

# CAREERS WITH STEM™

## NET ZERO

DOUBLE  
ISSUE  
FLIP FOR  
ENGINEERING  
CAREERS

**Awesome  
apprenticeships**

**p4**

**Design cars  
of the future**

**p6**

**Join the green  
energy boom**

**p8**

**ALTERNATIVE  
ENERGY  
ENGINEER**

CAREERSWITHSTEM.COM





# Be workforce ready for the jobs of tomorrow

UTS Engineering and IT graduates are next-generation leaders with innovation and entrepreneurship skills in new and emerging fields. Take your place at the forefront of technology with degrees that provide a hands-on approach to learning within our globally recognised teaching facilities.

As Australia's leading university in computer science and engineering\*, you will benefit from a degree that has been co-designed with renowned academics and leading industry partners, all on a campus in the heart of Sydney's Tech Central.

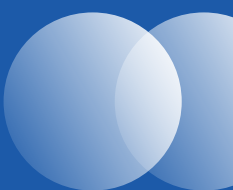
**Learn more about where a degree at the UTS Faculty of Engineering and IT can take you.**



Engineering



IT





# HOT JOBS IN NET ZERO

Getting to net zero carbon emissions is creating lots of new STEM careers

**S**o what even is 'net zero', you ask? Net zero means balancing the amount of greenhouse gases, like carbon dioxide, released into the atmosphere with the amount removed.

The goal is to stop adding more greenhouse gases than the Earth can handle, helping to combat climate change and protect our environment for the future. And in Australia, the government has committed us to reaching net zero by 2050.

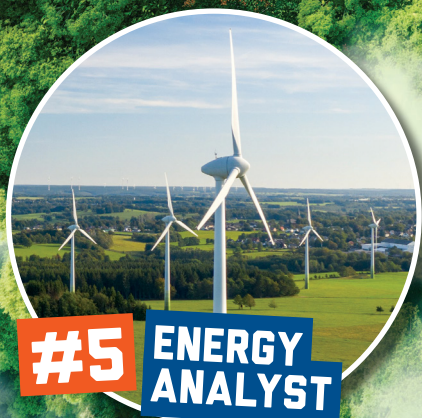
Reaching this goal will involve reducing emissions from sources like cars and factories and removing more carbon from the atmosphere, including through tree planting and carbon capture technologies.

In sectors like energy, transport, agriculture and mining, helping Australia to reach net zero will create new jobs for STEM graduates. In fact, consulting firm Deloitte is predicting more than 300 million additional 'Green Collar' jobs could be created by 2050. Here are six to consider! — Charis Palmer

#3

## ENVIRONMENTAL SCIENTIST

These scientists study the environment and develop plans to manage natural resources sustainably.



#5

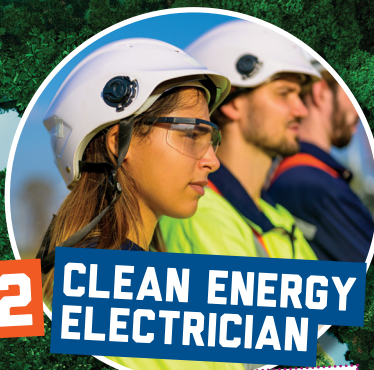
## ENERGY ANALYST

As new forms of renewable energy are plugged into the grid, it's energy analysts that are helping ensure things flow smoothly.

#1

## RENEWABLE ENERGY ENGINEER

Want to help design and develop new energy systems like solar, wind and hydroelectric power? Renewable energy engineers are at the forefront here!



#2

## CLEAN ENERGY ELECTRICIAN

If being stuck in front of a screen isn't your thing, but you still want to be part of our clean energy future, then an electrician qualification could be your jam.



#4

## GREEN CHEMIST

Green chemists focus on making all products that come from chemical manufacturing in the safest and most sustainable manner. That includes ensuring new chemicals use renewable resources in their production.

#6

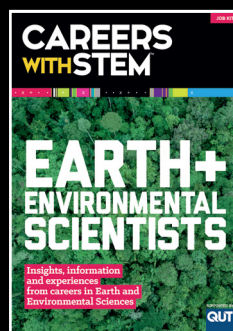
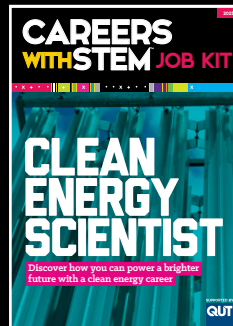
## GREEN TRANSPORT ENGINEER

You might be a chemical engineer like our cover star Doha (page 7) working on a new hydrogen car engine, or a sustainable systems engineer like award-winning designer Alex (page 9) making electric vehicles more accessible.

### NET ZERO JOB KITS



For more deets on these jobs and the grads who are doing them check out [bit.ly/renewable-jobs](https://bit.ly/renewable-jobs) or have a read of these job kits. Find them all via the QR code.





# Uni or not? Your choice

There are many pathways to a fulfilling career working on the energy transition

**D**o you want to help Australia transition to cleaner, renewable energy but aren't sure what to study after school? The good news is there are lots of roads you can take in this area of STEM. Below, we look at different paths into renewable energy engineering via uni and VET.

Once you've hatched your major plan, you can research degrees at universities and TAFEs that offer your chosen speciality. Take note of any prerequisites they might have. Lots of engineering degrees require that you've studied Year 12 physics and maths (usually extension 1).



## TEAM UNI

So you want to get an engineering degree? Awesome! Engineering majors related to renewable energy include:

- **CHEMICAL**
- **ENVIRONMENTAL**
- **ELECTRICAL**

Or you could choose a straight Bachelor of Renewable Energy Engineering.

## VET IS FOR ME

Not keen on going to uni or want a more hands-on renewable energy gig? Check out TAFEs for more info on the below renewable energy study options, plus many more.

- Certificate II or III in Electrotechnology
- Certificate II in Sustainable Energy
- Certificate III in Light Vehicle Mechanical Technology (Apprenticeship)
- Certificate III in Engineering (Mechanical Trade)
- Certificate IV in Engineering (Pathway)
- Diploma of Renewable Energy Engineering

## HYDRO HERO

**ELECTRICIAN KATRINA RUSSELL WORKS FOR HYDRO TASMANIA, AUSTRALIA'S LARGEST GENERATOR OF RENEWABLE ENERGY. SHE GOT THERE THANKS TO AN APPRENTICESHIP!**

**K**atrina came across Hydro Tasmania's apprentice program when she was doing general research into apprenticeships.

"After looking at their website and finding out about the production of electricity within Tasmania, it sparked my interest in wanting to work in renewable energy," she says.

During her apprenticeship, Katrina worked alongside tradespeople and engineers to install, test, maintain and repair Hydro Tasmania's electrical equipment. Now a qualified electrician, she's currently refurbishing a generator at Tasmania's Poatina Power Station.

For anyone considering an apprenticeship, she recommends attending open days at TAFEs or colleges to find one that suits you. — Louise Meers

**KATRINA RUSSELL**  
ELECTRICAL TECHNICIAN

**READ KATRINA'S FULL STORY AT [CAREERSWITHSTEM.COM/PROFILES/ELECTRICIAN](https://careerswithstem.com/profiles/electrician)**

CERTIFICATE II IN ELECTROTECHNOLOGY, LAUNCESTON COLLEGE

BASIC AERONAUTICAL KNOWLEDGE CERTIFICATE, LAUNCESTON COLLEGE

TASMANIAN CERTIFICATE OF EDUCATION, LAUNCESTON COLLEGE

PUBLIC SERVANT, DEPARTMENT OF FINANCE

ELECTRICAL APPRENTICESHIP, HYDRO TASMANIA

CERTIFICATE III IN ELECTROTECHNOLOGY, TASTAFE

GENERATIONAL TECHNICIAN - ELECTRICAL, HYDRO TASMANIA



# THE POWER OF INTERNSHIPS

AFTER JUMPING ON AN ENGINEERING STUDY PATH, **LUVHA SHRESTHA** SPECIALISED IN ELECTRICAL TO MAKE A REAL IMPACT ON TACKLING THE CLIMATE CRISIS

Luvha is currently studying a Master of Professional Engineering (Electrical and Electronic Engineering) and has just completed an electrical engineering internship at Horizon Power – an opportunity she scored through The Australian Power Institute (API).

One of the coolest parts of the internship was going onsite to commission standalone power system equipment. “Commissioning is always really interesting because it involves lots of problem-solving and executing the work you’ve been doing in the office, which is very fulfilling.”

Luvha says there are lots of opportunities to design and optimise systems that integrate new renewable energy sources into the grid. If you’re pursuing a career in this field, she recommends taking advantage of programs like the API Power UP Scholarship, and leadership development programs like the API POWERful Women program. “This not only connects you with companies for placements, but also provides lots of opportunities to be actively involved in the industry.” – Louise Meers

**LUVHA SHRESTHA**  
ELECTRICAL ENGINEERING STUDENT

BACHELOR OF SCIENCE (ENGINEERING SCIENCE AND MANAGEMENT), UNIVERSITY OF WESTERN AUSTRALIA

MASTER OF PROFESSIONAL ENGINEERING (ELECTRICAL AND ELECTRONIC ENGINEERING), UNIVERSITY OF WESTERN AUSTRALIA (ONGOING)

TECHNOLOGY UNDERGRADUATE INTERN, BHP

REFINERY ELECTRICAL ENGINEERING INTERN, ALCOA

RELIABILITY ENGINEERING INTERN, BHP

ELECTRICAL ENGINEERING INTERN, HORIZON POWER

**API** The Australian Power Institute

## Your Future in Power Starts Here.

### For high school students:

We created **Careers in Power** to empower power-passionate students and individuals in taking their first step towards their dream career in the power sector.

### For undergraduate students:

**Power Up Program** is designed for undergraduate students wanting to **CONNECT** with industry professionals, **CREATE** innovative solutions, and take **CHARGE** of their future with exciting industry and scholarship opportunities along the way.



Exclusive invites to career-related events



Scholarship information and more



Motivating stories from university students



Profiles of inspiring people in power

### CONNECT WITH US



The Australian Power Institute



@australianpowerinstitute



The Australian Power Institute



@auspowerinstitute



www.api.edu.au



info@api.edu.au





# WHEEL-Y EMPLOYABLE

Why you should be giving net zero + transport careers the green light

**D**id you know that Australia's transport sector is the third largest source of its greenhouse gas emissions? In 2023, transport accounted for 21% of national emissions and it's currently predicted to be the largest emitting sector in Australia by 2030.

To achieve net zero, transport emissions need to be reduced. Increasing the uptake of electric and hydrogen fuel cell vehicles, and developing sustainable aviation and maritime fuels, will help.

That's where careers in engineering come in! To decarbonise the transport industry, Australia needs all kinds of engineers. Think:

- Sustainable systems engineers
- Electrical engineers
- Mechanical engineers
- Design engineers

So, if you want to save the planet AND have a future-proof job, now is the time to follow a net zero + transport study and career path! – Louise Meers



**NET ZERO +  
TRANSPORT  
+ STUDY**

Bachelor of  
**Engineering  
(Honours) /  
Bachelor of  
Commerce, UNSW**

Bachelor of  
**Engineering  
(Transport  
Engineering)  
(Honours),  
The University of  
Queensland**

Bachelor of  
**Engineering  
(Chemical  
& Process  
Engineering)  
(Honours), QUT**

**NET ZERO +  
TRANSPORT  
+ JOBS**

Transportation  
engineer  
\$69K–\$82K

Chemical engineer  
\$59K–\$112K

Mechanical design  
engineer  
\$59K–\$102K\*

\*Salaries according to  
payscale.com

**DOHA GOREISHI  
ALTERNATIVE  
ENERGY  
ENGINEER**

**DRIVEN TO SUCCEED**  
**ENGINEERING STUDENT DOHA GOREISHI IS DRIVING  
THE NEXT GENERATION OF CAR ENGINES**

Doha always knew she wanted to follow an engineering path, but was daunted by all the different specialisations on offer. “I remember thinking, ‘which one would make me the most money?’” Doha says.

After briefly studying software engineering, Doha switched to chemical engineering and hasn’t looked back. Her journey took another significant turn when she joined the Sunswift project, a student-led initiative at UNSW aimed at developing sustainable automotive technology.

“I was walking past the garage and thinking, ‘wow, these students are such dedicated engineers. That could never be me.’”

Then, when an opportunity arose to join a new chemical engineering stream within Sunswift,

Doha took a leap of faith, sent an email, and soon found herself part of a team exploring alternative energy sources for solar cars.

Currently, Doha leads Sunswift’s alternative energy department, which is focused on integrating hydrogen into the car. “We want something that’s genuinely competitive in the market,” she says.

The goal is to create a vehicle powered by solar energy, batteries and hydrogen, making it both sustainable but practical for everyday use.

Doha’s involvement in Sunswift has reaffirmed her passion for sustainability and innovation. “Finding that little niche in hydrogen has been pretty life-changing because I can definitely see myself working in that space.” – Charis Palmer

**ALTERNATIVE ENERGIES DEPARTMENT LEAD,  
SUNSWIFT RACING**

**SENIOR AMBASSADOR,  
UNSW**

**BACHELOR OF ENGINEERING (HONOURS) /  
BACHELOR OF COMMERCE, UNSW**



# POWER PLAY

Green energy is booming, so why not be part of the next gen changing our world for the better

**H**as your house or apartment building got solar panels on the roof? More than one in five homes in Australia do, which makes us a world leader in solar uptake!

And even if your place hasn't yet hooked up to solar power, chances are at least some of the energy you use comes from renewable sources, be it solar, wind or hydroelectric energy.

Australia has set a goal of getting to 82% renewable energy by 2030, and this spike in green energy is creating lots of new STEM jobs where you get the chance to work with cutting-edge technology while helping to save the planet.

The Australian government is predicting we'll need an extra 32,000 electricians alone just to achieve our renewable energy generation targets, and the clean energy supply workforce will likely need to grow from approximately 53,000 workers today to 84,000 by 2050.

There are literally dozens of jobs in clean energy – many of them listed in our A-Z of renewable energy careers. Some require a university degree, but many will work for school and TAFE graduates.

Right now our green energy workforce is mostly made up of men and First Nations people are under-represented, with the government throwing out some incentives for more people to take on clean energy apprenticeships, including up to \$10,000 over the course of their training to help with cost of living pressures. So what are you waiting for? The green energy train is leaving the station! – *Charis Palmer*

**START YOUR  
CAREER HERE**

**NET ZERO +  
GREEN ENERGY  
+ STUDY**

Certificate II or III in  
**Electrotechnology**,  
TAFE

Certificate II in  
**Sustainable Energy**,  
TAFE

Bachelor of  
**Engineering  
(Renewable Energy)**  
(Honours), UTS

Bachelor of  
**Engineering  
(Electrical and  
Electronic,  
Renewable Energy)**  
(Honours), The  
University of Adelaide

Bachelor of  
**Engineering  
(Electrical and  
Renewable Power)**  
(Honours), QUT

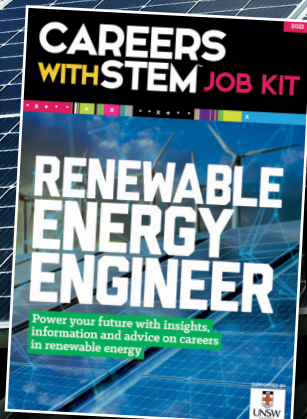
Bachelor of  
**Engineering  
(Renewable Energy)**  
(Honours), UNSW

**NET ZERO +  
GREEN ENERGY  
+ JOBS**

**Renewable energy  
engineer**  
\$56K–\$95K

**Sustainable energy  
electrician**  
\$50K–\$106K\*

\*Salaries sourced from  
payscale.com



## JOB KIT: RENEWABLE ENERGY ENGINEER

This free *Careers with STEM* job kit download is your introduction to careers in green energy engineering. Inside, you'll find deets on working in the industry, salary insights and advice from those already working in this field. **Get your copy by scanning the QR code:**





# MAKING WAVES

WANTING A CAREER THAT WOULD HELP THE COMMUNITY WHILE COMBATING CLIMATE CHANGE, **SENUKA KARIYAWASAM** DECIDED RENEWABLE ENERGY PRODUCTION TICKED ALL THE BOXES

Senuka's first step towards a climate-friendly career was enrolling in a Bachelor of Engineering (Honours) at UTS, majoring in Renewable Energy Engineering.

His favourite part of the degree (so far!) came out of group work in a subject called Engineering Projects.

"I had to form a group with four other classmates to design and present a sustainable way to provide electricity to a remote community in northern Queensland by utilising locally available resources," Senuka explains.

The group designed a system that converts the movement of ocean waves into electricity. Senuka loved the engineering challenge of finding a way to deliver energy that was unique to the location.

Senuka believes there are exciting career opportunities in emerging areas like offshore wind farms. His advice to others heading down this path is to remain motivated by remembering where you want to end up. – Louise Meers



**SENUKA KARIYAWASAM**  
RENEWABLE ENERGY  
ENGINEERING STUDENT

## SENUKA'S TOP TIP

"Always have an end goal that you are ultimately working towards. This will help you stay focused during your final high school years."



# DRIVING INNOVATION

**ALEX BURTON** CREATED AN AWARD-WINNING DESIGN THAT CONVERTS PETROL CARS INTO HYBRID CARS. AND HE'S JUST GETTING WARMED UP!

**ALEX BURTON**  
INVENTOR

Engineering and industrial design student Alex is on a mission to make electric vehicles more accessible. His cutting-edge prototype that turns regular cars into eco-friendly hybrids earned him the 2023 national award in the international James Dyson Award competition.

"Instead of taking out the whole petrol system, our REVR motors attach to the rear wheels. We add a battery in the boot and some sensors, and that's largely it," he explains.

Retrofitting regular cars with an electric system like this creates a hybrid vehicle that uses about 80% electric energy. It's one way to reduce our use of fossil fuels and get to net zero emissions.

While Alex finishes uni, he's busy making new versions of REVR and talking to investors. His future plans include working on REVR full-time and getting experience with other companies. Sounds like he's on track for an epic journey! – Danielle Lucas

BACHELOR OF ENGINEERING (SUSTAINABLE SYSTEMS ENGINEERING) (HONOURS) / BACHELOR OF INDUSTRIAL DESIGN (HONOURS), RMIT

INTERN – WORKSHOP TECHNICIAN, RAEDYNE SYSTEMS

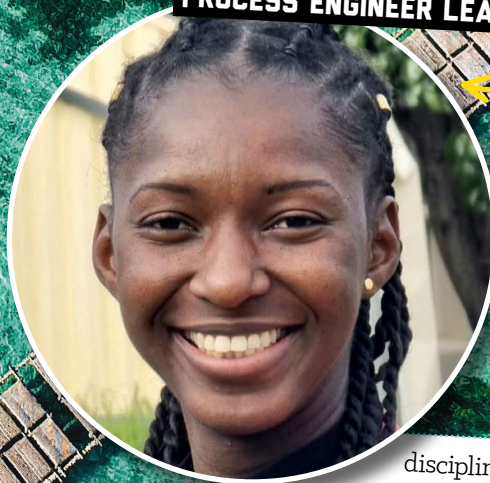
CO-FOUNDER AND CEO, REVR



# HYDROGEN HERO

**Sylvia Edifor** is using her engineering skills to help bring clean energy to the world

**SYLVIA EDIFOR**  
PROCESS ENGINEER LEAD



**G**rowing up in Ghana with a love for maths and science, Sylvia always wanted a career with impact.

"I always wanted to be an engineer, a problem-solver who could make a significant impact by finding solutions to the energy crises in Ghana, and alternate and clean energy for the world at large," she says.

After moving to Australia and choosing global engineering powerhouse the University of Adelaide to do her PhD, Sylvia is now well down the path to making a difference.

She's currently working at a startup called The Hydrogen Utility that specialises in infrastructure for green hydrogen.

As process engineer lead, Sylvia's daily role involves drafting and reviewing engineering drawings, preparing reports, engaging with other engineers, collaborating with technology partners regarding engineering designs, taking part in plant safety activities to help identify and minimise risks and working on improving the company's systems and processes.

"The coolest thing about my job is having a holistic experience working across different

disciplines that are outside my normal engineering role — one of the major advantages of working in a startup company!" Sylvia says.

Her advice to students heading to uni is to take advantage of every opportunity. At the University of Adelaide this includes internships, mentorship programs, and access to state-of-the-art facilities and software to develop your skills.

And, she says, remember that your new uni mates and lecturers will become part of your professional network.

"The university is the perfect place to start a professional career. It is important to build and maintain networks created there," Sylvia says.

As the hydrogen sector grows in popularity around the world, Sylvia says Australia offers plenty of opportunities for engineers to work with private companies and the government.

— Charis Palmer

**UNIVERSITY IS THE  
PERFECT PLACE TO START A  
PROFESSIONAL CAREER"**

PROCESS ENGINEER LEAD,  
THE HYDROGEN UTILITY

PHD IN PROCESS AND RESOURCES  
ENGINEERING, UNIVERSITY OF ADELAIDE

BACHELOR OF SCIENCE (HONOURS),  
KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY



# ENERGY TRADER

**STEPHANIE EASTON** COMBINED ENGINEERING WITH ECONOMICS TO FIND A CAREER AT THE HEART OF THE RENEWABLE ENERGY INDUSTRY

**STEPHANIE EASTON**  
ENERGY TRADER

After learning about energy generation in school, Stephanie had one big question: why can't it all be renewable?

Her search for answers led her to UNSW, the only university in Australia offering an undergraduate degree in renewable energy engineering at the time.

Fast forward 10 years, and Stephanie now leads a team of engineers, analysts and data scientists that only work with renewable energy. For someone who loves solving interesting problems, Stephanie says it's the dream job.

"There's a lot of analysis that you have to do on a day-to-day basis just to keep up," Stephanie says. That could look like forecasting electricity prices out to 40 years or working out how much to charge a customer for electricity over a fixed four-year contract.

As the world shifts towards a renewable energy future, Stephanie says there are all kinds of opportunities opening up. "For people who are passionate and curious, it's a really, really exciting field to work in." – Charis Palmer

BACHELOR OF RENEWABLE ENERGY ENGINEERING /  
BACHELOR OF COMMERCE (BUSINESS ECONOMICS). UNSW

GENERAL MANAGER, OPERATIONS CONTROL CENTRE.  
IBERDROLA AUSTRALIA

OPERATOR, OPERATIONS CONTROL CENTRE.  
IBERDROLA AUSTRALIA

EM PORTFOLIO MANAGEMENT.  
IBERDROLA AUSTRALIA

UNSW Engineering

## School of Photovoltaic and Renewable Energy Engineering



CRICOS CODE 00098G



UNSW  
SYDNEY

