



HOW CAN RECYCLING TECHNIQUES BE UTILIZED TO LOWER THE PRICES OF SOLAR PANEL SYSTEMS ALLOWING A LARGER DEMOGRAPHIC OF PEOPLE TO SWITCH TO CLEAN ENERGY ALTERNATIVE, SOLAR POWER?



PROJECT #87

SOLAR PANEL SYSTEMS, EVEN IF THEY ARE A CLEAN ENERGY ALTERNATIVE ARE NOT HEAVILY IMPLEMENTED BECAUSE OF THEIR HIGH PRICES.

INTRODUCTION

Solar panels, if it weren't for their high upfront costs would be an amazing alternative for fossil fuels, the leading cause of air pollution. Through my project I hope to raise awareness that there are alternatives to the high prices of solar panels. There are methods including buying second-hand solar panels and/or installing a system oneself.

BACKGROUND

As solar panels keep advancing, people tend to dispose of their old panels for the newer models. This leaves many still usable solar panels available. Solar panels on average can last around 30 to 40 years and after 25 years the efficiency rate decreases only by 6-8%. Though at the end of the solar panels' life spans they need to go somewhere. In some households, going solar isn't necessarily efficient for them. In houses where the electricity bill remains relatively low, paying thousands of dollars to convert to solar power would not reap any benefits. These still usable solar panels can be sold at lower prices to a wide demographic of people.

FINDINGS

Through my research I found that still usable solar panels are being thrown out in exchange for newer models. Many people choose not to go the solar route because of high upfront costs. However, these used solar panels are still around 85% efficient.

There are multiple ways to reduce the high prices of solar systems. For example, purchasing second-hand panels but there are also methods such as installing systems oneself. Installing a system oneself with a 30% tax rebate the final cost is \$10,094 and would start to see a profit after 6.8 years. Buying an installment with 30% tax rebate the final cost is \$15,543 would start to see a profit after 10.4 years. This is the numbers without buying second-hand. With using second-hand panels and installing a solar system, the upfront cost can be decreased by around 50%.

Solar Panel type	Actual Wattage Output	Efficiency Percentage
325w	296w	91%
240w	190w	79%
240w	228w	95%
4500w	3320w	74%

METHODOLOGY

Since I could not purchase my own second-hand solar panels to test efficiency, I relied on other people performing the task. There is not a wide range of people performing the task, so I found around 4 videos with wattage and performance data for used solar panel efficiency. I then turned the wattage efficiency of the panels into percentages and averaged the percentages together.

Risks

Used solar panels do not come with any warranty from the companies and there is alot of uncertainty in the solar panels. There are unknowns and no support incase the used solar panels are not

CONCLUSION

Solar Panels are already an alternative to the leading cause of air pollution, fossil fuels. But solar panels are not readily implemented because of the high upfront cost. Though, there are methods to decrease these costs by nearly 50%. Including buying second-hand equipment like the solar panels and installing the system yourself. This method would allow for more people to move to solar power.

The cost of solar systems breakup

- solar panels – 12%
- inverter(s) – 10%
- wiring – 3%
- labor – 7%
- permitting – 8%
- marketing – 18%
- overhead expenses – 11%
- companies' profit – 11%

