

Eco Challenge Question #1

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There are a lot of different ways to invest in the environment today: carbon offsets, RECs, alternative energy, capital equipment upgrades, green power, etc. It is often hard to make direct comparisons due to differences in time scale, availability of good data, etc. The following Eco Challenge Question is meant to represent the real world tradeoffs that a company or individual might face, and to be a catalyst for a more rigorous analysis of the economic and environmental impacts of these investment options.



Please send me thoughts on the structure of the question as well as thoughts on the answer.

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Eco Challenge Question #1

XYZ Corporation is trying to reduce their green house gas emissions, and they've budgeted \$500K for the upcoming year to help do that. Since they don't run manufacturing plants or large fleets of vehicles, their primary GHG emissions are from electricity usage.

XYZ's electricity usage is 150M kWh a year, and costs the company \$10.5M annually. XYZ's electricity consumption is responsible for 100K tons CO₂ emissions per year.

Members of their management team have proposed 4 different projects. Each of them has different economic and environmental benefits over various timeframes. Which should they choose and why?

Proposal 1: The company can use the \$500K to purchase 100K tons of CO₂ offsets to cover all of their CO₂ emissions for the current year. The CO₂ offset \$'s will be used to plant trees in various parts of the world. These trees are expected to reduce the CO₂ in the atmosphere by 100K tons over the 70 years expected lifetime of the new trees.

Proposal 2: The company can use the money to buy green energy from their utility. Green energy costs an additional 2 cents per kWh, so \$500K would purchase 25M kWh of CO₂-free energy, representing 1/6 of their electricity usage for the year.

Proposal 3: XYZ can use their \$500K, combine it with government incentives, and purchase and install solar panels on a facility in southwestern US. These solar panels are estimated to have an effective output over time of 100 kW (900K kWh/year) and an anticipated lifetime of 20 years.

Proposal 4: The company can use the the money to invest in an upgrade to more efficient servers in their datacenter, which will reduce energy usage required to power the servers and cool the datacenter. The \$500K will cover 75 systems with an expected lifetime of 4 years. Each system is estimated to lower the company's energy consumption by 10K kWh/year (or 750K kWh total).