Final Project:

You are going to use your home energy audit and Part 1: Projection Summary (from the wind portion of our exploration) to design a renewable energy plan for the City of Talent.

**Part 1:**

Refer to your home energy audit.

1. How much energy does your family use annually? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. On average (mean), per household, our class was able to reduce energy consumption by 23.5%. If your family reduced your energy consumption by 23.5%, what would be your new annual energy need?
3. Go to PV Watts, type in your address, and draw the area where solar panels can be placed. Specify the azimuth and tilt. The energy costs we used for the energy audits were $0.056 / kWh.
4. How big will the system be? How many kW will it produce? And what is the annual value?
5. Use an installation cost of $3 / watt to determine the cost of the system. Then find the return on investment.
6. Calculate the percent of energy you can generate out of the energy your family needs.

**Part 2:**

Class averages

1. Compile class data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Original Annual Use | Reduced Annual Use | kW solar capacity | % Needed | Installation Cost |
|  |  |  |  |  |

1. For the remaining energy we can use wind and solar. How many, and what size, wind turbines can the City use to generate the deficit? What would the cost be and the return on investment? (For wind, use $0.104/ kW to determine return on investment and $6 / watt for installation cost)

3) How large an area would be required to generate the deficit using solar? (Use PVwatts to help you figure this out.)

**Part 3: Presentation**

Present current energy needs and projected energy needs

Present cost of implementing solar and the cost of installing wind (current average rates for solar are $3/ w and $6 / w for wind)

Present class findings (include average annual energy use and reductions)

Appliances that are the highest energy consumers - suggest public service / educational campaign to target those uses to get people to start reducing

On average, single family households could use solar to generate \_\_\_\_\_% of the energy they need. That is \_\_\_\_\_% of the population in Talent.

Commercial facilities with parking can cover their parking lots and utilize roof space to generate a surplus of energy.

Plan of action:

Continue implementing solar projects on City properties.

Launch public service / education campaign to move people towards reducing the amount of energy they need (provide facts and actions that can be taken to change people’s habits)

Students will use their home energy audits to determine the number of solar panels and/or wind turbines their families would need to be 100% renewable.

Required information: Annual energy consumption (for ex. Mine is 20 kW / day) 600 kWh/month

Which makes my rates: averages out to be $0.0745/kWh

|  |  |
| --- | --- |
| First 500 kWh | $0.07216 |
| 500 kWh - 5,000 kWh | $0.08726 |

My goal 20 x 365 = 7300 kWh/ yr (before energy reductions)

After energy reductions my goal is to reduce energy consumption by 5.94 kWh, so use would be 13.86 kWh / day ; 5059 kWh / yr

A 5 kW system