

RENEWABLE ENERGY ENGINEER

ALSO KNOWN AS:

RENEWABLES ENGINEER

MECHANICAL ENGINEER – RENEWABLE ENERGY

SENIOR RENEWABLE ENGINEER

POWER THE FUTURE AND ENERGISE YOUR CAREER.

As a Renewable Energy Engineer, you'll harness the force of nature to create sustainable solutions for a cleaner, greener planet.

KEY SKILLS

Skills which may benefit anyone considering a job as a renewable energy engineer include:

- ☑ Electrical systems
- ☑ Knowledge of policies
- ☑ Project management
- ☑ Energy system modelling
- ☑ Knowledge of renewable technologies

VALUES & ATTRIBUTES

Values and attributes of anyone considering a job as a renewable energy engineer include:

- ☑ Sustainability Mindset
- ☑ Adaptable
- ☑ Collaborative
- ☑ Innovative
- ☑ Analytical
- ☑ Enterprising – "Persuader"

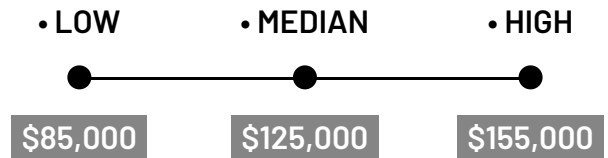
CAREER PROGRESSION

In this role, you may have the opportunity to progress to other positions. Career progression opportunities include:

- Chief Engineering Officer
- Chief Executive Officer
- Chief Operating Officer
- Chief Financial Officer

SALARY EXPECTATION

The expected salary for a Renewable Energy Engineer can vary across different areas of manufacturing and may vary as you become more experienced.



RELATED INDUSTRIES

- ▶ Renewables

RECOMMENDED SCHOOL SUBJECTS

- Agricultural Science
- Chemistry
- Engineering Skills
- Mathematical Methods
- Specialist Mathematics

CORE SCHOOL SUBJECTS

- General Mathematics
- Essential English
- Engineering
- Biology
- Physics

JOB OVERVIEW

Renewable Energy Engineers are at the forefront of the global transition to sustainable energy sources. They design, develop, and implement systems that harness renewable energy sources such as solar, wind, hydroelectric, geothermal, and biomass. These innovative professionals play a crucial role in addressing climate change, reducing dependence on fossil fuels, and creating a more sustainable energy future.

Working across various sectors, including energy production, construction, and environmental consulting, Renewable Energy Engineers contribute to projects ranging from small-scale residential installations to large utility-scale power plants. They are involved in all stages of renewable energy projects, from initial feasibility studies and system design to installation, maintenance, and optimisation of energy systems. In this role you may also be responsible for the design and development of renewable energy componentry and products.

In their daily work, Renewable Energy Engineers utilise a wide array of tools and technologies. They might use specialised software for solar panel layout and energy yield calculations, wind resource assessment tools, or advanced modelling software for hydroelectric system design. A typical day could involve analysing weather data to optimise the placement of wind turbines, designing a solar PV system for a commercial building, and collaborating with environmental scientists to assess the ecological impact of a proposed geothermal plant. These engineers often work on cutting-edge projects, from developing more efficient solar cells and advanced energy storage systems to creating smart grid technologies that integrate various renewable energy sources.

WHAT WILL YOU DO?

Your role may include duties as follows:

1. Design and develop renewable energy systems
2. Conduct feasibility studies and site assessments
3. Perform energy yield calculations and system modelling
4. Oversee installation and commissioning of renewable energy projects
5. Optimise existing systems for maximum efficiency

HOW TO BECOME A RENEWABLE ENERGY ENGINEER

Employers will look for candidates with a strong educational background and relevant experience. To become a renewable energy engineer, you typically require a bachelor's degree in a relevant area. Here are the steps to become a renewable engineer:

1. Earn a bachelor's degree in engineering majoring in renewable energy, or electrical engineering
2. Apply to work as an intern, or directly with an employer
3. Develop a strong portfolio showcasing your projects and skills
4. Continue to grow your networks within the industry

REGISTRATION

Once you have industry experience with an employer, you may be able to seek registration as an engineer. Learn more and explore the Engineers Australia's National Engineering Register (NER) and Board of Professional Engineers.

VOCATIONAL EDUCATION & TRAINING

While most engineering positions require a bachelor's degree, vocational education and training can provide a pathway and skills useful to higher level application.

PATHWAY THROUGH A TRADE

A trade certificate can be a valuable stepping stone towards university education, offering a unique blend of practical skills and industry knowledge. This pathway allows individuals to gain hands-on, real-world experience in their chosen field before transitioning to higher-level academic learning.

MANUFACTURING AND ENGINEERING PATHWAY

One trade pathway through manufacturing and engineering would be to undertake a Certificate III in Engineering – Mechanical Trade (MEM30219) or similar qualification as an apprenticeship. This qualification is designed for apprentices in the mechanical engineering trade. It covers skills in fitting, assembly, manufacture, installation, and maintenance of mechanical equipment. Another trade pathway could be through a Certificate III in Engineering – Technical (MEM30522) which would give you foundation knowledge and skill in drafting and design.

Post-trade qualifications are also available, including a Certificate IV in Engineering (MEM40119). This qualification is also undertaken as an apprenticeship.

The manufacturing and engineering pathway offers a range of higher-level qualifications, these include:

- Diploma of Engineering – Advanced Trade (MEM50119)
- Diploma of Engineering – Technical (MEM50222)
- Diploma of Engineering – Planning (MEM50522)
- Advanced Diploma of Engineering (MEM60122)
- Advanced Diploma of Engineering – Planning (MEM60322)

ELECTROTECHNOLOGY PATHWAY

You could also pursue an electrotechnology pathway by undertaking a Certificate III in Electrotechnology Electrician (UEE30820) or Certificate III in Electrical Fitting (UEE33020).

Post-trade qualifications are also available, including a Certificate IV in Electrical – Renewable Energy (UEE43322).

The electrotechnology pathway offers a range of higher-level qualifications, these include:

- Diploma of Electrical Engineering (UEE50420)
- Diploma of Electrical Systems Engineering (UEE53020)
- Diploma of Renewable Energy Engineering (UEE50722)
- Advanced Diploma of Renewable Energy Engineering (UEE60922)
- Advanced Diploma of Engineering Technology – Renewable Energy (UEE62022)

You might also consider training in sustainable operations:

- Diploma of Sustainable Operations (MSS50122)

Advanced level vocational education and training qualifications can sometimes count towards or give you entry to a university degree.

UNIVERSITY & HIGHER EDUCATION

Many universities offer programs that the skills and knowledge to enter the engineering industry. To become a Renewable Energy Engineer, you typically need:

A bachelor's degree in engineering with a major in chemical, electrical or mechanical engineering. There are a small number of universities that offer renewable energy engineering as a major

- Some positions may require or prefer a master's degree in engineering or a related field
- Ph.D. for research and development positions or university teaching roles

In addition to core engineering courses, students should focus on developing a strong foundation in physics, electrical systems, and environmental science. Courses in solar energy technology, wind power systems, and energy storage are particularly valuable. Many programs offer opportunities to work on real-world renewable energy projects, such as designing and installing solar systems for community buildings or optimising wind farm layouts. Joining student chapters of organisations like the Association of Energy Engineers can provide excellent networking opportunities and hands-on experience. Some universities also offer specialisations in areas like smart grid technology or sustainable building design, allowing students to tailor their education to specific career goals. Pursuing internships or co-op placements with renewable energy companies, utilities, or research institutions can provide invaluable real-world experience and potentially lead to job opportunities after graduation. Additionally, staying informed about the latest developments in renewable energy policy and technology trends is crucial in this rapidly evolving field.