

# **Solar LED Lighting Systems**

## **The United States Should Install More Solar LED Lighting Systems**

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## Outline

- I. Solar lighting should be installed throughout America, especially in areas prone to storms and power outages.
  - A. Solar lighting is a renewable resource that is abundantly available for everyone.
  - B. Background information of solar lighting
  - C. More Americans should have access to solar lighting through tax incentives.
- II. Body
  - A. Background
    1. Insight of what solar lighting is
      - a. How we are able to capture it
      - b. How it is used it to generate electricity
    2. How in recent decades solar electricity has evolved
  - B. Pros
    1. Better for the environment
    2. Reduces global warming
    3. Reduces use of expensive nonrenewable biofuels
    4. Constant unlimited supply
    5. With power outages, lighting and some electricity could be available
    6. Long-term cost will be cheaper
    7. Creates more jobs
  - C. Cons
    1. Contributes to global warming
    2. Manufacturing cost/needs many panels
    3. Brightness of lights
    4. Being on grid selling energy you collect...their power goes down; yours does too.
- III. Conclusion
  - A. In conclusion, solar lighting is a safe, free renewable resource that is abundantly available for everyone.
  - B. It is environmentally friendly and after initial cost saves 75-100 percent on utility bills.
  - C. Not ideal for areas prone to storms.
  - D. U.S. should offer more tax incentives for Americans to implement solar lighting.

Solar LED lighting devices should be installed throughout America, especially in areas prone to storms and power outages. Do you remember Hurricane Katrina and the catastrophic damage she created? Now imagine the effects if more people had access to solar lighting devices. The damage would have still been devastating; however, the chaotic events that followed the storm could have been altered by utilizing solar LED lighting systems. In fact, humans have consumed solar energy dating back to prehistoric times. However, solar technologies have failed to evolve as a result of discovering fossil fuels such as coal, oil, and uranium. Until recently, these fossil fuels were perceived as inexpensive fuels (Plitnik, 2010, p. 1112). During the first decade of the twenty-first century, oil rigs began to be exhausted, and as a result, the prices of these fossil fuels began to rise. These fossil fuels are used to create electricity and are believed to cause global warming problems. As a result, many individuals, business, and countries began seeking other alternate energy sources (Cuttino, 2013). One source in particular is solar lighting. "Every day the Earth receives ten thousand more times energy from the Sun than humans derive from all alternative energies and non renewable fuels combined" (Plitnick, 2010, p. 1112). The United States is leading in the research department of clean energy motivation; however, it is failing to deploy its inventions (Cuttino, 2013). Therefore, the United States should offer more tax incentives for home or business owners who would like to install solar LED lighting devices. This would help encourage more Americans to utilize more solar power, which in return is better and safer for the environment than current energy.

As a result of global warming and the rise in oil prices, many countries are trying to find ways to convert more solar power into electricity. Solar lighting systems are being used to track

and collect direct sunlight. “First the sunlight is collected by a concentrator and it is then divided into visible and non-visible rays by a beam splitter. The visible rays pass through the light guide where they are mixed with LED lights and in return, the LED lights will light when the sunlight is inefficient. This is possible because the ultraviolet rays (non visible rays) are absorbed by a photovoltaic device that is used to provide heat and electrical power” (Sun, Tsuei, & Kuo, 2012, p. 496). This device is used to store and save the energy for power when sunlight is overcast or insufficient (Sun, Tsuei, & Kuo, 2012, p. 496). Therefore, during night hours and cloudy days, the consumer will have access to light and power. However, solar lights do not always satisfy the consumer because the LED lights are not as bright as a standard fluorescent bulb. “Un-like conventional light bulbs, solar lights never die or blow out; over-time the lights just lose their brightness” (Comparison: “Hard-Wired Electric vs. Solar Powered Lighting,” n.d., p.1). Nevertheless, at the present time, many companies are able to manufacture spot and flood solar LED lights. Therefore, within the next few years, this negative view should be eliminated (“Pros and Cons of Solar Lighting,” 2012, p.1). Another example of a solar lighting device is The Ulitium Solar Light. It is also a LED lighting system that allows the consumer to have access to solar lighting whenever needed. This particular light is charged on a solar panel and does not require batteries for operation. It is easily operated by a pull cord with three different light settings, which will have the lights on in seconds. If needed, the light can also be detached and used as a torch. This particular light will be useful in areas that are vulnerable to power outages (“Need cost effective solar lighting,” 2012). Solar lighting is one practical way of converting solar energy to an electrical usage.

Utilizing solar power as a main energy source has many cost-effective advantages. The first advantage is that it is a constant supply and is limitless. “The sun produces ten thousand times more energy than humans derive from all alternative energies and nonrenewable fuels combined” (Plitnik, 2010, p. 1112). By installing solar LED lights, consumers can save an average of 2.6 times more money in power consumption (Sun, Tsuei, & Kuo, 2012, p.503). However, the largest disadvantage of solar lighting is the manufacturing and installation prices. The average price of a single solar cell is approximately \$69.00, and it takes many solar panels installed on the rooftop to efficiently generate enough electricity for a house or business (Sun, Tsuei, & Kuo, 2013, p.502). After the initial cost of solar energy, there is very little maintenance cost involved (“Pros and Cons of Solar Lighting,” 2012, p.1). Many individuals who utilize solar energy save an average of 75 to 100 percent annually on their energy bill. Despite the initial cost of solar energy devices, after about five years, they virtually pay for themselves, and they can last up to 20-25 years (Sun, Tsuei, & Kuo, 2013, p. 502). Another advantage in utilizing solar energy is the possibility of selling energy to utility companies. However, in order to do this, the consumer must be on the “grid.” This means that he/she is collecting his/her own energy, but is still connected to the power grid. Therefore, when the utility company’s power goes down, so does the consumers’ power (“Pros and Cons of Solar Lighting,” 2012, p.1). Despite the initial cost of solar power, there is eventually an economic advantage of solar power.

Another advantage in utilizing solar energy for solar LED lighting is that it is clean and does not produce air or water pollution, carbon dioxide output, and greenhouse gasses (“The Pros and Cons of Solar Lighting,” 2012, p.1). This is because solar LED lights do not require any electrical wiring, and they rely solely on the sun for their power. However, there are some toxic

materials used when making the photovoltaic cells that are ultimately responsible for converting sunlight into electricity, and some thermal systems use potentially hazardous fluids to transfer heat (“Ten Facts You Probably Didn’t Know About Solar Energy,” 2014). However, investors see clean energy solutions an economic advantage because it’s capable of creating more jobs. Recent research has shown that clean energy investments create three times more jobs than conventional fossil fuels (Cuttino, 2013). On another positive note is that by using solar energy for lighting systems, the consumer is completely self-sufficient. This means that all his/her energy is coming straight from the sun, and it is being stored in numerous photovoltaic cells. As a result, during power outages, a power source is still available. However, on a negative note, debris or dirt can inhibit the collection of solar energy, which in turn, will lower the amount of solar light available (“Pros and Cons of Solar Lighting,” 2008-2012, p.1). Therefore, right after a storm or areas with a lot of snowfall, power may not be available until the debris has been cleansed off the solar panels. While over time, solar panels may accumulate dirt, they do not produce pollution.

In conclusion, solar lighting is a safe, free renewable resource that is abundantly available for everyone. Solar lighting has a lot of positive and negative factors. Solar lighting can make the United States more economically and environmentally secure by creating more jobs and reducing its dependence of fossil fuels. Solar lights will also help reduce global warming that is caused by fossil fuels and electricity. However, due to the cost of solar lighting devices, they should be placed with careful consideration. It may not be the best option for areas prone to storms like hurricanes, earthquakes, and tornadoes. These storms can cause catastrophic damage and throw debris in countless directions. As a result, keeping panels free

of debris and damage can be difficult, dangerous, and time consuming in the event of a storm.

On the other hand, a better solution for these areas is to utilize the Ulitium Solar LED light that will supply the consumer with six to eight hours of light before it needs to be re-charged.

Because the benefits and energy efficiency, the government should offer more tax incentives for consumers wanting to reduce the United States' dependence on fossil fuels as a main source of energy.

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