

# Capital Budgeting: Cash Flow Estimation Basics

## Cash Flow Estimation:

Capital budgeting deals with estimating the cash flows that are generated by a proposed new project/investment decisions and then to use the NPV criteria in order to decide whether to undertake the project or not.

### Step One: Identify the following Project Cash Flows

- Initial Investment
- Salvage Value
- Investment in Net Working Capital
- Net Working Capital Recovered
- Cash Flow from Operations (Requires the most attention and can be difficult)
  - Operating Cash Flows
  - CCA Tax shield (*We will have a closer look at this item*)

### Step Two:

- Calculate the Present Value of all the Cash Flows Identified in Step 1.

### Step 3:

- Compute the Overall NPV of the Project by Taking the Sum of All the Present Values Calculated in Step Two

## Cash Flow Estimation Basic Example

### Example 1:

XYZ Inc. can buy a new, very efficient, machine for \$1 million. It will cost \$35,000 per year to operate but will save the firm \$125,000 annually in costs and will be useful for 10 years. The machine will require an immediate investment in NWC of 10,000 which will be fully recovered at project end. Further the machine will have a salvage value of \$100,000 at the end of 10 years. The firm's discount rate is 10%. Ignoring taxes, calculate the NPV of the project.

PV of the Initial Investment
PV of Salvage Value
PV of Investment in Net Working Capital
PV of Net Working Capital Recovered
PV of Cash Flow from Operations
Yearly Operating Cash Flows
CCA Tax shield

# Tax Shield Basics

## Identify the following Project Cash Flows

- Initial Investment
- Salvage Value
- Investment in Net Working Capital
- Net Working Capital Recovered
- ***Cash Flow from Operations (Requires the most attention and can be difficult)***
  - *Operating Cash Flows*
  - *CCA Tax shield (We will have a closer look at this item)*

## Tax Shield

The Cash Savings on Taxes Paid Due to Depreciation Expense / CCA Expense.

## Example 2

Initial Investment: \$100,000

Yearly Cash Flows: \$55,000

Salvage Value: None

5 Year Project Life

Discount Rate: 6%

Tax rate: 40%

Straight Line Depreciation

### Required:

Calculate the Tax Shield that would result from this investment on a yearly basis.



## Tax Shield - A More Detailed Look

### Example 3

Initial Investment: \$100,000

Yearly Cash Flows: \$55,000

Salvage Value: \$10,000

10 Year Project Life

Discount Rate: 6%

Tax rate: 40%

CCA Rate: 15%

### Calculate:

- The CCA/Depreciation & Tax Shield for the 1<sup>st</sup> year
- The CCA/Depreciation & Tax Shield for the 2<sup>nd</sup> year
- The PV of the Tax Shields Across the Entire Project
- The NPV of the project

## Cash Flow Estimation    Comprehensive Example

### Example 4

XYZ Inc. can buy a new, very efficient, machine for \$500,000. The new machine will save the firm \$95,000 annually in costs and will be useful for 7 years. The machine will require an immediate investment in NWC of \$15,000 which will be fully recovered at project end. Further, the machine will have a salvage value of \$50,000 at the end of 7 years.

The firm's discount rate is 10% and the firm's tax rate is 35%. The machine falls into a 20% CCA asset class, declining balance method, and the half-year rule applies.

### Calculate:

- The CCA/Depreciation & Tax Shield for the 1<sup>st</sup> year
- The NPV of the project



## Cash Flow from Operations

### Example 5

What is the amount of the operating cash flow for a firm with \$500,000 profit before tax, \$100,000 depreciation expense, and a 35% corporate tax rate?

### Example 6

What is the amount of the operating cash flow for a firm with \$250,000 in Sales, \$150,000 in Expenses, \$50,000 in Depreciation and a 35% corporate tax rate?

### Example 7

Estimate the annual after tax cash flow for a project with forecasted annual sales of 10 million units at a price of \$1 each, variable cost per unit of \$0.50, annual fixed cost of \$2 million and annual depreciation of \$2 million. Assume the corporate tax rate is 30%.