

# Problem Set 1

You are the owner of a large data-services firm and are deciding on the purchase of a new hardware cooling system that you expect will yield \$233,300 in cost-savings per year for the next 15 years. The installation of this cooling system will cost \$3,000,000.

1. At face value, does this system seem profitable? By how much?
2. Assume that your company uses a discount rate of 6%.
  - a. What is the Net Present Value (NPV) of this project?
  - b. How does the NPV of this project change as you assume a higher or lower discount rate? Why?
  - c. What is the IRR/ROI of this project?
  - d. How much should the yearly cost-savings be in order to break even?
    - i. (hint) use goal-seek/what-if analysis
3. Suppose that you decide to finance the purchase of this system through a loan from the bank. The bank is willing to loan this money over an 8 year term at an interest rate of 4% per year.
  - a. Using a 70/30 debt-to-equity ratio, what is the NPV of this project?
    - i. (hint) calculate the yearly payment using excel function "PMT"
  - b. How does the NPV of this project change if a larger portion is financed through equity (e.g. debt-to-equity ratio of 60/40)? Why?