

## Solar Energy as a Renewable Resource

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Imagine a world where worrying about unsustainable energy was a thing of the past, a world with a renewable resource so abundant that it could power the entire world 20,000 times over. For those of us who have concerns about how to obtain the power needed to survive as a society, the renewable resource of solar energy is the key to eliminating our concerns. Solar energy is so abundant that as long as we have a sun, we have solar. The availability (other than cloud cover and nightfall) is unlimited. Solar power is also sustainable, environmentally friendly, silent, reduces electricity cost, and is an improving technology. Although this multiple-use renewable resource is something that every country throughout the world should embrace, there continue to be people who are against solar energy. Protesters make claims about the cost of developing, transporting and installing solar panels. There are also concerns about the cost of storing this form of energy and the environmental hazards with respect to the batteries needed to store this resource. Overcast weather will always be an issue, but more so in European countries that are known for year-round overcast. Greenhouse gasses are one of the main issues associated with solar energy, including chemicals such as nitrogen trifluoride and sulfur hexafluoride, which are considered to have "many thousand times the impact on global warming compared to carbon dioxide" ("SEIA Applauds," 2013). However, if the United States government were to contribute subsidies that matched funds that are provided to the electricity industry, it would prompt other countries to follow their lead, and the world would be on its way to a sustainable renewable resource that is cost effective, environmentally friendly, and would save trillions of dollars.

Solar energy is a renewable resource derived from the sun in the form of solar radiation. Although there are many who see solar energy as something relatively new, it has been

associated with human life from the beginning. If we took the time to consider the actual definition, we would realize that energy from the sun is always being used in some form, whether intentionally or unintentionally. It could be argued that all forms of life need some form of energy derived from solar. History shows the many ways that the Greeks and Romans used solar energy B.C. and A.D. Many publications talk about how the Greeks and Romans used glass to deflect the rays from the sun to start fires, heat homes, and even in war to burn other ships. In 1976, Horace de Saussure was given credit for building the world's first solar collector, which was used years later as a means to cooking food. Fifty years later, the world was introduced to its first dish/Stirling system. This is a solar thermal technology system that converts the sun's solar thermal energy into power. By the end of the 1800's, the world would be introduced to its first solar water heater, first solar cells, and sparks between metal electrodes. In the early 1900's, we see the world-famous scientist Albert Einstein, who won a Nobel prize for his theory on the photoelectric effect, start to develop new ways of storing solar energy with copper as did Williams J. Bailey in 1908. With this innovative research into renewable resources, there seem to be no limits to the use of solar ("History of Solar," 2013).

The greatest step in the advancement of solar energy came when our own U.S. scientists "Daryl Chapin, Calvin Fuller, and Gerald Pearson develops the silicon photovoltaic (PV) cell at Bell Labs—the first solar cell capable of converting enough of the sun's energy into power to run everyday electrical equipment. Bell Telephone Laboratories produced a silicon solar cell with 4% efficiency and later achieved 11% efficiency" ("History of Solar," 2013). It could be argued that if it weren't for Bell Telephone, we wouldn't have carriers such as Sprint, AT&T, Charter, and many other companies that use photovoltaic ("History of Solar," 2013).

California is one of the leading states that has found a way to use renewable energy, and San Diego Gas and Electric has partnered with Silverado, a leading edge company in California that has initiated the use of geothermal energy in the San Diego Area (“We Harness,” n.d.). Solar energy isn’t a new energy source; however, there’s still much to be learned about the uses of solar.

The “pro” for solar energy as a renewable resource is a “no-brainer” compared to the more commonly used energy in today’s society. *Renewable* by definition, simply put, means “won’t run out.” This is not just an intriguing word, but it prompts the mind to think of all the endless possibilities. Because it’s solar energy, the multiple uses seem endless. Mosaic is a solar energy company that focuses on seven areas; bringing light to developing countries (First to contact, first to contract) will allow them to fine-tune their research. Only 60% of infrared solar energy light that hits the earth’s surface is visible. Forty percent is infrared and ultraviolet, and Mosaic has found ways to use that 40%. Building integrated photovoltaics, which are seen on the West Coast in roof shingles, curtain walls, facades, and windows, (yes, it is now in spray form) is now expanding throughout the United States. Solar leafs are used to make fuel cells that produce electricity, mobile gadgets, power vehicles, and in new solar manufacturing process. Mosaic is finding ways to save much of the material that is lost when making solar panels (“Seven New Solar Innovations,” 2012). Solar energy is being used to power vehicles, homes, factories, and multiple hand-held devices—why not an entire city?

Two other words associated with solar energy are *abundance* and *availability*. As long as we have a sun, we have solar energy, and as long as it’s available, we have abundance. Receiving 120,000 terawatts of solar radiation, which is 20,000 times what is needed to power

the world as we know it today, should motivate our government to commit more funds to advance this resource. This resource is silent, yet efficient, reduces electrical cost while remaining environmentally friendly, and with state and government rebates, companies must find a way to harness this ever-improving technology (Maehlum, 2012).

As with all things that come across as being too good to be true, there are those who oppose innovation. Solar energy is something that must be closely regulated by state and federal government (even though they have their hands in too many local policies). Producing solar energy does release gasses that affect global warming, which is also in question. Nitrogen trifluoride and sulfur hexafluoride do have more of an effect on the atmosphere than carbon dioxide. There is a concern with the cost of storing solar energy, and finding a way to produce proficient, but inexpensive, batteries continues to draw attention of advocates. Others who oppose solar energy as we know it today question subsidies going toward solar energy and feel the money should be used for other state programs. Advocates feel that the copper used to produce thinner panels is rare and too costly ("Solar," n.d.). Federal funding will always draw scrutiny, even when it's the right thing to do.

Renewable energy is here to stay, and while some may say that water is the best renewable we have, the possibility of droughts and floods makes it unpredictable. Others may say that wind as a renewable resource is least expensive, clean and is sustainable. All is true, but what about the states that have very little wind? When the three of these renewable sources are evaluated, solar provides more multiple uses, from handheld devices to cars, buildings to watercrafts. Solar innovations are a technology that's been around since the beginning of time and will be here until the earth ceases to exist. Renewable resources aren't a

United States issue, but rather a worldwide must. There are too many countries that are unable to take advantage of their natural resources, and the United States could be the country that spearheads the innovation of solar energy throughout the world.

There are valid issues with solar energy, but the benefit outweighs the cons. Should we be concerned with waste?—yes, as with oil, coal, and electricity. Should we be concerned with greenhouse gasses?—yes, as with oil, coal, and electricity. Should we be concerned with cost?—yes, as with oil, coal and electricity. These are serious concerns, but our watchword should be *renewable*, which is what solar energy is. However, oil, coal, and electricity aren't. Even the White House now has solar panels, thanks to President Obama ("Solar," 2013).  
Imagine that!

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