

controller has estimated that it will cost the district \$15,250, initially, to redesign its bus routes, inform the public, install caution signs in certain hazardous locations, and retrain its drivers.

A minibus costs \$27,000, whereas a full-size bus costs \$90,000. The school district uses straight-line depreciation for all of its long-lived assets. The board has two options regarding the five full-size buses. First, the buses could be sold now for \$15,000 each. Second, the buses could be kept in reserve to use for field trips and out-of-town athletic events and to use as backup vehicles when buses break down. Currently, the board charters buses from a private company for these purposes. The annual cost of chartering buses amounts to \$30,000. The school district controller has estimated that this cost could be cut to \$5,000 per year if the five buses were kept in reserve. The five full-size buses have five years of useful life remaining, either as regularly scheduled buses or as reserve buses. The useful life of a new minibus is projected to be five years also.

Blue Ridge School District uses a hurdle rate of 12 percent on all capital projects.

Required:

1. Think about the decision problem faced by the board of education. What are the board's two main alternatives?
2. One of these main alternatives has two options embedded within it. What are those two options?
3. Before proceeding, check the hint given at the end of the chapter, which explains and diagrams the school board's alternatives. Suppose the board of education chooses to buy the minibuses. Prepare a net-present-value analysis of the two options for the five full-size buses. Should these buses be sold now or kept in reserve?
4. From your answer to requirement (3), you know the best option for the board to choose regarding the full-size buses *if* the minibuses are purchased. Now you can ignore the other option. Prepare a net-present-value analysis of the school board's two *main alternatives*: (a) continue to use the full-size buses on regular routes, or (b) purchase the minibuses. Should the minibuses be purchased?
5. Compute the internal rate of return on the proposed minibus acquisition.
6. What information given in this case was irrelevant to the school board's decision problem? Explain why the information was irrelevant.
7. Independent of requirements (1) through (6), suppose the NPV analysis favors keeping the full-size buses. Michael Jeffries, the business manager for the Blue Ridge School District, was prepared to recommend that the board not purchase the minibuses. Before doing so, however, Jeffries ran into a long-time friend at the racquet club. Peter Reynolds was the vice president for sales at a local automobile dealership from which the minibuses would have been purchased. Jeffries broke the bad news about his impending recommendation about the minibuses to his friend. The two talked for some time about the pros and cons of the minibus alternative. Finally, Reynolds said, "Michael, you and I go back a long time. I know you're not paid all that well at the school district. Our top financial person is retiring next year. How would you like to come to work for the dealership?"

"That's pretty tempting, Peter. Let me think it over," was Jeffries' response.

"Sure, Michael, take all the time you want. In the meantime, how about rethinking that minibus decision? It's no big deal to you, and I could sure use the business."

"But Peter, I told you what the figures say about that," responded Jeffries.

"Come on, Michael. What are friends for?"

Discuss the ethical issues in this situation. What should Michael Jeffries do?

Instant Dinners, Inc. (IDI), is an established manufacturer of microwavable frozen foods. Leland Forrest is a member of the planning and analysis staff. Forrest has been asked by Bill Rolland, chief financial officer of IDI, to prepare a net-present-value analysis for a proposed capital equipment expenditure that should improve the profitability of the western plant. This analysis will be given to the board of directors for approval. Several years ago, as director of planning and analysis at IDI, Rolland was instrumental in convincing the board to open the western plant. However, recent competitive pressures have forced all of IDI's manufacturing divisions to consider alternatives to improve their market position. To Rolland's dismay, the western plant may be sold in the near future unless significant improvement in cost control and production efficiency are achieved.

Western's production manager, an old friend of Rolland, has submitted a proposal for the acquisition of an automated-material-handling system. Rolland is anxious to have this proposal approved as it will ensure the continuation of the western plant and preserve his friend's position. The plan calls for the replacement of a number of forklift trucks and operators with a computer-controlled conveyor belt

■ Case 16-58

Capital-Budgeting Analysis of Automated-Material-Handling System; Taxes; Ethical Issues (Section 2)

(LO 16-3, 16-4, 16-6)

1. Net present value:
\$(235,280)



system that feeds directly into the refrigeration units. This automation would eliminate the need for a number of material handlers and increase the output capacity of the plant. Rolland has given this proposal to Forrest and instructed him to use the following information to prepare his analysis.

Automated-Material-Handling System Projections

Projected useful life	10 years
Purchase and installation of equipment	\$4,500,000
Increased working capital needed*	1,000,000
Increased annual operating costs (exclusive of depreciation)	200,000
Equipment repairs to maintain production efficiency (end of year 5)	800,000
Increase in annual sales revenue	700,000
Reduction in annual manufacturing costs	500,000
Reduction in annual maintenance costs	300,000
Estimated salvage value of conveyor belt system	850,000

* The working capital will be released at the end of the 10-year useful life of the conveyor belt system.

The forklift trucks have a net book value of \$500,000 with a remaining useful life of five years and no salvage value for depreciation purposes. If the conveyor belt system is purchased now, these trucks will be sold for \$100,000. IDI has a 40 percent tax rate, has chosen the straight-line depreciation method for both book and tax purposes, and uses a 12 percent discount rate. For the purpose of analysis, all tax effects and cash flows from the equipment acquisition and disposal are considered to occur at the time of the transaction while those from operations are considered to occur at the end of each year.

When Forrest completed his initial analysis, the proposed project appeared quite healthy. However, after investigating equipment similar to that proposed, Forrest discovered that the estimated salvage value of \$850,000 was very optimistic. Information previously provided by several vendors estimates this value to be only \$100,000. Forrest also discovered that industry trade publications considered eight years to be the maximum life of similar conveyor belt systems. As a result, Forrest prepared a second analysis based on this new information. When Rolland saw the second analysis, he told Forrest to discard this revised material, warned him not to discuss the new estimates with anyone at IDI, and ordered him not to present any of this information to the board of directors.

Required:

1. Prepare a net-present-value analysis of the purchase and installation of the material-handling system using the revised estimates obtained by Leland Forrest. (For this problem, ignore the half-year convention. Assume annual straight-line depreciation of \$562,500, which is $\$4,500,000 \div 8$.)
2. Explain how Leland Forrest, a management accountant, should evaluate Bill Rolland's directives to repress the revised analysis. Take into consideration the specific ethical standards of competence, confidentiality, integrity, and objectivity discussed in Chapter 1.
3. Identify some steps Leland Forrest could take to resolve this situation.

(CMA, adapted)