



## STUDENT ACTIVATION



# Renewable Energy Engineer

## OVERVIEW

With the ever-increasing global population and the subsequent energy demands, we need professionals who can research innovative energy sources and are able to develop long term energy solutions. Those professionals are renewable energy engineers.

Renewable energy engineers research and develop methods for producing energy from renewable or sustainable sources. Some examples of renewable energy are solar power, wind power, hydropower, and geothermal energy. These engineers work on designing new machines, developing innovative processes, and discovering efficiencies, all with the goal of producing energy that has a minimal impact on the environment. Renewable energy engineers are found in all facets of sustainable energy production—project planning, research and development, equipment installation and testing, working with energy providers, and more!

## EVALUATE YOUR INTEREST

- I am interested in non-traditional energy sources and passionate about finding ways to make them practical for everyday usage.
- I enjoy solving problems, especially when an established solution just won't cut it.
- I like figuring out how something works, even if that means taking it apart just to put it back together again.
- I am an excellent planner and a keeper of highly detailed to-do lists.
- I work well as part of a team and enjoy helping other people solve their problems.
- I am excited by the idea of technological advancement and the development of solutions to problems we have not even encountered yet.
- I enjoy STEM subjects like algebra, calculus, physics, and computer science.

# Renewable Energy Engineer

STUDENT ACTIVATION (CONTINUED)



## CAREER CONNECTION

How does this career affect me?	What are some other similar careers?	How does this career affect the world?
<p>When communities integrate distributed energy resources into their power grid, everyone benefits. Families that have renewable energy sources at their homes that are being integrated into the grid, such as solar panels, likely end up saving money on their monthly utility bills, because instead of simply consuming power, they are helping to generate some, too. The community at large also benefits, because less energy is lost when the power sources used are local, and a diversity of sources of energy generally means greater reliability. Your family's energy bills may be lower, and you may have more luck keeping the lights on because of the work distributed energy resource engineers do daily.</p>	<p><b>Nuclear engineers</b> are also helping the world explore the use of alternative energy sources. They research and develop ways that society can make use of nuclear energy and radiation.</p> <p><b>Petroleum engineers</b> work in the oil and gas industry and design innovative methods for extracting oil and gas from the earth. They, like distributed energy resource engineers, are concerned with ensuring reliable access to energy sources.</p> <p><b>Automotive engineers</b> are mechanical engineers who turn their passion and skill toward building the world's most innovative personal transportation systems. Automotive engineers are addressing energy and climate challenges by creating hybrid and fully electric or battery-powered vehicles.</p>	<p>Distributed energy resource engineers are helping to build a cleaner, brighter future for us all. Many of the energy sources that engineers are working to integrate into utility grids are renewable sources of energy, such as solar panels and wind turbines. Heavier reliance on renewable resources will mean less reliance on fossil fuels, like coal and oil, which emit greenhouse gases and can harm the environment. Integrating these localized sources of renewable energy into utility grids can help a community move toward carbon neutrality, and a carbon neutral power system would benefit us all.</p>



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STUDENT ACTIVATION (CONTINUED)



## TAKE ACTION

- Ask your parents or guardians for a copy of your family utility bill to determine who your utility company is and do some research on their website to see what you can learn about them. What sources of energy go into their utility grid? Do they provide information on ways that your home can select “greener” or “smarter” energy options? What are they doing to ensure that the energy they provide to your home and community is safe and reliable? Share your findings with your family.
- With your family’s permission, conduct an energy walk around your neighborhood or community. Look for equipment that is generating or delivering power, including power lines, solar panels, and maybe even wind turbines. Note that sometimes, people have small solar panels for specific uses, for example to power lights in their yards—look for these! Then, look for potential sources of renewable energy that are not already being tapped. For example, is there a fast-moving river or stream that could be harnessed for hydropower? Does someone have a compost pile that could be turned into biofuel? Is there a windy hilltop that would be an ideal place for a wind turbine? Make notes throughout your walk and then share them with your classmates.
- Identify a product that runs off traditional energy sources in your home or school, such as a remote control, a refrigerator, or a gas-powered lawnmower. Identify what the power source is currently (Electricity? Batteries? Gas?), and then brainstorm ways that this product could potentially be powered by a different source of energy. If it sits near a sunny window or outside, could it potentially be powered by solar energy? How would a battery-powered product work differently if you had to plug it in instead? Use the internet to conduct some research on how a given energy source is identified for a product and whether different options might exist for an individual product (e.g., cell phone chargers that plug into a source of electricity versus those that are solar-powered, or an electric car versus a traditional gas-powered vehicle). Record your findings.

