

Case 46

Aero Tech

Aero Tech's executive committee has spent the last two weeks debating the annual capital budget. They are nearly ready to make a decision, which they would normally do in their Tuesday meeting. Ms. Gloria Burns is the CEO, and she has asked them instead to write memos. Her intent is to use these memos to help educate two new members of the Board of Directors: you and Mr. Fred Vail. At the same time, she can use your reactions as a double check on the approach that has historically been used.

The committee has agreed that the total operating budget for next year should be \$124 million. This leaves \$24 million for capital investment, although additional funds could be raised through borrowing or through the issuance of new common stock. Ms. Burns has decided that the stock possibility should be ignored; in fact, the executive committee is even considering using part of the capital budget to *buy back* some of the company's stock. The finance VP estimates that this will have a 15.4% rate of return, as long as no more than \$5 million is repurchased. This repurchase would be part of the capital budget.

If bonds were sold to increase the \$24 million, then the cost would be 10.8%, with semiannual interest and a 10-year life. These bonds could be for any amount between \$1 million and \$5 million, and the setup fee would be 2% of the amount borrowed. If a loan were used, the rate would be 12.4%, but *all* payments would be made at the end of the loan. The period of the loan could be anywhere from one to three years. The amount borrowed could be as low as \$500,000, but the upper limit is only \$2 million. In this case, the setup fee is 1% of the amount borrowed. The total increase in debt is limited to \$6 million.

Historically, Aero Tech has used a 10% minimum attractive rate of return in evaluating its capital projects, so that projects whose present worth was negative were rejected. They have not standardized on an approach to prioritizing those projects that meet the 10% minimum criterion. Usually they fund from one-third to two-thirds of the projects that meet the minimum criterion.

Develop a recommended capital project list and budget for Ms. Burns, including a description of your recommended methodology. This memo should also include a critique of the proposals from members of the executive committee. The candidate projects are listed in Table 46-1. These projects are independent of each other, and any combination can be accepted subject to the funding limits.

Table 46-1 Proposed Projects for Aero Tech

Project	First Cost (\$ × 10 ⁶)	Net Annual Benefit (\$ × 10 ³)	Life (years)
A	5.5	1420	10
B	8.1	2500	5
C	4.7	700	15
D	3.9	830	25
E	2.1	400	15
F	5.0	970	20
G	6.3	1310	10
H	1.9	730	5
I	2.4	460	10

To: Gloria, CEO
 From: George, VP for Engineering

The table below shows the projects that I recommend. Notice that this depends on bonding \$4.8 million for five years, so that we can add project B to the funded list. The cutoff is highlighted.

Table 46-2 Engineering's Proposed Projects for Aero Tech

Project	First Cost (\$ $\times 10^6$)	Net Annual Benefit (\$ $\times 10^3$)	Life (years)	Present Worth at 10% (\$ $\times 10^6$)	Cumulative First Cost (\$ $\times 10^6$)
D	3.9	830	25	3.634	3.9
F	5.0	970	20	3.253	8.9
A	5.5	1420	10	3.225	14.4
G	6.3	1310	10	1.749	20.7
B	8.1	2500	5	1.377	28.8
E	2.1	400	15	.942	30.9
H	1.9	730	5	.867	32.8
C	4.7	700	15	.624	37.5
I	2.4	460	10	.427	39.9

To: Gloria, CEO

From: Simon, VP for Manufacturing

The table below shows the projects that I recommend based on a payback criterion. Notice that this depends on borrowing \$1.7 million for at least a year. I prefer this to the bonds because of the lower setup fees, and our ability to pay it off at our convenience. The cutoff is highlighted.

Table 46-3 Manufacturing's Proposed Projects for Aero Tech

Project	First Cost (\$ × 10 ⁶)	Net Annual Benefit (\$ × 10 ³)	Life (years)	Payback Period (years)	Cumulative First Cost (\$ × 10 ⁶)
H	1.9	730	5	2.60	1.9
B	8.1	2500	5	3.24	10.0
A	5.5	1420	10	3.87	15.5
D	3.9	830	25	4.70	19.4
G	6.3	1310	10	4.81	25.7
F	5.0	970	20	5.15	30.7
I	2.4	460	10	5.22	33.1
E	2.1	400	15	5.25	35.2
C	4.1	700	15	6.71	39.9

To: Gloria, CEO

From: Aristotle, VP for Finance

The table below shows that I have evaluated the projects at a discount rate of 18.4%. This is the average rate of return for the projects that we accepted last year. Since some projects are necessarily below average, this means that at least one of my recommended projects is shown with a negative present worth.

I am comfortable with the top 4 projects. The next 3 projects (E, B, & I) are worthwhile, but I'm not sure which option is best.

1. Do E and buy back \$1.6 million in stock.
2. Do B and borrow \$500,000 (\$100,000 put in bank).
3. Do E & B and borrow \$2.5 million through bonds.
4. Do E, B, & I and bond for \$4.9 million.

Table 46-4 Finance's Proposed Projects for Aero Tech

Project	First Cost (\$ × 10 ⁶)	Net Annual Benefit (\$ × 10 ³)	Life (years)	PW at 18.4% (\$ × 10 ⁶)	Cumulative First Cost (\$ × 10 ⁶)	
A	5.5	1420	10	792	5.5	
D	3.9	830	25	545	9.4	
H	1.9	730	5	362	11.3	
F	5.0	970	20	92	16.3	
E	2.1	400	15	-99	18.4	cutoff
B	8.1	2500	5	-352	26.5	???
I	2.4	460	10	-362	28.9	cutoff
G	6.3	1310	10	-495	35.2	
C	4.7	700	15	-1198	39.9	

Suggestions to the Students

1. One of the difficulties in comparisons of these projects is that they do not all have the same life. Does present worth properly adjust for this? Does payback period?
2. If not, can modified measures be constructed? If not, what criteria should be used for ranking?
3. One of the decisions you may have to make (depends on the criteria you use) is the appropriate discount rate for evaluation of these projects. Two considerations in this choice are (1) the opportunity costs of rejected projects, and (2) the reinvestment rate you expect to apply to future choices.