To understand the social consequences of solar energy, one must be aware of what solar energy is. Solar energy is a radiant energy produced in the sun as a result of nuclear fusion reactions. It is transmitted to the earth through space in quanta of energy called photons, which interact with the earth’s atmosphere and surface. The strength of solar radiation at the outer edge of the earth’s atmosphere when the earth is at its average distance from the sun is called the solar constant. The intensity of energy actually available at the earth’s surface is less than the solar constant because of the absorption and scattering of radiant energy as photons interact with the earth’s atmosphere. The amount and strength of the solar energy available at any point on the earth depends on the day of the year, time of day, the latitude of the collection point, and the orientation of the object used in collection. Solar energy, in broadest perspective, includes all the energy flows and storages caused by sunlight: wind, falling water, waves, biomass, ocean temperature gradients, fossil fuels, fresh water, salt deposits, icebergs, and even low humidity.

The earth is rich in abundant natural resources. However, the earth’s natural resources are being consumed at an astronomical rate. It will only be a matter of time before those resources are depleted and we are forced to consider other alternatives. We can wait until every resource has been consumed and go back to living the way mankind
did a century ago, or we can continue to move forward and explore the possibilities of harnessing the power of something that remains constant in our lives—the sun.

Mankind has been using the natural energy of the sun for ages. Interactions between the sun’s energy, the oceans, and the atmosphere produce winds that have been used for centuries to turn windmills. Modern applications of wind energy, when attached to generators, produce electricity. Through photosynthesis, solar energy contributes to the growth of plant life masses that can be used as fuel, such as alcohol or methane.

Solar energy is a clean and safe source of natural energy that should be considered as an alternative energy source for the future. The sun is not indigenous to any one country. It is a resource that can be utilized globally. Individuals and countries could possibly become more self-sufficient in energy resources. Solar energy is a success story. It already supplies electricity to several hundred thousand people around the world, provides employment for over ten thousand and generates business worth more than $1 billion dollars. In the future, the pace of change and progress could be even more rapid as the solar industry unlocks its hidden promise.

An idea that has been proposed to produce power on a large scale would involve placing giant solar modules in earth’s orbit where energy generated from sunlight would be converted to microwaves and beamed to antennas on earth to be converted to electric power. To produce as much power as five nuclear power plants, ten million pounds and several square miles of solar collectors would have to be assembled in orbit and an earth based antenna five miles in diameter would be required. This vision requires an exorbitant amount of money. To my knowledge, there isn’t a government on earth that is willing, thus far, to fund such a project.
The potential future uses of solar energy are confronted with opposition. So far, the cost of constructing devices that would be able to harness a free energy source is at the top of the list. I realize there is a lot of money involved, but I really can’t think of any technological discovery that was free to begin with. Every invention has come about through scientific research, and research requires money. Some have expressed concern regarding certain industries having to change their products to supply the new needs of society. Due to new and expected futures advances in technology, the world will always be forever changing. Some industries will initially absorb some monetary and opportunity costs, but it is the price they will have to pay for progression. Another public concern is Mother Nature. If we experience too many cloudy days in a row; then we will need a backup source of energy. Perhaps it would be a good idea to explore the possibilities and fund the research for solar energy before we deplete our backup resources.

However, the benefits of solar power are compelling: environmental protection, economic growth, job creation, diversity of fuel supply and rapid deployment, as well as the global potential for technology transfer and innovation. The underlying advantage of solar energy is that the fuel is free, abundant and inexhaustible. The total amount of energy irradiated from the sun to the earth’s surface is enough to provide more than 10,000 times the annual global energy consumption. Yet these benefits remain largely untapped; most energy decisions taken today overlook solar power as a modular technology which can be rapidly deployed to generate electricity close to the point of consumption. Solar energy uses fewer natural resources than conventional energy sources. Using energy from sunlight can replace the use of stored energy in natural
resources such as petroleum, natural gas, and coal. Energy industry researchers estimate that the amount of land required for photovoltaic (PV) cells to produce enough electricity to meet all U.S. power needs is less than 60,000 square kilometers, or roughly 20 percent of the area of Arizona. It is also a clean energy. Even when the emissions related to solar cell manufacturing are counted, photovoltaic generation produces less than 15 percent of the carbon dioxide from a conventional coal-fired power plant. Using solar energy to replace the use of traditional fossil fuel energy sources can prevent the release of pollutants into the atmosphere.

As solar technology continues to improve, and as the leaders of today recognize the potential for solar power, the future of solar power looks bright. Solar energy holds promise for the global community as an environmentally responsible source of power and heat. With support from the society for governmental and industry efforts to provide improved solar power, solar energy engineers and innovators will implement more effective solutions. Since long-term environmental effects are difficult to ascertain, solar power is an answer we cannot afford to overlook. Solar power is not only possible but eminently practical, not to mention more environmentally friendly. It is a way to use the resources that we currently have instead of depending on machines. Solar energy has the most promise for the future among all the other energy sources. It could be the best way to ease the looming natural gas crisis and become the economic choice for energy for millions of people in the next decade.
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