to renewable energy projects like solar farms and battery storage. In the ACT, electricians are in high demand as the territory upgrades housing, installs solar and battery systems through government programs, and supports its 100% renewable electricity target. This is skilled, hands-on work with clear steps to get qualified, strong job security and good pay. For mob, it's a trade you can carry with you – on Country, in the city, or across regions – with real opportunities to grow over time.

Why it matters for mob

Electricians are at the heart of the energy transition. It's a hands-on job that lets you work anywhere while helping power up communities. For mob, becoming a sparkie is about more than income. It's about building independence, growing skills, and staying connected to Country through meaningful, practical work.

This job suits you if you ...

- like working with your hands and solving problems
- are focused and careful – safety matters
- enjoy being outdoors or working in different environments
- are up for a challenge and willing to learn new things
- have or can get a driver's licence (needed to travel between sites and onsite).

Add-ons to get site-ready

- White Card (construction safety training) – required before going onsite
- CPR and low voltage rescue training – updated yearly
- Working at heights / first aid training – often required by employers
- Solar Accreditation Australia (SAA) accreditation – required to install solar or battery systems
- Asbestos Awareness Training – mandatory for construction work in the ACT.

A day on the tools

You'll be indoors and outdoors, sometimes up ladders, on rooftops or in tight spaces. Strong safety habits and team communication are key.



Start early

Safety briefing, gear check and plan for the day.



Head to site

Could be a housing upgrade, battery install or solar job.



Get to work

Run cables, install systems, check circuits or troubleshoot faults.



Wrap up

Test the system, make it safe, record the job and pack down.

What you'll learn (training and qualifications)

Certificate II in Electronics

A 6-month pre-apprenticeship at Canberra Institute of Technology (CIT) – learn the basics and see if it's for you.

Certificate III in Electrotechnology Electrician

A 4-year paid apprenticeship mixing hands-on site work and classroom study (usually delivered in person, often weekly or in blocks – some providers offer regional delivery or travel support if needed). You'll learn how to wire homes, fix faults and work on clean energy sites.

Electrician's License

Once you finish your apprenticeship, you apply to Access Canberra to get licensed. This lets you work on your own and take on bigger jobs.

Career pathways

There are many directions you can take once you're qualified. Here are some roles you might step into as you gain experience:

Lead hand or supervisor

Run jobs and guide apprentices.

Solar or battery tech

Specialise in clean energy systems.

Inspector or compliance officer

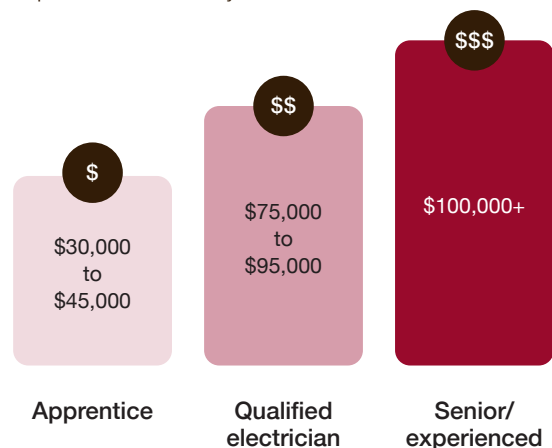
Check safety and quality.

Start your own business

Become your own boss.

What you can earn

Pay will depend on your level of experience and nature of the role, but here's a general guide for what you can expect to earn each year:



Where the jobs are (ACT hotspots)

Region	Opportunities
1. Canberra Metro	Solar and battery installs under the ACT Government's Sustainable Household Scheme and Home Energy Support Program
2. Inner North and South	Commercial retrofits, public building electrification, and EV charger installs
3. Gungahlin and Tuggeranong	Housing upgrades and energy efficiency projects aligned with ACT's Climate Change Strategy

Jobs in the decarbonisation workforce are also located outside of these hotspots, visit the [First Nations Clean Energy Network](#) to explore local projects involving mob.



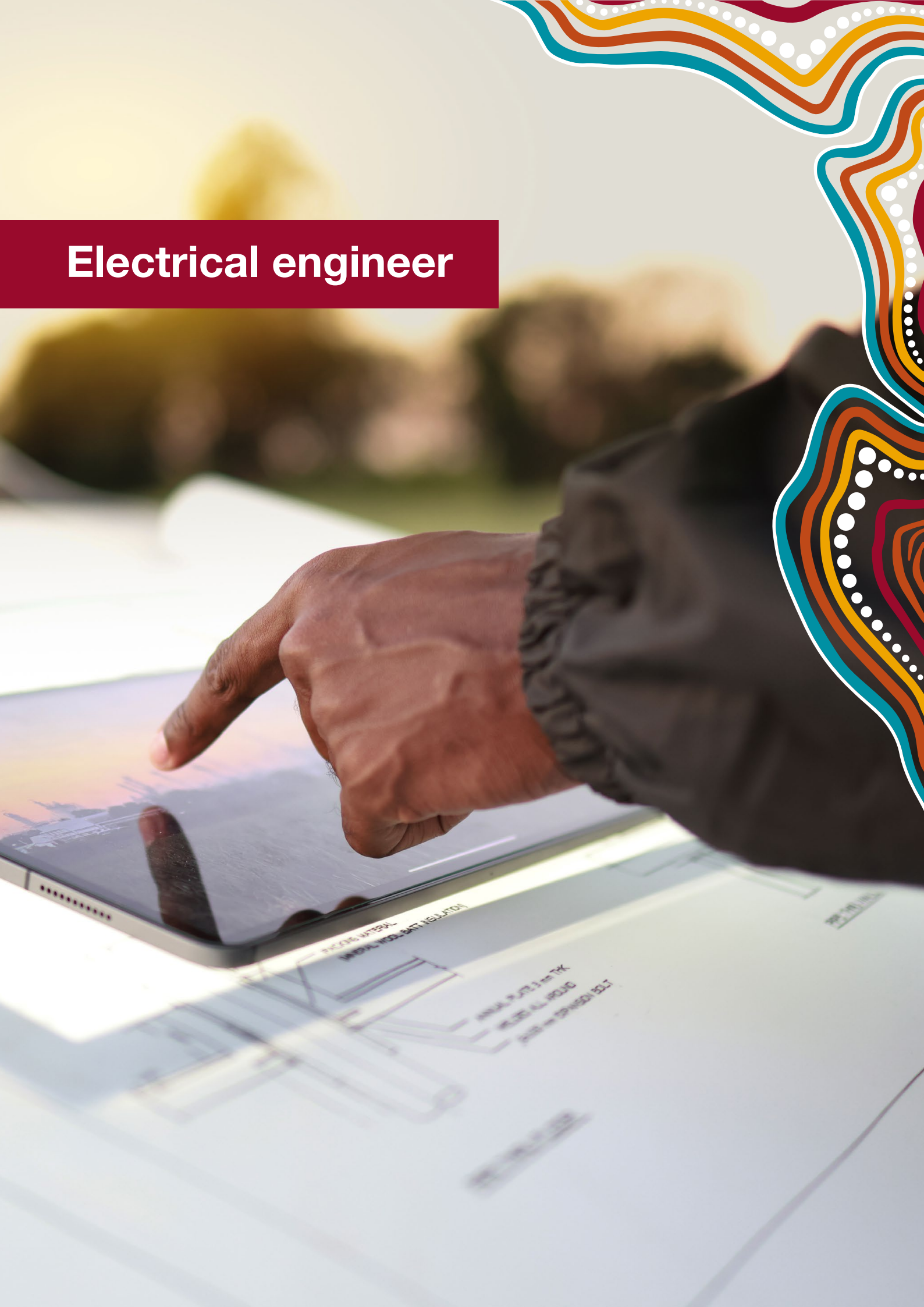
How to get started (step-by-step)

1. Get your [driver's licence](#) – essential for traveling to job sites
2. Get your [White Card](#) – complete construction safety training (needed before going on-site)
3. Enrol in Certificate II – do the Certificate II through CIT to get the basics
4. Apply for an electrical apprenticeship – use Australian Apprenticeship Support Network Providers to search for paid apprenticeships near you
5. Complete Certificate III – do the Certificate III in Electrotechnology Electrician over 4 years while working
6. Get your Electrician's Licence – apply through Access Canberra once qualified
7. Add extra training – courses like Working at Heights or Solar Installation open more doors
8. Apply for jobs – search job boards (like Seek), contact local solar companies, or ask TAFE/ job providers about employers hiring mob
9. Gain experience – work under experienced technicians to build practical skills
10. Advance your career – pursue further certifications, mentorship and take on more responsibilities

Need help getting there?

- [CIT Yurauna Centre](#) – tutoring, wellbeing and cultural support for Aboriginal and Torres Strait Islander students
- [Aboriginal Employment Strategy \(AES\)](#) – helps mob get apprenticeships and support through the trade
- [Australian Apprenticeship Support Network Providers](#) – can help connect mob with employers and apprenticeships in the ACT
- [New Energy Apprenticeships Program](#) – get up to \$10,000 for gear, tools and travel

Electrical engineer



What's the job?

Electrical engineers design and manage the systems that generate, store and move electricity, including grid infrastructure as well as solar, battery and electrification systems. In the ACT, engineers play a key role in managing distributed energy, supporting the all-electric building transition, and planning upgrades for EV chargers and energy efficiency retrofits. Some roles are hands-on and based onsite, while others focus on design, modelling and planning. For mob who enjoy systems thinking, problem solving and leadership, this is a strong pathway with growing opportunities.

Why it matters for mob

The clean energy transition needs systems designed to work for Country, not just for industry – and mob are best placed to help lead that change. As an electrical engineer, you will shape how energy is shared and how it fits with the land it crosses. This role gives mob the technical standing to embed First Nations thinking into every wire and flow of energy. It's a chance to build systems that reflect your values, support your community and show the next generation what leadership looks like in the energy space.

This job suits you if you ...

- are good at maths and science – good with systems, numbers or logic
- enjoy solving problems and thinking through how things work
- are comfortable using computers and digital tools
- want to work indoors and outdoors, in teams or solo
- can stay organised and manage competing deadlines.

Add-ons to get site-ready

- White Card (construction safety training) – required before going onsite
- First aid – often required before starting
- Working at heights / elevated work platform – depends on the site.

A day on the tools



Start early

Check-in, review design plans, safety briefings or team updates.



Head to work

You'll split time between the office and onsite; some jobs are hands-on, others are more about planning and design.



Get to work

Design or problem-solve; work on a solar grid layout, battery connection or fixing a system fault; visit site or test systems and use tools or software to test equipment or supervise installations; collaborate with electricians, technicians, managers or Traditional Owners to find the best solutions.



Wrap up

Finalise documents, write reports or prepare for the next stage of the project.

What you'll learn (training and qualifications)

Main pathway – university degree

Finish Year 12 (not essential, but it helps): take general maths, English and preferably physics or engineering studies.

Bachelor of Engineering (Electrical)

A 4-year degree offered at Australian National University (ANU). The ANU also offers flexible double degrees and the ANU Tjabal Indigenous Higher Education Centre for Aboriginal and Torres Strait Islander students.

Graduate program or entry-level job

Most mob start out in graduate engineering programs – working while learning on the job. You'll keep building experience under supervision before taking on bigger projects.

Chartered/registered engineer (CPEng, NER or RPEQ)

Apply to [Engineers Australia](#) if you want to become chartered (CPEng) or register on the National Engineering Register – this is not required to start but can support leadership or regulatory roles.

Alternate pathway – TAFE to university or technician training

Start with the [Diploma of Engineering - Technical](#) at Canberra Institute of Technology (CIT). This can lead to university later or to technician roles working alongside engineers.

Career pathways

There are many directions you can take once you're qualified. Here are some roles you might step into as you gain experience:

Design engineer

Plan new energy systems, tools or equipment.

Project engineer

Run onsite builds and manage contractors.

Electrical safety officer

Make sure worksites follow safety rules.

Control systems engineer

Work on smart grids, automation or robotics.

Energy systems engineer

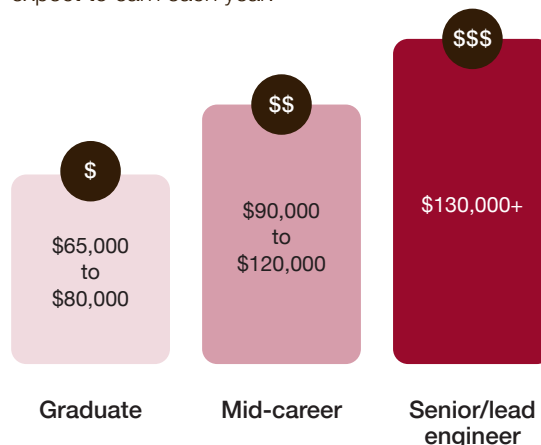
Plan how renewables connect to the grid.

Manager or director

Lead teams, mentor others, shape strategy.

What you can earn

Pay will depend on your level of experience and nature of the role, but here's a general guide for what you can expect to earn each year:



Where the jobs are (ACT hotspots)

Region	Opportunities
1. Canberra Metro	Battery storage projects, smart grid development and public sector energy efficiency upgrades
2. Belconnen and Tuggeranong	EV charging infrastructure, solar and battery installations on public buildings
3. Gungahlin and Inner North	Electrification of new housing developments, distributed energy management roles

Jobs in the decarbonisation workforce are also located outside of these hotspots, visit the [First Nations Clean Energy Network](#) to explore local projects involving mob.



How to get started (step-by-step)

1. Finish Year 12 – ideally with maths, English and science subjects
2. Apply for a Bachelor of Electrical Engineering – e.g. through [UAC](#) or direct entry to ANU
3. Apply for scholarships or university access programs if needed – see Aurora or ANU Indigenous support
4. Start university or a diploma – join mob support programs and stay connected
5. Apply for internships through [CareerTrackers](#) or university partners
6. Finish your course and apply for a graduate job
7. Keep learning on the job – get mentoring and grow your skills
8. Work towards becoming a senior engineer or project leader
9. Give back – mentor others, share your story, lead change

Need help getting there?

- [Aurora Foundation](#) – mentoring and academic support for mob at university
- [CareerTrackers](#) – paid internships and wraparound support for First Nations students
- [CIT Yurauna Centre](#) – tutoring, wellbeing and cultural support for Aboriginal and Torres Strait Islander students
- [ANU Tjabal Indigenous Higher Education Centre](#) – academic, wellbeing and mentoring support for mob studying at ANU
- [National Indigenous STEM Professional Network](#) – mentoring, professional networking and connection to career pathway opportunities
- [Aboriginal and Torres Strait Islander Engineers Group](#) – networking and support from mob in the field



Environmental engineer

What's the job?

Environmental engineers protect Country during energy development. You might assess the impact of a solar or wind farm, plan erosion controls, help with infrastructure planning or work on water management. In the ACT, clean energy and public infrastructure projects must meet strict environmental standards, and skilled workers are needed to ensure these projects reduce harm and respect Country. This is a role that combines science, systems thinking and two-way knowledge – working alongside communities, Traditional Owners and government to ensure energy projects are done right.

Why it matters for mob

Environmental engineers sit in a powerful position: between science and Country, between government and community, between what is and what could be. For mob, this is more than a job. It's a way to walk in 2 worlds with strength. You'll have the tools to assess impacts, shape decisions and guide how development happens not just after the fact, but right from the start. In the decarbonisation space, where new projects are being rolled out on Country at speed, your voice is needed to slow things down, ask the right questions and make sure care comes before construction. This is how mob protect what matters: not just by resisting change, but by redesigning it.

This job suits you if you ...

- are interested in science, nature and systems thinking
- are committed to protecting land, water and community
- communicate well and can work with mob, scientists and industry
- have strong values and a problem-solving mindset
- are keen to work outdoors and in team environments.

Add-ons to get site-ready

- White Card – required for construction sites
- First aid – often needed for field work
- Driver's licence – important for travel to regional or remote sites.

A day on the tools



Start early

Plan and review project goals, maps and environmental reports.



Head to work

You might be assessing soil, monitoring water or meeting with Traditional Owners.



Get to work

Model solutions, design systems or review risks.



Wrap up

Write up findings, prepare reports and designs, brief other project teams, provide advice.

What you'll learn (training and qualifications)

Main pathway – university degree

Finish Year 12 (not essential, but it helps): take general maths, English and preferably physics or engineering studies.

Bachelor of Engineering (Environmental)

A 4–5-year university degree. In the ACT, this is offered by Australian National University – Bachelor of Engineering (Honours in Environmental Engineering) with a strong interdisciplinary focus. The ANU also offers flexible double degrees and the ANU Tjabal Indigenous Higher Education Centre for Aboriginal and Torres Strait Islander students.

Graduate program or entry-level job

Most mob start out in graduate engineering programs – working while learning on the job. You'll keep building experience under supervision before taking on bigger projects.

Chartered/registered engineer (CPEng, NER or RPEQ)

Apply to [Engineers Australia](#) if you want to become chartered (CPEng) or register on the NER – this is not required to start but can support leadership or regulatory roles.

Alternate pathway – TAFE to university or technician training

Start with a Certificate III in Conservation and Ecosystem Management or [Diploma of Engineering - Technical](#) at CIT. These can lead to university later or to environmental technician roles working alongside engineers.

Career pathways

There are many directions you can take once you're qualified. Here are some roles you might step into as you gain experience:

Site environmental adviser

Monitor projects on the ground.

Senior engineer

Lead assessments or impact studies.

Project lead

Manage environmental inputs for infrastructure builds.

Policy or planning adviser

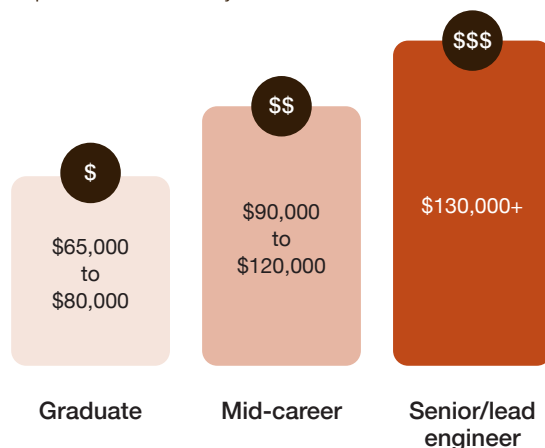
Help shape environmental decisions at government level.

Specialist consultant

Focus on water, biodiversity or cultural heritage.

What you can earn

Pay will depend on your level of experience and nature of the role, but here's a general guide for what you can expect to earn each year:



Where the jobs are (ACT hotspots)

Region	Opportunities
1. Canberra Metro	Environmental planning and review of public infrastructure, energy efficiency upgrades and solar/battery projects on government buildings
2. Inner North and Belconnen	Water management, urban greening, biodiversity offset planning, and climate resilience projects tied to ACT's Climate Change Strategy
3. Tuggeranong and Molonglo	Environmental assessment of new housing developments and electrification initiatives

Jobs in the decarbonisation workforce are also located outside of these hotspots, visit the [First Nations Clean Energy Network](#) to explore local projects involving mob.



How to get started (step-by-step)

1. Finish Year 12 – ideally with maths, English and science subjects
2. Apply for a Bachelor of Electrical Engineering – e.g. through [UAC](#) or direct entry to ANU
3. Apply for scholarships or university access programs if needed – see Aurora or ANU Indigenous support
4. Start university or a diploma – join mob support programs and stay connected
5. Apply for internships through [CareerTrackers](#) or university partners
6. Finish your course and apply for a graduate job
7. Keep learning on the job – get mentoring and grow your skills
8. Work towards becoming a senior engineer or project leader
9. Give back – mentor others, share your story, lead change

Need help getting there?

- [Aurora Foundation](#) – mentoring and academic support for mob at university
- [CareerTrackers](#) – paid internships and wraparound support for First Nations students
- [CIT Yurauna Centre](#) – tutoring, wellbeing and cultural support for Aboriginal and Torres Strait Islander students
- [ANU Tjabal Indigenous Higher Education Centre](#) – academic, wellbeing and mentoring support for mob studying at ANU
- [National Indigenous STEM Professional Network](#) – mentoring, professional networking and connection to career pathway opportunities
- [Aboriginal and Torres Strait Islander Engineers Group](#) – networking and support from mob in the field



Other information

Getting job-ready

Need a birth certificate?

Local legal aid services or your land council can help so you can apply for ID and Working With Children Checks.

Worried about a police check or Working With Children Check?

Some jobs still accept you – check first before ruling yourself out.

No car or licence?

Some training programs offer lessons or help you get your licence – ask your job provider or TAFE.

Need gear or tools?

Programs like the New Energy Apprenticeships can help with uniforms, boots, and other job cost.

No internet or a computer?

Try your local land council, library or job hub for help getting online, writing and printing or applying for jobs.

Need help with people skills or confidence?

Programs can help with communication, teamwork or speaking up onsite. These are called job-ready skills and they matter too – ask your job provider or TAFE for support.

Unsure what's right for you?

Pre-employment programs, short courses or workshops can help you test it out before committing.

Living away from home

DIDO/FIFO

Some roles involve flying or driving to site for 1–3 weeks, then coming home for breaks.

Relocation help

Some employers may offer support or grants to help you move closer to work or training.

Accommodation support

You might stay in camp-style housing, share housing or access subsidies.

Cultural safety at work

Some employers offer yarning circles, support staff or Elders – look for places that value mob.

Homesickness and wellbeing

It's normal to miss home. Many programs now offer mental health and cultural support, especially for young workers.



Programs just for mob

Entry pathways and outreach

- [Powering Up Workshops](#) – learn about jobs, projects and opportunities near you
 - [Aurora Indigenous Pathways Portal](#) – scholarships, mentoring and support programs for First Nations students
 - [PowerMakers Program](#) – helps grow mob into leaders in clean energy
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Apprenticeships and vocational support

- [Aboriginal Employment Strategy \(AES\)](#) – support to get and stay in apprenticeships
 - [Busy at Work First Nation's Apprenticeships](#) – culturally sensitive support for First Nations apprentices, partnering with local organisations to empower apprentices and employers
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Higher education and university support

- [CareerTrackers](#) – paid internships and wraparound support for First Nations students
 - [Aurora Foundation](#) – university access and mentoring programs
 - [CIT Yurauna Centre](#) – cultural, academic and personal support for Aboriginal and Torres Strait Islander students
 - [ANU Tjabal Indigenous Higher Education Centre](#) – mentoring, tutoring and wellbeing support
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Mentoring and professional networks

- [National Indigenous STEM Professional Network](#) – mentoring and networking in STEM fields
- [Engineers Australia Indigenous Chapter](#) – networking and support from mob in the field
- [Indigenous Skills and Employment Program \(ISEP\)](#) – local programs connecting mob to jobs, training and support

Other support

- [New Energy Apprenticeships Program](#) – up to \$10,000 support for apprentices in clean energy
- [Apprenticeship and traineeships](#) – an online resource to help people explore and connect with apprenticeship and traineeship opportunities available across ACT

