

Renewable Energy

Overview:

Renewable energy is defined as a clean and unlimited source of power or fuel. This energy is harnessed from different sources such as sunlight (solar), wind, water (hydro), organic matter (biomass), and the earth's internal heat (geothermal). Renewable energy often provides energy in four important areas: electricity generation, air and water heating/cooling, transportation, and rural (off-grid) energy services.

Key Skills

- Data Collection and Trend Analysis
- CAD Software
- Problem Solving
- System Knowledge
- Basic Mechanical and Electrical Knowledge
- Engineering Computation Skills
- Economic Analysis
- Technical Writing
- Strong Communication Skills

Recruiting Timeline

It's crucial to research specific companies and their recruitment timelines well in advance to avoid missing out on opportunities. Generally, the Renewable Energy industry recruits on a rolling basis dependent on what projects they have and when those start and end.

Entry Level Job Examples:

Areas	Roles/Description
Solar	PV and solar thermal system installers and maintainers, building inspectors and sales consultant
Hydropower	Electrical and operations & maintenance engineers, technicians, trade persons, sustainability specialists
Wind	Project developers, service technicians, data analysts, electrical, computer, mechanical and construction engineers
Geothermal	Entry level geothermal engineers
Bioenergy	R&D and design engineers, service technicians and trainers

Potential Value of Advanced Degrees in Renewable Energy

There are many entry level positions within the Renewable Energy industry that do not require advanced degrees, and that will provide real world experience, skills development, and career growth opportunities. That said, advanced degrees, such as a MS , a MS in Renewable energy , or an adjacent degree such as Earth Systems can provide professionals with a competitive edge in the job market, and allow them to qualify for higher-level positions, earn higher salaries, and achieve greater opportunities for career growth with fewer years of full-time job experience. It's important to note, however, that obtaining an advanced degree alone may not lead to rapid career advancement without significant professional experience in the field.

Fields of Specialization/ Areas of Focus

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| <ul style="list-style-type: none">● Solar: derived by capturing radiant energy from sunlight and converting it into heat, electricity, or hot water. Photovoltaic (PV) systems can convert direct sunlight into electricity through the use of solar cells.● Wind: turns a turbine's blades, which feeds an electric generator and produces electricity.● Hydropower: relies on water, typically fast-moving water in a large river or rapidly descending water from a high point—and converts the force of that water into electricity by spinning a generator's turbine blades. | <ul style="list-style-type: none">● Biomass: organic material that comes from plants and animals, and includes crops, waste wood, and trees. When biomass is burned, the chemical energy is released as heat and can generate electricity with a steam turbine.● Tide, Wave, and Ocean Energy: power produced by the surge of ocean waters during the rise and fall of tides● Geothermal: thermal energy generated and stored in the Earth. |
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Companies and Organizations That Have Hired or Recruited at Stanford

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|------------------------------------|---|---------------------------------------|
| ● CA Water Service | ● Abraxas Energy Consulting | ● Tesla |
| ● EDF Renewables | ● Shell Oil Company | ● US Dept. of Energy. |

Pro Tips and Trends:

- **Many Opportunities:** The renewable energy industry is actually a vast group of sub-industries that offer employment opportunities for people with many different educational backgrounds. *Engineers, scientists, architects, farmers, technicians, operators, mechanics, lawyers, businesspeople, sales*

workers, human resource and public affairs specialists, as well as a host of administrative support workers make their living by researching, developing, installing, and promoting renewable energy.

- **Develop Technical Skills:** Learn about solar, wind, geothermal, and other renewable energy technologies. Gain proficiency in relevant software tools and technologies, such as MATLAB, AutoCAD, and energy modeling software.
- **Understand Energy Systems:** Gain a basic understanding of how energy systems work, including power generation, distribution, and storage.
- **Stay informed about industry trends:** Follow industry news to stay updated with the latest developments in the renewable energy sector.
- **Focus on Sustainability and environmental impact:** Gain knowledge of relevant environmental policies, regulations, and incentives that affect the renewable energy industry.
- **Promote Sustainability:** Show your commitment to sustainability by engaging in environmentally friendly practices and initiatives, and be prepared to share stories about those practices in interviews.

Experiential Learning Opportunities

- **Join clubs and organizations:** Being part of energy-related clubs or organizations on campus can provide an opportunity to connect with like-minded peers, work together on significant projects, and participate in insightful extracurricular activities that promote personal growth and learning. These organizations can be found here: [Student Clubs | Explore Energy](#)
- **Participate in competitions:** Participating in [renewable energy competitions](#). It can provide a challenging and rewarding experience that helps develop practical skills.
- **Gain real-world experience:** Employers often seek candidates with practical experience in addition to academic qualifications. Consider internships, part-time jobs, or volunteer opportunities to gain hands-on experience in Renewables. Look for opportunities at companies or organizations that align with your career interests and goals. [Handshake](#) is a great source to find these.
- **Attend industry events and conferences:** Attending [renewable energy events & conferences](#) provides opportunities to learn from industry experts & connect with professionals in the field.
- **Connect with Stanford alumni:** Stanford alumni members have a wide-ranging expertise in all major areas of Renewable Energy. You may reach out to them by using official platforms such as: [Stanford Professionals in Energy](#), [Stanford Alumni Mentoring \(SAM\)](#)

Alumni Spotlight

- Will graduated from Stanford with a B.A. in Urban Studies. Since his graduation he has worked for the Conservation Fund. He started as the Vice President for Conservation Services within this organization. He now works as the Senior vice president of Strategic Giving where he leads in advising how and where money should be invested for renewables. In order to ensure the greatest amount of clean energy is produced with the funds available.
- Naoki graduated with an M.B.A. in Business Administration. After graduating Naoki earned the position of manager of Waste Management and recycling in Japan. He then applied the skills he had learned about utilities to acquire the position he currently has, which is, Country Chair & President RWE Renewables Japan. He leads in managing the sustainable growth of Japan's reliable energy sources.
- Lynette graduated with a B.A. in Human Biology from Stanford. She went on to establish an environmental consulting firm that advised clients on environmental, communication, and organization development strategies. She aimed to help clients navigate a path to relying on renewables in an efficient way. After more than 10 years in this position she is now Chief of Staff of a tech-enabled clean energy transformation firm focused on energy efficiency, transportation electrification, and decarbonization.

Additional Resources:

- [Fact Sheet | Jobs in Renewable Energy, Energy Efficiency, and Resilience \(2019\) | White Papers | EESI](#)
- [Skills you need to succeed in green energy and sustainability jobs](#)
- [Renewable energy sources: Jobs created, skills required \(and identified gaps\), education and training](#)
- [21 Best Renewable Energy Jobs In The World](#)
- Learn more about this and related careers at [O*NET Online](#), containing occupation-specific descriptors on almost 1,000 occupations covering the entire U.S. economy.
- Gain some virtual experience at [Forage](#), a virtual work experience platform that replicates work at top companies.
- Prepare for interviews using [Big Interview](#), an online platform to hone your interviewing skills.