

Mueller Policy Paper #2: Environmental Investments = Financial Investments

All the suggestions in the Mueller Report will reduce PSU's environmental impact, or ecological footprint. In addition, most of these suggestions will save the University money. However, many of these environmentally sound suggestions will entail an initial investment to see future returns. But where should we get the initial capital for the necessary investment?...state taxes? ...alumni donations?... student tuition? None of the above! It is the Green Destiny Council's conjecture that this money should be supplied by liquidating University financial investments that supply less of a fiscal return than the given environmental improvement.

Penn State is already aware that many environmental improvements save money and with their commitment to environmental stewardship has mandated to complete all environmental improvements that can pay for themselves in five years. This five-year cut-off is far more forward thinking than the cut-off used by many businesses, which typically varies from 1 to 3 years, however, it is still arbitrary. In order to be financially responsible the lifetime of the device, building, or process must also be taken into account. The following equation, henceforth referred to the "***Penn State Equation***", can be used to determine if a given environmental improvement should be completed purely on financial grounds:

$$P/S = (1 - e^{-RT})/R$$

P= Principal Investment

S= Savings from environmental improvements per year

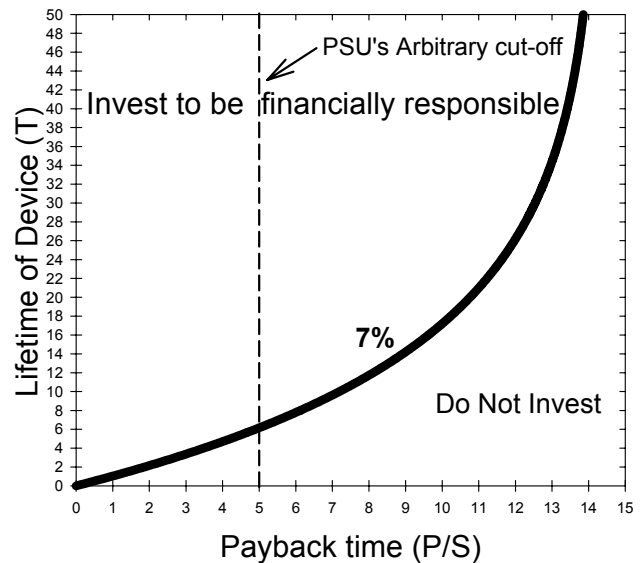
R= Rate of interest in percent

T= Time of life of the device (lifetime)

Thus, **P/S** gives us the payback, which PSU currently uses to make environmental investment decisions and was arbitrarily chosen to be 5 years. **R**, the rate of interest, is what PSU uses to make financial decisions. Gary Schultz, the Vice-President of Finance and Business at Penn State, estimates the interest rate on Penn State investments to be approximately 7%.

We believe it would make more sense from an economic perspective and assist in Penn State's pledge of ecological stewardship if environmental improvements were considered as market investments. Graphing the ***Penn State Equation*** for a given interest rate makes it abundantly clear why this shift in metrics is necessary. In the graph on the right the lifetime of a generic device is plotted for a given payback time using a 7% interest rate as the solid black line. Any investment below that line is fiscally irresponsible and any investment that is above this line is fiscally responsible. Also on this graph, we have put a dotted

line indicating a payback of five years. It is clearly apparent that a large area of investment space is being overlooked by current Penn State investment strategies (the area to the right of the dotted line and above the thick black line). Nearly all environmental improvements outlined in the Mueller Report have returns greater than 7% over their lifecycle and are applicable University wide.



Policy Suggestions:

1. The Executive Administration – Begin to consider all environmental improvements that save Penn State money as investments. Where “greening” beats the 7% line shift money from the least productive current investments into “green” investments.
2. Finance and Economic Departments – add the “***Penn State Equation***” to standard introduction courses so that students will graduate with an in-depth understanding of operational costs savings possible from environmental improvements.

This policy paper represents the second in a series of PSU Green Destiny Council suggestions stemming from the Mueller Report. This study showed that it is possible to reduce ecological impact and save money by increasing efficiency, using technology intelligently, and increasing environmental awareness. The full text of the Mueller Report and the Indicators Reports are available free at www.bio.psu.edu/greendestiny/

The ***Penn State Equation*** was adapted from Modern Engineering Economy, D. Young, New York : J. Wiley, 1993. For more information contact the Mueller Report Coordinator, Joshua Pearce at jmp228@psu.edu