

# Green Energy Engineering

**STARTING SALARY: VARIES**  
**MEDIAN INCOME: VARIES**



Each of us uses energy everyday. Not only do we use energy to walk, talk, play sports, and function (all of which use calories) but we also use energy to power our cars, toast our bread, watch TV, on so on. Energy is everywhere and there are multiple forms of it. Energy can be kinetic (electrical, thermal, geothermal, nuclear, light, motion, water or sound energy) or potential (chemical, nuclear or stored energy). When energy is renewable it means that it can be re-used. For example, energy from the sun can provide power when it hits a solar panel. The sun's energy is renewable because the energy from the sun is still available even after you use it (Newton's First Law of Thermodynamics states that energy cannot be created or destroyed. It can only be transferred from one form to another.) If the same power was being provided by natural gas, once you use the gas, it is gone forever because natural gas is a non-renewable energy source.

Engineers are hard at work designing ways we can use renewable energy. Engineers in this industry are designing engines that run cleaner for improved efficiency as well as developing electric and hybrid vehicle batteries and systems. Other engineers are working to improve the efficiency of wind, water and solar power. Still other engineers are exploring the potential of future technologies utilizing wind, solar, geothermal, biofuel and wave energy sources. These need to be cultivated, expanded and implemented, as well as meeting the increased demand for greener buildings and transportation systems.

## Job Outlook

Many types of engineers can find employment as Green Energy Engineers. See Job Outlook for Environmental, Mechanical, Chemical, Materials, Manufacturing, Electrical, and/or Computer, for expected growth and opportunities.

Jobs in the green collar sector — such as solar panel and turbine manufacturing, installation, sales, research, and design are in high demand. Renewable energy technologies diversify our energy supply, reduce our dependence on imported fuels, improve air quality, offset greenhouse gas emissions and stimulate the economy. The opportunities in this sector are blossoming and will provide tremendous job security for engineers. It's a great time to be a green energy engineer.

For more information about green engineering, pick up a copy of *The Green Engineer: Engineering Careers to Save the Earth*.

# Glossary of Terms

Benefit - a good or helpful result or effect

Biodegradable - capable of decomposing rapidly under natural conditions

Biodiversity - the relative abundance and variety of plant and animal species and ecosystems within particular habitats

Bioenergy - renewable energy produced from organic matter

Biofuels - fuels made from biomass

Biosphere - the portion of the Earth and its atmosphere that can support life

Conserve - to keep something safe from being damaged or destroyed

Deplete - to use most or all of something important

Durable - staying strong and in good condition over a long period of time

Efficient - capable of producing desired results without wasting materials, time, or energy

Environment - the conditions and influences that affect the growth, health, progress, etc., of someone or something

Global - of, relating to, or involving the entire world

Holistic - relating to or concerned with complete systems rather than with individual parts

Impact - to have a strong and often bad effect on something or someone

Innovate - to do something in a new way: to have new ideas about how something can be done

Innovation - a new idea, device, or method

Monitor - to watch, observe, listen to, or check (something) for a special purpose over a period of time

Natural - existing in nature and not made or caused by people : coming from nature

Quantify - to determine, express, or measure the quantity of

Recycle - to make something new from something that has been used before

Regulation - an official rule or law that says how something should be done

Renewable - an energy source that is replenished continuously in nature or that is replaced after use through natural means

Resource - a place or thing that provides something useful

Reuse - to use again especially in a different way or after reclaiming or reprocessing

Sustainable - able to be used without being completely used up or destroyed

Toxic - containing or being poisonous material especially when capable of causing death or serious debilitation

Waste - loss of something valuable that occurs because too much of it is being used or because it is being used in a way that is not necessary or effective