

Renewable Energy Trends
Schwartz Problem Set #9, Due Wednesday, June 5

1. Calculate the surface area of standard PV panels (20% efficiency) necessary for you to live your life. Please include the following consideration:
 - a) We live in SLO and can anticipate the corresponding solar incidence.
 - b) You continue to use electricity like always, and continue to drive like you always do, but in a (shared?) electric car.
Please give your answer in square meters.... Does this area seem reasonable to you? Do you feel you are taking too much of the planet's surface area with this?
 - c) Indicate what kind of lifestyle changes you would need to make in order to live like this.

2. We have seen how solar deployment has been growing at a near exponential rate. We have also learned about the learning curve: That the cost of a technology decreases with the total deployment of that technology. For instance, look at a car: ~\$10,000 for about 100 kW: *10 cents a Watt...* and that \$10,000 covers way more than the engine. That's because we humans have considerable experience, having produced... maybe a few billion cars. Anyway, please look up some graphs of how global deployment of solar electricity has increased over the years, and how the cost to produce solar panels has decreased:
 - a) If these trends continue through 2025, please project the cost to produce solar and total global deployment in 2025. Please include the graphs or references you used.
 - b) Of course, this trend will not continue indefinitely. Project when total global consumption of electricity can be met by solar... be careful to include consideration of duty cycle.