

Cash-flow Problem Set

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. Additionally, O&M expenditures for the cooling system are expected to be \$2,120 per year.

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?