Justin Hawkins

ENGR 115

December 3rd, 2019

Recommendation to City of Arcata

System	Total Savings	Total CO2 Emssions Reductions (lbs)
PV	$7,980.74	1456
CFL	$98,336.00	353,920
LED	***$138,943.50***	***500,070***

For the $10,000 we modeled the energy savings and reduction of CO2 emissions for three energy options, photovoltaic (PV), compact flourescent lamp (CFL), and Light-emitting diode (LED).These values are based on a model of incadescent bulbs for comparisions, where these bulbs would be replaced with either LED or CFL. These models were based on several assumptions, the average usage for an indivual bulb would be two hours a day, averager price of electricity in Califronia (0.13 $/kWh), and bulb prices.The PV model was caluculated independtly with an assumed yearly average of Daily Normal Solar Radiation Incidence, 4.4 kWh/m^2, based on government data of this geographic region. All models used the same value to estimate CO2 emissions, O.474 lbs/kWh came from a government study on national energy infastructure. Out of the two categories, cost savings, and CO2 reduction, LED vastly outpreformed PV and CFL in both. We reccomened spending your budget on replacing incadescent light bulbs with LED ones.