

KEEP OR REPLACE ANALYSIS INCLUDING APPLICATION OF INCREMENTAL CASH FLOW ANALYSIS

CND Example

INTRODUCTION

This is a “Keep” or “Replace” analysis using the following templates;

1. Keep Revenue & Expenses Yearly Template
2. Replace Revenue & Expenses Yearly Template

This example is for manufacturing but the “Keep” or “Replace” analysis applies to profit and non profit organizations such as government, universities, hospitals and service industries.

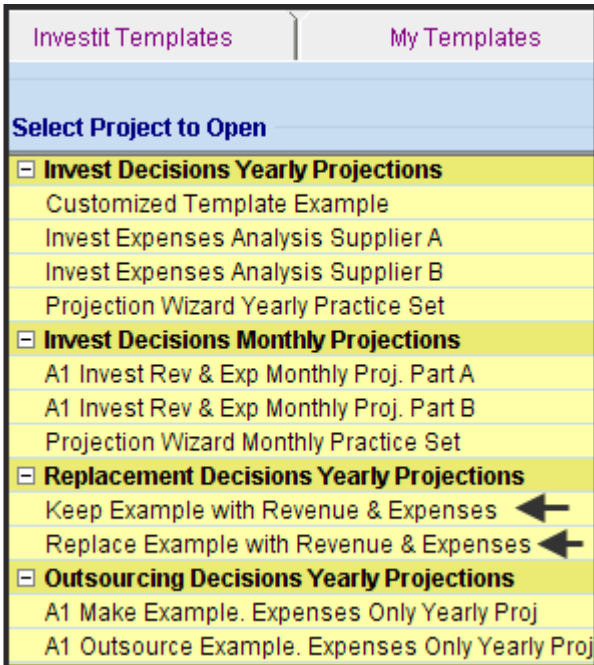
Non profit examples of Keep or Replace decisions

1. A hospital is considering whether to replace and aging x-ray machine or not
2. A city is considering whether to replace the traditional parking meters with parking meter stations which requires a substantial investment but will generate additional revenue and reduce labor costs

VERIFYING YOUR ANALYSIS

You can compare your analysis against the two Investit Decisions Examples;

1. Keep Example with Revenue & Expenses
2. Replace Example with Revenue & Expenses



KEEP or REPLACE CASE STUDY

A manufacturing organization is considering replacing aging production equipment used to produce plastic bottles with a more technologically advanced model, which will offer the following benefits:

1. Less rejected products resulting in lower manufacturing costs per unit
2. The new computerized system allows faster set up and less down time
3. Increase in sales because of increased production capacity
4. Lower labor costs

The equipment was bought 5 years ago for \$9,000,000 and the depreciation claimed is based on Personal Prop. St Line with a 7 years recovery period. If retained, a major overhaul costing \$2,500,000 will be required in year 4. The salvage value at the end of the Analysis Period is \$75,000

If the "Existing Equipment" is sold now, the current salvage value is \$800,000 before tax and \$740,000 after tax

The equipment was financed with a loan of \$4,000,000, 8.00% interest repayable over 7 years with uniform blended payments of principle & interest. If the equipment is sold the loan will have to be paid off. The current outstanding loan balance is \$1,378,479

The new equipment will cost \$11,000,000 installed and will be depreciated using Personal Prop. St Line with a 7 year recovery period. The equipment will be finance with \$6,000,000 loan interest repayable over 7 years with uniform blended payments of principle & interest.

Summary

	Existing Equipment	New Equipment
Investment	\$9,000,000 5 years ago Major overhaul Year 4 Jan \$2,500,000	\$11,000,000
Depreciation Method	Personal Prop. St Line 7 year recovery period	Personal Prop. St Line 7 year recovery period
Working Capital Addition		\$90,000
Salvage Value	Existing Equipment \$800,000 before tax. Today \$740,000 after tax. Today \$75,000 in 9 years Major Overhaul \$0	\$1,000,000 in 9 years
Sales	\$3,500,000 per Yr increasing at 5.00% compounding per year	\$5,500,000 per Yr increasing at 5.00% compounding per year
Labor	30.00% of Sales	20.00% of Sales
Materials	25.00% of Sales	20.00% of Sales
Repairs & Maintenance	\$324,000 per year increasing at 8.00%	\$536,000 increasing at 5.00% per Yr
Utilities	\$190,000 per year increasing at 6.00% per year	\$335,000 per year increasing at 5.00% per year
Insurance	\$35,000 per year increasing at 6% per year	\$65,000 per year increasing at 6.00% per year
Selling expenses	10.00% of sales	10.00% of Sales
Financing		
Loan Amount	\$4,000,000	\$6,000,000
Current Outstanding Balance	\$1,378,479	--
Amortization Period	7 years	7 years
Remaining Amortization	2 years	--
Interest Rate	7.00%	9.00%

KEEP ANALYSIS

PROJECT INFO Folder

Project Name: Plastic Bottle Manufacturing Division
Project Description: Keep Equipment Analysis
Analysis Period: 9 Years
Analysis Start Date: Year 1 Jan

INVESTOR Folder

Investor's Marginal Tax Rate: 33.00%
Percentage of Capital Gain Rate: 50.00%
Desired Return or Discount Rate (Before Tax): 13.00%
Short Term Rates
 Financing Rate: 8.00%
 Reinvestment Rate: 2.50%

INVESTMENT Folder

1. Existing Equipment: \$2,000,000
 CCA Class: Equipment/Machinery
2. Major Overhaul: Year 4 January \$2,500,000
 CCA Class: Equipment/Machinery

WORKING CAPITAL Folder

Working Capital: \$0

EXPENSES Folder

Labor: 30.00% of Revenue

Materials: 25.00% of Revenue

Repairs & Maintenance:

\$324,000 per year for the first year then increasing at 8.00% compounding per year

Utilities:

\$190,000 per year for the first year then increasing at 6.00% compounding per year

Insurance:

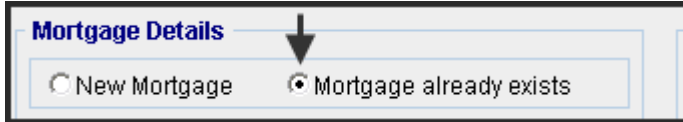
\$35,000 per year for the first year then increasing at 6.00% compounding per year

Selling Expenses: 10.00% of Revenue

REVENUE Folder

Sales: \$3,500,000 per year for the first year then increasing at 5.00% compounding per year

FINANCING Folder



“Mortgage already exists” means that the mortgage or loan was taken out to fund the purchase of the equipment five year ago. We need to enter the “Outstanding Balance” at the start of the Analysis Period and the remaining amortization period.

The principle and interest payments for the remaining two years will be included in the cash flow. The “Outstanding Balance” is used to generate the principle & interest payments for the remaining two year, but is not included in the cash flow

Description: Loan. Outstanding Balance

Type: Standard Mortgage

Amount: \$1,378,479 (The Outstanding Balance on the Analysis Start Date)

Time Period: 2 years

Amortization Period: 2 years (The remaining Amortization Period)

Interest Rate: 7.00% per year

Payments: Monthly

SALVAGE VALUE Folder

Existing Equipment: \$75,000

REPLACE ANALYSIS

PROJECT INFO Folder

Project Name: Plastic Bottle Manufacturing Division
Project Description: Replace Equipment Analysis
Analysis Period: 9 Years
Analysis Start Date: Year 1 Jan

INVESTOR Folder

Investor's Marginal Tax Rate: 33.00%
Percentage of Capital Gain Rate: 50.00%
Desired Return or Discount Rate (Before Tax): 13.00%
Short Term Rates
 Financing Rate: 8.00%
 Reinvestment Rate: 2.50%

INVESTMENT Folder

New Equipment: \$11,000,000 Year 1 Jan
CCA Class: Equipment/Machinery

Salvage Value of Equipment being replaced

 Before Tax: \$800,000

 After Tax: \$740,000

 Financing Repaid: \$1,378,479 (Repayment of outstanding balance for the bank loan for the preexisting equipment purchased 5 years ago)

WORKING CAPITAL Folder

Working Capital: \$90,000 Year 1 Jan

EXPENSES Folder

Labor: 20.00% of Revenue

Materials: 20.00% of Revenue

Repairs & Maintenance:

 \$536,000 per year for the first year then increasing at 5.00% compounding per year

Utilities:

 \$335,000 per year for the first year then increasing at 5.00% compounding per year

Insurance:

 \$65,000 per year for the first year then increasing at 6.00% compounding per year

Selling Expenses: 10.00% of Revenue

REVENUE Folder

Sales: \$5,500,000 per year for the first year then increasing at 5.00% compounding per year

FINANCING Folder

Description: Equipment Loan
Start Date: Year 1 January
Type: Standard Mortgage
Amount: \$6,000,000
Time Period: 7 years
Interest Rate: 9.00% per year
Payments: Monthly
Compounding Period: Monthly

SALVAGE VALUE Folder

New Equipment: \$1,000,000

Template selection

The selection of the appropriate template is based on the following;

1. The analysis involves revenue & expenses
2. Projections are Yearly

Template: Keep Revenue & Expenses Yearly

STEPS

Using the Keep and Replace Revenue & Expenses Yearly projections templates;

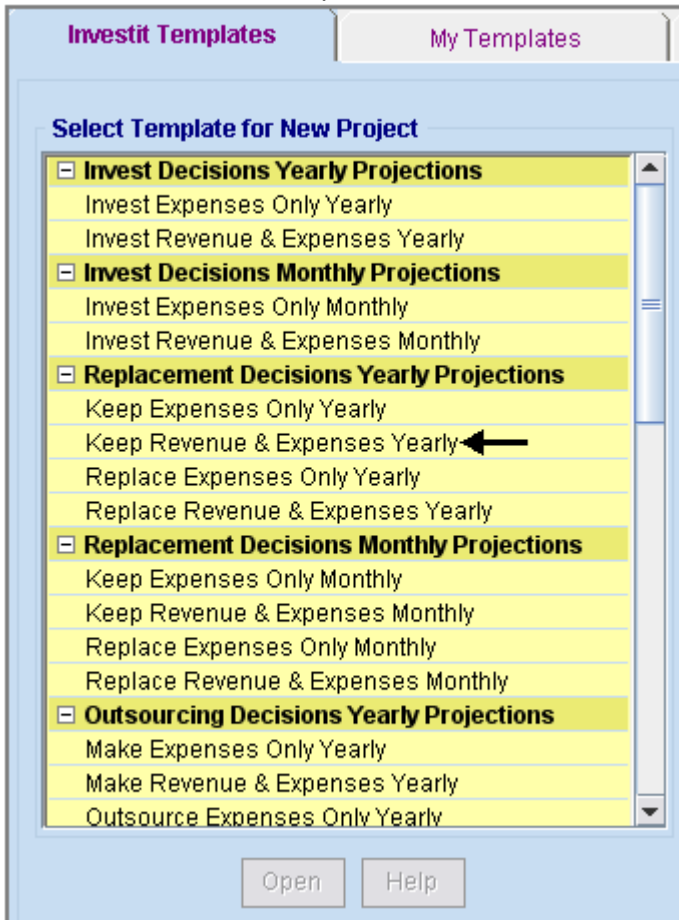
1. Enter the analysis for keeping the equipment
2. Enter the analysis for replacing the equipment
3. Use the "Project Comparison Report" or the "Incremental Cash Flow Report" to compare the two options

INSTRUCTIONS FOR ENTERING THE “KEEP” ANALYSIS

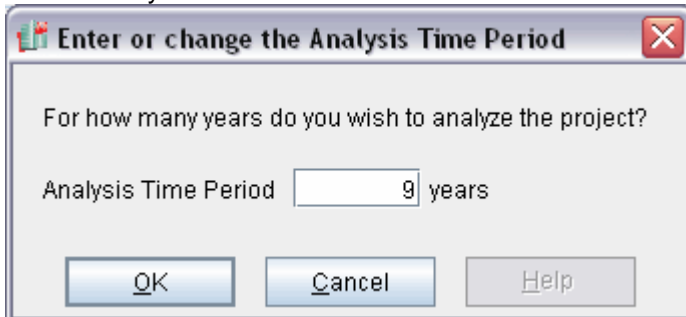
Getting started

The first step is to open the Investit Decisions Template “Keep Revenue & Expenses Yearly” as follows:

1. Open Investit Decisions.
2. Select the Investit Templates folder



3. Select and open the Investit template “Keep Revenue & Expenses Yearly”. The analysis period dialog will open at this point.
4. Enter 9 years and click OK



Entering the project data and information

Project Info Folder

Project Name: Plastic Bottle Manufacturing Division
 Project Description: Keep Equipment Analysis
 Analysis Period: 9 years

Project Info.	Investor	Investment	Working Capital	Expenses
Report Headers				
Project Name	Plastic Bottle Manufacturing Division ←			
Project Description	Keep Equipment Analysis ←			
Analysis Time Period				
	9	Years	Change Analysis Time Period	
Entry Information				
Enter Revenue and Expenses	Yearly		Change Entry Information	
Starting Date	January Year 1			

INVESTOR Folder

Investor's Marginal Tax Rate: 33.00%
 Percentage of Capital Gain Rate: 50.00%
 Desired Return or Discount Rate (Before Tax): 13.00%
 Short Term Rates
 Financing Rate: 8.000%
 Reinvestment Rate: 2.500%

Project Info.	Investor	Investment	Working Capital	Expenses	Revenue
<input type="checkbox"/> Turn off Tax Calculations					
Investor's Marginal Tax Rate		→ 33.00%			
Tax Calculation on Sale based on					
<input checked="" type="radio"/> Percentage of Capital Gain		50.00%			
<input type="radio"/> Income Tax					
Discount Rate or Desired Return on Investment					
Before Tax		→ 13.00%			
After Tax		8.45%			
Short Term Rates					
Before Tax					
Financing Rate		→ 8.000%			
Reinvestment Rate		→ 2.500%			
After Tax					
Financing Rate		5.200%			
Reinvestment Rate		1.625%			

INVESTMENT Folder

1. Existing Equipment: \$2,000,000
CCA Class: Equipment/Machinery
2. Major Overhaul: Year 4 January \$2,500,000
CCA Class: Equipment/Machinery
Instructions for setting up the Investment folder

Enter the following into the Investment folder

Project Info.	Investor	Investment	Working Capital	Expenses	Revenue	Financing		
CCA Claim Option: <input type="text" value="Full CCA Claim"/>								
Investments								
		<input type="button" value="Inflate"/>	CCA Claim Setting					
Description	Amount	Year	Month	CCA Class	CCA Rate	First Year	Claim CCA in Last Year	Investment New Exists
Existing Equipment →	\$ 2,000,000	Year 1	Jan	Equipment/Machinery	30.00%		<input checked="" type="checkbox"/>	<input type="radio"/> <input checked="" type="radio"/>
Major Overhaul ←	\$ 2,500,000	Year 4	Jan	Equipment/Machinery	30.00%	50.00%	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> <input type="radio"/>

↑ ↑

Working Capital Folder

No Working Capital.

Expenses Folder

Labor: 30.00% of Revenue

Materials: 25.00% of Revenue

Repairs & Maintenance:

\$324,000 per year for the first year then increasing at 8.00% compounding per year

Utilities:

\$190,000 per year for the first year then increasing at 6.00% compounding per year

Insurance:

\$35,000 per year for the first year then increasing at 6.00% compounding per year

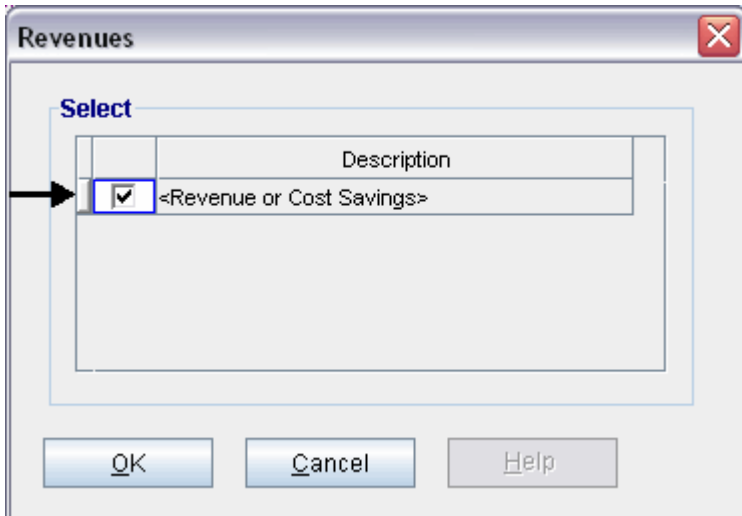
Selling Expenses: 10.00% of Revenue

Setting up the Expenses folder

1. Select row 7 'Rent' and click on the Delete button
2. Make the following changes to the Expenses folder

Project Info.	Investor	Investment	Working Capital	Expenses	
Expenses					
Description	Entry Choice	Qty	Category	Year 1 Jan...	
Labor	% of Revenue(s) ←	—	Common	0.00%	
Materials	% of Revenue(s) ←	—	Common	0.00%	
Repairs & Maintenance	\$ per Yr ←	—	Common	\$ 0	
Utilities	\$ per Yr ←	—	Common	\$ 0	
Insurance	\$ per Yr ←	—	Common	\$ 0	
Selling Expenses ←	% of Revenue(s) ←	—	Common	0.00%	

Fill out the % of Revenues windows as follows



Setting up Labor

1. Select row 1 'Labor'
2. Click on the Projection Wizard button and enter the following entries

Projection Wizard

Entry Information

Description: Labor

Entry Choice: % of Revenue(s)

Projection

%	Project Entry Using...	Increase	Starting Year	Time Period		Cont. Proj.
				To End	Yrs	
→ 30.00%	Constant (Fill Right)		Year 1	<input checked="" type="checkbox"/>	9	

Projection Description

Labor

Entry Choice: % of Revenue(s)

Sales

Year 1 30.00% of Revenue(s)

 Constant per year for next 8 years

OK Print Report

New Projection Insert Projection Delete Projection

Delete All Projections Projection Description

Setting up Materials

1. Select row 2 'Materials'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' application window. It is divided into two main sections: 'Entry Information' and 'Projection'.

Entry Information:
 Description: Materials
 Entry Choice: % of Revenue(s)

Projection:
 A table with columns: %, Project Entry Using..., Increase, Starting Year, Time Period (To End, Yrs), and Cont. Proj. The first row is highlighted in yellow and contains the following data: 25.00%, Constant (Fill Right), [dropdown arrow], Year 1, [checked checkbox], 9, and [dropdown arrow].

A 'Projection Description' dialog box is open in the foreground, showing the following details:
 Materials
 Entry Choice: % of Revenue(s)
 Sales
 Year 1 25.00% of Revenue(s)
 Constant per year for next 8 years

Buttons at the bottom of the dialog include 'OK', 'Print Report', and 'Help'. Below the main wizard window, there are buttons for 'New Projection', 'Insert Projection', 'Delete Projection', 'Delete All Projections', and 'Projection Description'. An arrow points from the 'Projection Description' button to the dialog box.

Setting up Repairs & Maintenance

1. Select row 3 'Repairs & Maintenance'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' application window. It is divided into two main sections: 'Entry Information' and 'Projection'.

Entry Information:

- Description: Repairs & Maintenance
- Entry Choice: \$ per Yr

Projection Table:

Entry	Project Entry Using...	Increase	Starting Year	Time Period		
				To End	Yrs	Cont. Proj.
→ \$ 324,000	Annual Compounding	→ 8.00%	Year 1	<input checked="" type="checkbox"/>	9	

Arrows point from the 'Annual Compounding' and '8.00%' cells in the table to the 'Projection Description' dialog box.

Projection Description Dialog Box:

Repairs & Maintenance
 Entry Choice: \$ per Year
 Year 1 \$324,000 per Year
 Compounding at 8.00% per year for next 8 years

Buttons: OK, Print Report, Help

Buttons at the bottom of the wizard: New Projection, Insert Projection, Delete Projection, Delete All Projections, Projection Description

Setting up Utilities

1. Select row 4 'Utilities'
2. Click on the Projection Wizard button and enter the following entries

The screenshot shows the 'Projection Wizard' window. It has two main sections: 'Entry Information' and 'Projection'.

Entry Information:
 Description: Utilities
 Entry Choice: \$ per Yr

Projection:

Entry	Project Entry Using...	Increase	Starting Year	Time Period		Cont. Proj.
				To End	Yrs	
→ \$ 190,000	Annual Compounding	→ 6.00%	Year 1	<input checked="" type="checkbox"/>	9	

Below the table is a 'Projection Description' dialog box with the following text:

Utilities
 Entry Choice: \$ per Year
 Year 1 \$190,000 per Year
 Compounding at 6.00% per year for next 8 years

The dialog box has buttons for 'OK', 'Print Report', and 'Help'. Below the main window are buttons for 'New Projection', 'Insert Projection', 'Delete Projection', 'Delete All Projections', and 'Projection Description'. Arrows in the original image point from the 'Projection Description' button to the dialog box and from the 'To End' and 'Yrs' columns to the table row.

Setting up Insurance

1. Select row 5 'Insurance'
2. Click on the Projection Wizard button and enter the following entries

Projection Wizard

Entry Information

Description: Insurance
Entry Choice: \$ per Yr

Projection

Entry	Project Entry Using...	Increase	Starting Year	Time Period			Cont. Proj.
				To End	Yrs		
→ \$ 35,000	Annual Compounding	→ 6.00%	Year 1	<input checked="" type="checkbox"/>	9		

Projection Description

Insurance
Entry Choice: \$ per Year
Year 1 \$35,000 per Year
Compounding at 6.00% per year for next 8 years

Buttons: OK, Print Report, Help

Main Window Buttons: New Projection, Insert Projection, Delete Projection, Delete All Projections, Projection Description

Setting up Selling expenses

1. Select row 6 'Selling expenses'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' window. Under the 'Entry Information' section, the description is 'Selling expenses' and the entry choice is '% of Revenue(s)'. The 'Projection' section contains a table with the following data:

%	Project Entry Using...	Increase	Starting Year	Time Period		
				To End	Yrs	Cont. Proj.
10.00%	Constant (Fill Right)		Year 1	<input checked="" type="checkbox"/>	9	

An arrow points to the 'To End' checkbox in the table. Below the table is a 'Projection Description' dialog box with the following text:

Selling expenses
 Entry Choice: % of Revenue(s)
 Sales
 Year 1 10.00% of Revenue(s)
 Constant per year for next 8 years

The dialog box has 'OK', 'Print Report', and 'Help' buttons. At the bottom of the main window are buttons for 'New Projection', 'Insert Projection', 'Delete Projection', 'Delete All Projections', and 'Projection Description'. An arrow points from the 'Projection Description' button to the dialog box.

REVENUE Folder

Sales: \$3,500,000 per year for the first year then increasing at 5.00% compounding per year

Set up the Revenue folder as follows

Project Info.		Investor	Investment	Working Capital	Expenses	Revenue
Revenue						
Description	Entry Choice	Qty	Category	Year 1 Jan...		
Sales ←	\$ per Yr ←	—	Common	\$ 0		

Setting up the Sales

1. Select row 1 'Selling expenses'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' window with the following details:

- Entry Information:**
 - Description: Sales
 - Entry Choice: \$ per Yr
- Projection Table:**

Entry	Project Entry Using...	Increase	Starting Year	To End	Yrs	Cont. Proj.
→ \$ 3,500,000	Annual Compounding	→ 5.00%	Year 1	<input checked="" type="checkbox"/>	9	
- Projection Description Dialog:**

Sales
 Entry Choice: \$ per Year
 Year 1 \$3,500,000 per Year
 Compounding at 5.00% per year for next 8 years
- Buttons:**
 - New Projection
 - Insert Projection
 - Delete Projection
 - Delete All Projections
 - Projection Description

Financing Folder

Description: Loan. Outstanding Balance

Type: Standard Mortgage

Amount: \$1,378,479 (The Outstanding Balance on the Analysis Start Date)

Time Period: 2 years

Amortization Period: 2 years (The remaining Amortization Period)

Interest Rate: 7.00% per year

Payments: Monthly

Make the following entries into the mortgage window

Mortgage

Mortgage Details

New Mortgage → Mortgage already exists

Analysis Period: Year 1 Jan to Year 9 Dec

Commencing Year 1 Month January

Type Standard Mortgage ←

Amount → \$ 1,378,479 Interest Rate Fixed

Description Loan. Outstanding Balance ←

Mortgage Settings

Payment Frequency Monthly

Additional Payments/Borrowing

Payment Rounded Up to Nearest Cent

Compounding Frequency Monthly

Terms and Amortization Details

No of (Balloon) Terms 1

Term No	Time Period		Amortization		Nominal Interest Rate
	Years	Months	Years	Months	
1	→ 2	0	→ 2	0	→ 7.000%

Make the entries and then click on the Compute button

OK Compute Fill Down Cancel Help Comments

SALVAGE VALUE Folder

Existing Equipment: \$75,000

Make the following entries in the Salvage Value folder

Expenses Revenue Financing **Salvage Value**

Disposition Costs

Description	Entry Choice	Expense
Selling Expenses	% of Salvage Value	0.00%
Legal Fees	% of Salvage Value	0.00%
Removal Costs	Amount	\$ 0

Add Insert Delete Move

Salvage Value

Description	Capital Investment	Salvage Value
Existing Equipment	\$ 2,008,092	→ \$ 75,000
Major overhaul	\$ 100,000	\$ 0

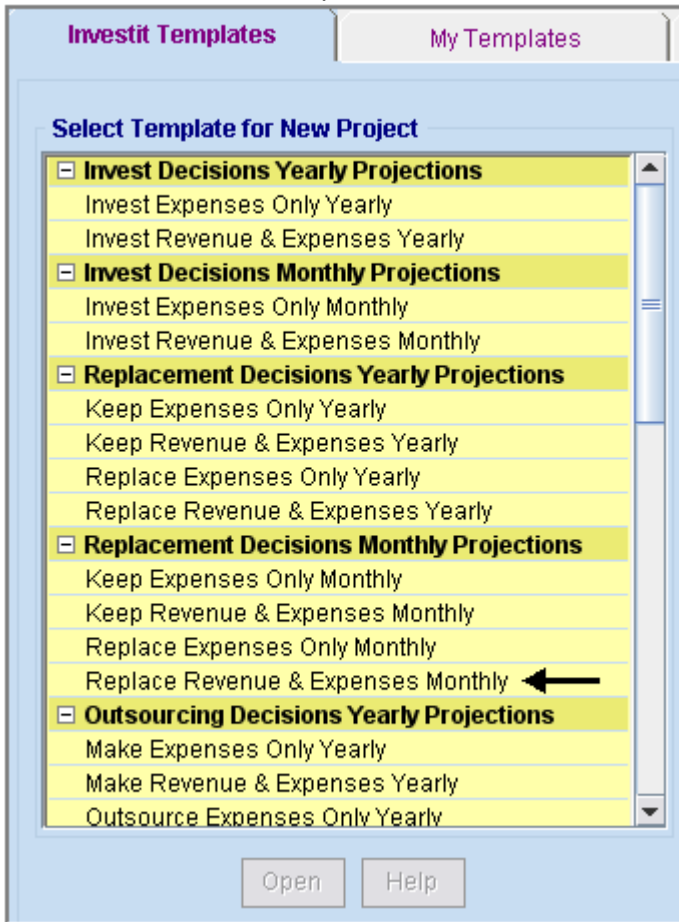
SAVE YOUR PROJECT

INSTRUCTIONS FOR ENTERING THE “REPLACE” ANALYSIS

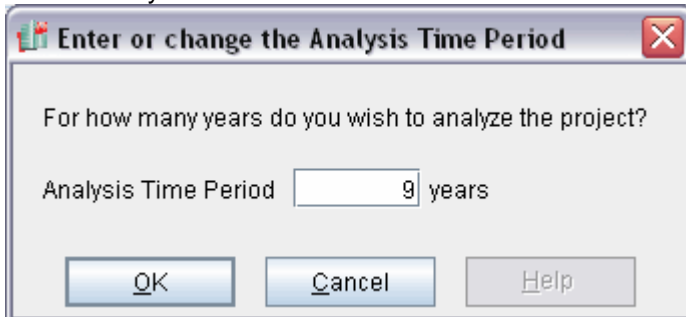
Getting started

The first step is to open the Investit Decisions Template “Replace Revenue & Expenses Yearly” as follows:

1. Open Investit Decisions.
2. Select the Investit Templates folder



3. Select and open the Investit template “Replace Revenue & Expenses Yearly”. The analysis period dialog will open at this point.
4. Enter 9 years and click OK



Entering the project data and information

Project Info Folder

Project Name: Plastic Bottle Manufacturing Division
 Project Description: Replace Equipment Analysis
 Analysis Period: 9 years

Project Info.	Investor	Investment	Working Capital	Expenses
Report Headers				
Project Name	Plastic Bottle Manufacturing Division ←			
Project Description	Replace Equipment Analysis ←			
Analysis Time Period				
	9	Years	Change Analysis Time Period	
Entry Information				
Enter Revenue and Expenses	Yearly		Change Entry Information	
Starting Date	January Year 1			

INVESTOR Folder

Investor's Marginal Tax Rate: 33.00%
 Percentage of Capital Gain Rate: 50.00%
 Desired Return or Discount Rate (Before Tax): 13.00%
 Short Term Rates
 Financing Rate: 8.00%
 Reinvestment Rate: 2.50%

Project Info.	Investor	Investment	Working Capital	Expenses	Revenue
<input type="checkbox"/> Turn off Tax Calculations					
Investor's Marginal Tax Rate		→ 33.00%			
Tax Calculation on Sale based on					
<input checked="" type="radio"/> Percentage of Capital Gain		50.00%			
<input type="radio"/> Income Tax					
Discount Rate or Desired Return on Investment					
Before Tax		→ 13.00%			
After Tax		8.45%			
Short Term Rates					
Before Tax					
Financing Rate		→ 8.000%			
Reinvestment Rate		→ 2.500%			
After Tax					
Financing Rate		5.200%			
Reinvestment Rate		1.625%			

INVESTMENT Folder

New Equipment: \$11,000,000 Year 1 Jan
 CCA Class: Equipment/Machinery

Salvage Value of Equipment being replaced

Before Tax: \$800,000

After Tax: \$740,000

Financing Repaid: \$1,378,479 (Repayment of outstanding balance for the bank loan for the preexisting equipment purchased 5 years ago)

Make the following entries in the Investment folder

Project Info.	Investor	Investment	Working Capital	Expenses	Revenue	Financing	Salvage Value	
CCA Claim Option: Full CCA Claim								
Investments								
		Inflate	CCA Claim Setting					
Description	Amount	Year	Month	CCA Class	CCA Rate	First Year	Claim CCA in Last Year	Investment New Exists
Existing Equipment →	\$ 2,000,000	Year 1	Jan	Equipment/Machinery	30.00%		<input checked="" type="checkbox"/>	<input type="radio"/> <input checked="" type="radio"/>
Major Overhaul ←	\$ 100,000	Year 4	Jan	Equipment/Machinery	30.00%	50.00%	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> <input type="radio"/>

WORKING CAPITAL Folder

Working Capital: \$90,000 Year 1 Jan

Make the following entries in the Working Capital folder

Project Info.	Investor	Investment	Working Capital	Expenses
Working Capital				
Description	Entry Choice		Year 1 Jan...	
Working Capital	Add or Subtract (-) Working Capital		\$ 90,000	

EXPENSES Folder

Labor: 20.00% of Revenue

Materials: 20.00% of Revenue

Repairs & Maintenance:

\$536,000 per year for the first year then increasing at 5.00% compounding per year

Utilities:

\$335,000 per year for the first year then increasing at 5.00% compounding per year

Insurance:

\$65,000 per year for the first year then increasing at 6.00% compounding per year

Selling Expenses: 10.00% of Revenue

Setting up the Expenses folder

1. Select row 7 'Rent' and click on the Delete button
2. Make the following changes to the Expenses folder

Project Info.	Investor	Investment	Working Capital	Expenses	
Expenses					
Description	Entry Choice	Qty	Category	Year 1 Jan...	
Labor	% of Revenue(s) ←	—	Common	0.00%	
Materials	% of Revenue(s) ←	—	Common	0.00%	
Repairs & Maintenance	\$ per Yr ←	—	Common	\$ 0	
Utilities	\$ per Yr ←	—	Common	\$ 0	
Insurance	\$ per Yr ←	—	Common	\$ 0	
Selling Expenses ←	% of Revenue(s) ←	—	Common	0.00%	

Fill out the % of Revenues window as follows

Revenues ✖

Select

	Description
<input checked="" type="checkbox"/>	<Revenue or Cost Savings>

Setting up Labor

1. Select row 1 'Labor'
2. Click on the Projection Wizard button and enter the following entries

Projection Wizard

Entry Information

Description: Labor

Entry Choice: % of Revenue(s)

Projection

%	Project Entry Using...	Increase	Starting Year	Time Period		Cont. Proj.
				To End	Yrs	
→ 20.00%	Constant (Fill Right)		Year 1	<input checked="" type="checkbox"/>	9	

Projection Description

Labor

Entry Choice: % of Revenue(s)

Sales

Year 1 20.00% of Revenue(s)

 Constant per year for next 8 years

Buttons: OK, Print Report, Help

Main Window Buttons: New Projection, Insert Projection, Delete Projection, Delete All Projections, Projection Description

Setting up Materials

1. Select row 2 'Materials'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' window. Under the 'Entry Information' tab, the 'Description' is 'Materials' and the 'Entry Choice' is '% of Revenue(s)'. The 'Projection' tab shows a table with the following data:

Time Period						
%	Project Entry Using...	Increase	Starting Year	To End	Yrs	Cont. Proj.
→ 20.00%	Constant (Fill Right)		Year 1	<input checked="" type="checkbox"/>	9	

An arrow points from the 'To End' checkbox in the table to the 'Projection Description' dialog box. The dialog box contains the following text:

Materials
 Entry Choice: % of Revenue(s)
 Sales
 Year 1 20.00% of Revenue(s)
 Constant per year for next 8 years

Buttons in the dialog include 'OK', 'Print Report', and 'Help'. At the bottom of the main window, there are buttons for 'New Projection', 'Insert Projection', 'Delete Projection', 'Delete All Projections', and 'Projection Description'.

Setting up Repairs & Maintenance

1. Select row 3 'Repairs & Maintenance'
2. Click on the Projection Wizard button and enter the following entries

The screenshot shows the 'Projection Wizard' window. It has two main sections: 'Entry Information' and 'Projection'.

Entry Information:
 Description: Repairs & Maintenance
 Entry Choice: \$ per Yr

Projection:

Entry	Project Entry Using...	Increase	Starting Year	Time Period		Cont. Proj.
				To End	Yrs	
→ \$ 536,000	Annual Compounding	→ 5.00%	Year 1	<input checked="" type="checkbox"/>	9	

Below the table is a 'Projection Description' dialog box with the following text:

Repairs & Maintenance
 Entry Choice: \$ per Year
 Year 1 \$536,000 per Year
 Compounding at 5.00% per year for next 8 years

Buttons in the dialog box: OK, Print Report, Help.

Buttons at the bottom of the wizard: New Projection, Insert Projection, Delete Projection, Delete All Projections, Projection Description.

Setting up Utilities

1. Select row 4 'Utilities'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' software interface. At the top, the title bar reads 'Projection Wizard'. Below it, the 'Entry Information' section shows 'Description: Utilities' and 'Entry Choice: \$ per Yr'. The 'Projection' section contains a table with the following data:

Entry	Project Entry Using...	Increase	Starting Year	To End	Yrs	Cont. Proj.
→ \$ 335,000	Annual Compounding	→ 5.00%	Year 1	<input checked="" type="checkbox"/>	9	

Below the table is a 'Projection Description' dialog box with the following text:

Utilities
Entry Choice: \$ per Year
Year 1 \$335,000 per Year
Compounding at 5.00% per year for next 8 years

The dialog box has buttons for 'OK', 'Print Report', and 'Help'. At the bottom of the main window, there are buttons for 'New Projection', 'Insert Projection', 'Delete Projection', 'Delete All Projections', and 'Projection Description'. Arrows in the original image point from the 'Projection Description' button to the dialog box and from the 'Annual Compounding' and 'To End' cells of the table to the dialog box content.

Setting up Insurance

1. Select row 5 'Insurance'
2. Click on the Projection Wizard button and enter the following entries

The screenshot displays the 'Projection Wizard' window. Under the 'Entry Information' section, the 'Description' is 'Insurance' and the 'Entry Choice' is '\$ per Yr'. The 'Projection' section contains a table with the following data:

Entry	Project Entry Using...	Increase	Starting Year	Time Period		
				To End	Yrs	Cont. Proj.
\$ 65,000	Annual Compounding	6.00%	Year 1	<input checked="" type="checkbox"/>	9	

Below the table is a 'Projection Description' dialog box with the following text:

Insurance
 Entry Choice: \$ per Year
 Year 1 \$65,000 per Year
 Compounding at 6.00% per year for next 8 years

The dialog box has buttons for 'OK', 'Print Report', and 'Help'. At the bottom of the main window are buttons for 'New Projection', 'Insert Projection', 'Delete Projection', 'Delete All Projections', and 'Projection Description'. Arrows in the image indicate the flow from the table row to the dialog box and from the 'Projection Description' button to the dialog box.

Setting up Selling Expenses

1. Select row 6 'Selling Expenses'
2. Click on the Projection Wizard button and enter the following entries

The screenshot shows the 'Projection Wizard' window with the following sections:

- Entry Information:**
 - Description: Selling expenses
 - Entry Choice: % of Revenue(s)
- Projection Table:**

%	Project Entry Using...	Increase	Starting Year	Time Period		
				To End	Yrs	Cont. Proj.
→ 10.00%	Constant (Fill Right)		Year 1	<input checked="" type="checkbox"/>	9	
- Projection Description Window:**

Selling expenses
 Entry Choice: % of Revenue(s)
 Sales
 Year 1 10.00% of Revenue(s)
 Constant per year for next 8 years

Buttons: OK, Print Report, Help
- Main Window Buttons:**

New Projection, Insert Projection, Delete Projection, Delete All Projections, Projection Description

REVENUE Folder

Sales: \$5,500,000 per year for the first year then increasing at 5.00% compounding per year

Set up the Revenue folder as follows

Project Info.		Investor	Investment	Working Capital	Expenses	Revenue
Revenue						
Description	Entry Choice	Qty	Category	Year 1 Jan...		
Sales ←	\$ per Yr ←	—	Common	\$ 0		

Setting up the Sales

1. Select row 1 'Sales'
2. Click on the Projection Wizard button and enter the following entries

The screenshot shows the 'Projection Wizard' dialog box with the following configuration:

- Entry Information:** Description: Sales, Entry Choice: \$ per Yr
- Projection Table:**

Entry	Project Entry Using...	Increase	Starting Year	To End	Yrs	Cont. Proj.
\$ 5,500,000	Annual Compounding	5.00%	Year 1	<input checked="" type="checkbox"/>	9	

An inset 'Projection Description' dialog box displays the following details:

- Sales
- Entry Choice: \$ per Year
- Year 1: \$5,500,000 per Year
- Compounding at 5.00% per year for next 8 years

Buttons at the bottom of the wizard include: New Projection, Insert Projection, Delete Projection, Delete All Projections, and Projection Description.

FINANCING Folder

Description: Equipment Loan
 Start Date: Year 1 January
 Type: Standard Mortgage
 Amount: \$6,000,000
 Time Period: 7 years
 Interest Rate: 9.00% per year
 Payments: Monthly
 Compounding Period: Monthly

Make the following entries into the Mortgage window

Mortgage

Mortgage Details

Analysis Period: Year 1 Jan to Year 9 Dec

Commencing Year 1 Month January

Type Standard Mortgage

Amount \$ 6,000,000 Interest Rate Fixed

Description Equipment Loan

Mortgage Settings

Payment Frequency Monthly

Additional Payments/Borrowing

Payment Rounded Up to Nearest Cent

Compounding Frequency Monthly

Terms and Amortization Details

No of (Balloon) Terms 1

Term No	Time Period		Amortization		Nominal Interest Rate
	Years	Months	Years	Months	
1	7	0	7	0	9.000%

Make the entries and click on the Compute button

OK Compute Fill Down Cancel Help Comments

SALVAGE VALUE Folder

New Equipment: \$1,000,000

Make the following entries into the Salvage Value folder

Working Capital	Expenses	Revenue	Financing	Salvage Value
Disposition Costs				
Description		Entry Choice	Expense	
Selling Expenses		% of Salvage Value	0.00%	
Legal Fees		% of Salvage Value	0.00%	
Removal Costs		Amount	\$ 0	
<input type="button" value="Add"/> <input type="button" value="Insert"/> <input type="button" value="Delete"/> <input type="button" value="Move"/>				
Salvage Value				
Description		Capital Investment	Salvage Value	
New Equipment		\$ 11,000,000	→ \$ 1,000,000	

SAVE YOUR PROJECT

DECIDING BETWEEN “KEEP” & “REPLACE”

To decide between the two options use;

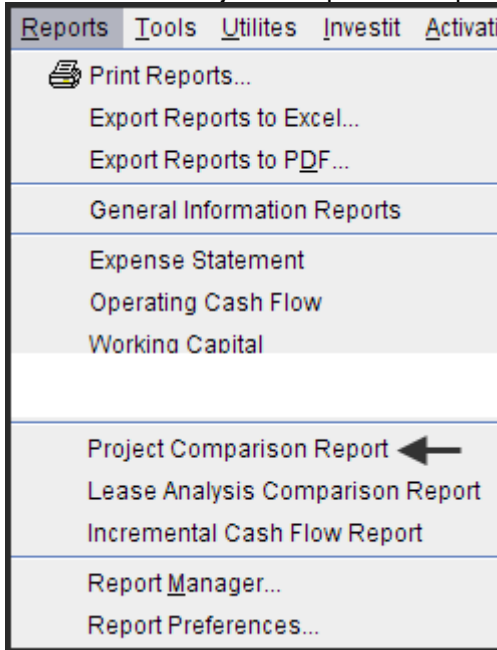
- a. The Project Comparison Report and
- b. The Incremental Cash Flow Report

Project Comparison Report

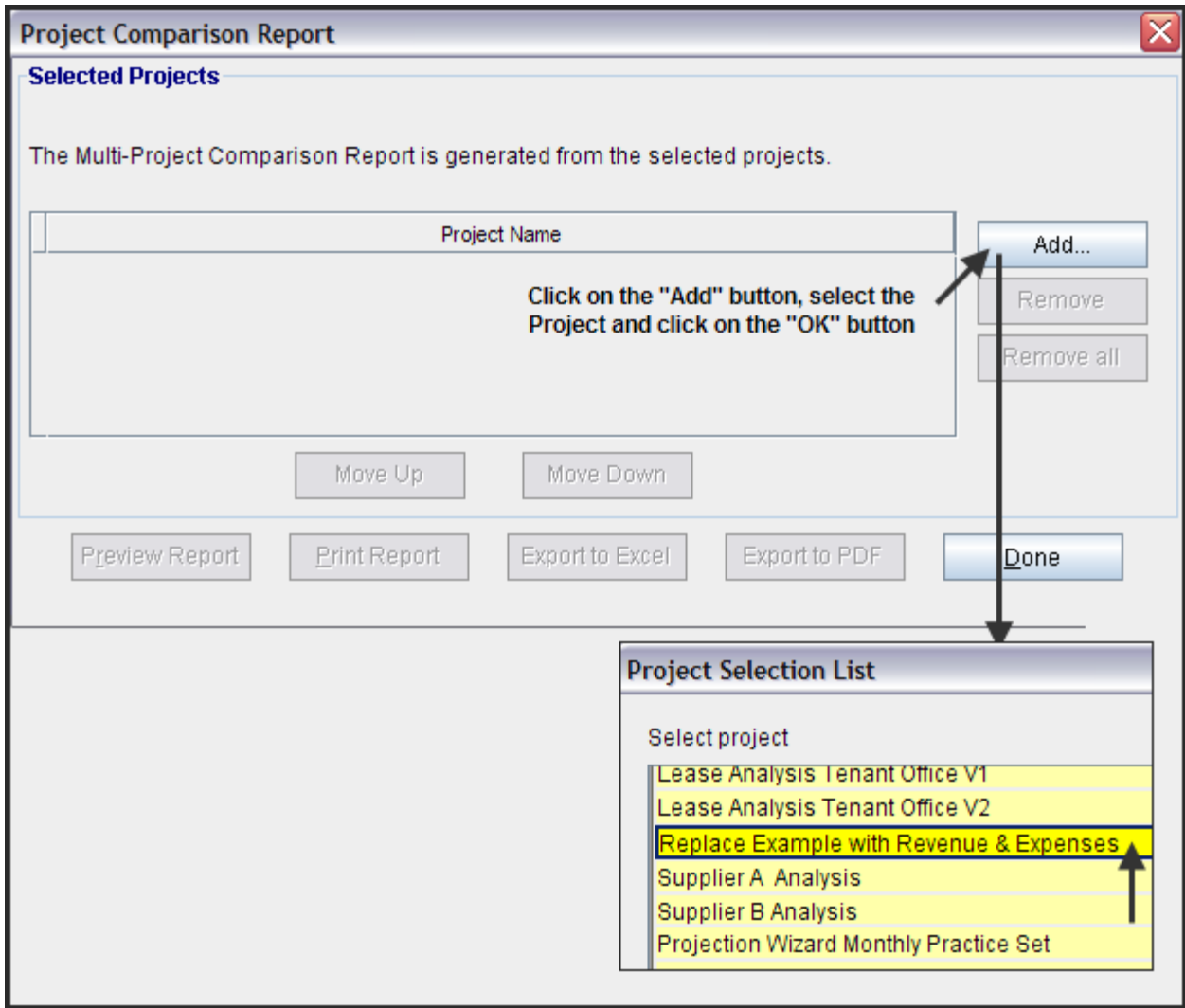
Up to four projects can be compared side by side.

Step involved in selecting the projects for the Project Comparison Report.

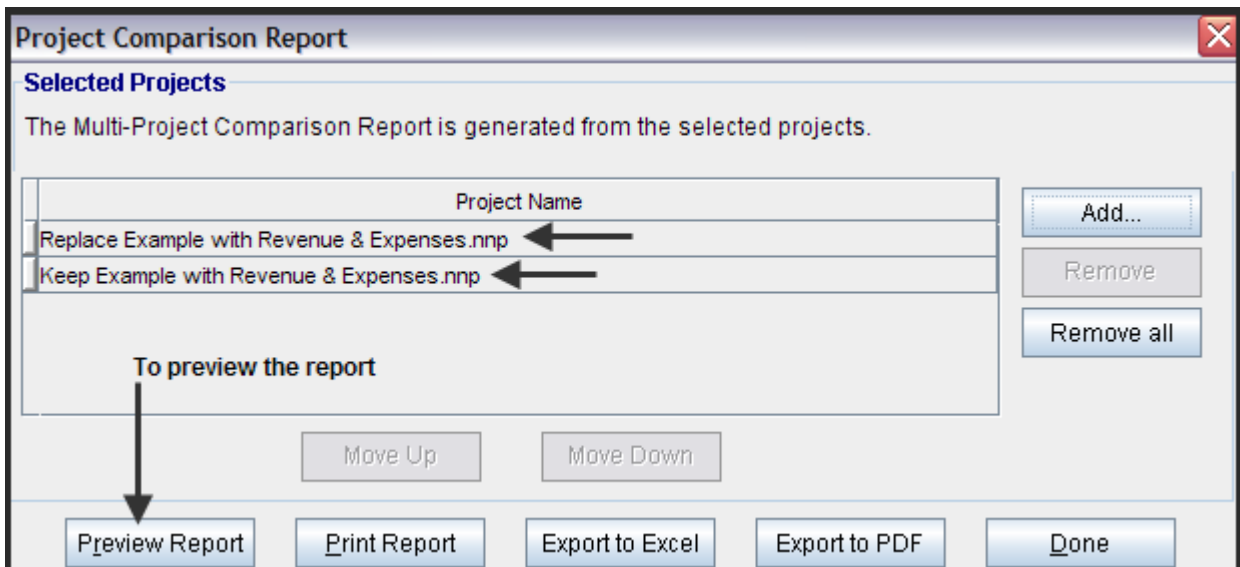
1. Select the Project Comparison Report on the Reports menu



2. On the Project Comparison Report dialog click on the “Add” button to display the Report Selection List. Select the Project and click ‘Ok’. Repeat the process to add another project.



3. The diagram below shows selected projects to be displayed in the "Project Comparison Report"



Project Comparison Report

Project Comparison Report (Before Tax)			
Net Cash Flow(Before Tax)			
		Replace Example with Revenue & Expenses	Keep Example with Revenue & Expenses
Year	0	(5,668,479)	-
	1	565,586	(64,617)
	2	745,636	(42,787)
	3	840,149	619,839
	4	939,348	741,965
	5	1,043,461	764,139
	6	1,152,735	786,282
	7	1,267,422	808,303
	8	2,546,205	830,102
	9	3,852,539	926,566
	Total	7,294,604	5,369,792
Financial Return Before Tax			
Internal Rate of Return (IRR)		14.62%	246.54%
MIRR		10.39%	57.86%
Short term financing rate		8.000%	8.000%
Short term reinvestment rate		2.500%	2.500%
Net Present Value (NPV)	→	\$ 473,360 at 13.00%	→ \$ 2,550,627 at 13.00%
Annual Equivalency		\$ 92,243 at 13.00%	\$ 497,038 at 13.00%
Benefit to Cost Ratio		0.97 at 13.00%	86.39 at 13.00%
Payback Period (Years)		6.30	2.17
Discounted Pay Back Period (Years)		8.63 at 13.00%	2.21 at 13.00%

Interpretation and decision using the “Comparison Report”

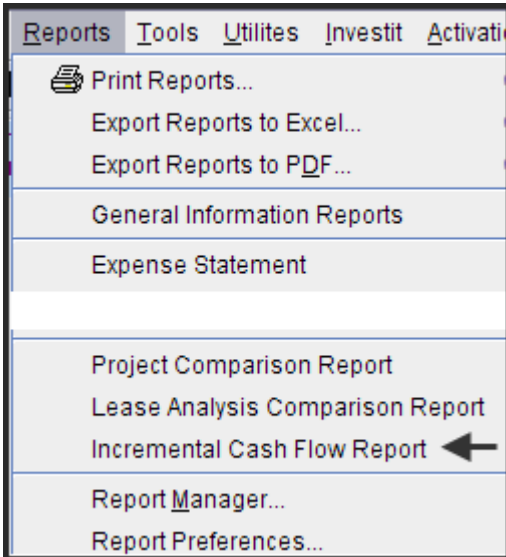
The “Keep” option is the best choice because the Net Present Value at 13.00% before tax is \$2,550,627 compared to \$473,360 for the Replace Option

Incremental Cash Flow Report

When carrying out “Incremental Cash Flow Analysis” the largest investment goes first for the Incremental Cash Flow Report. In this case it is the Replace” option

Steps

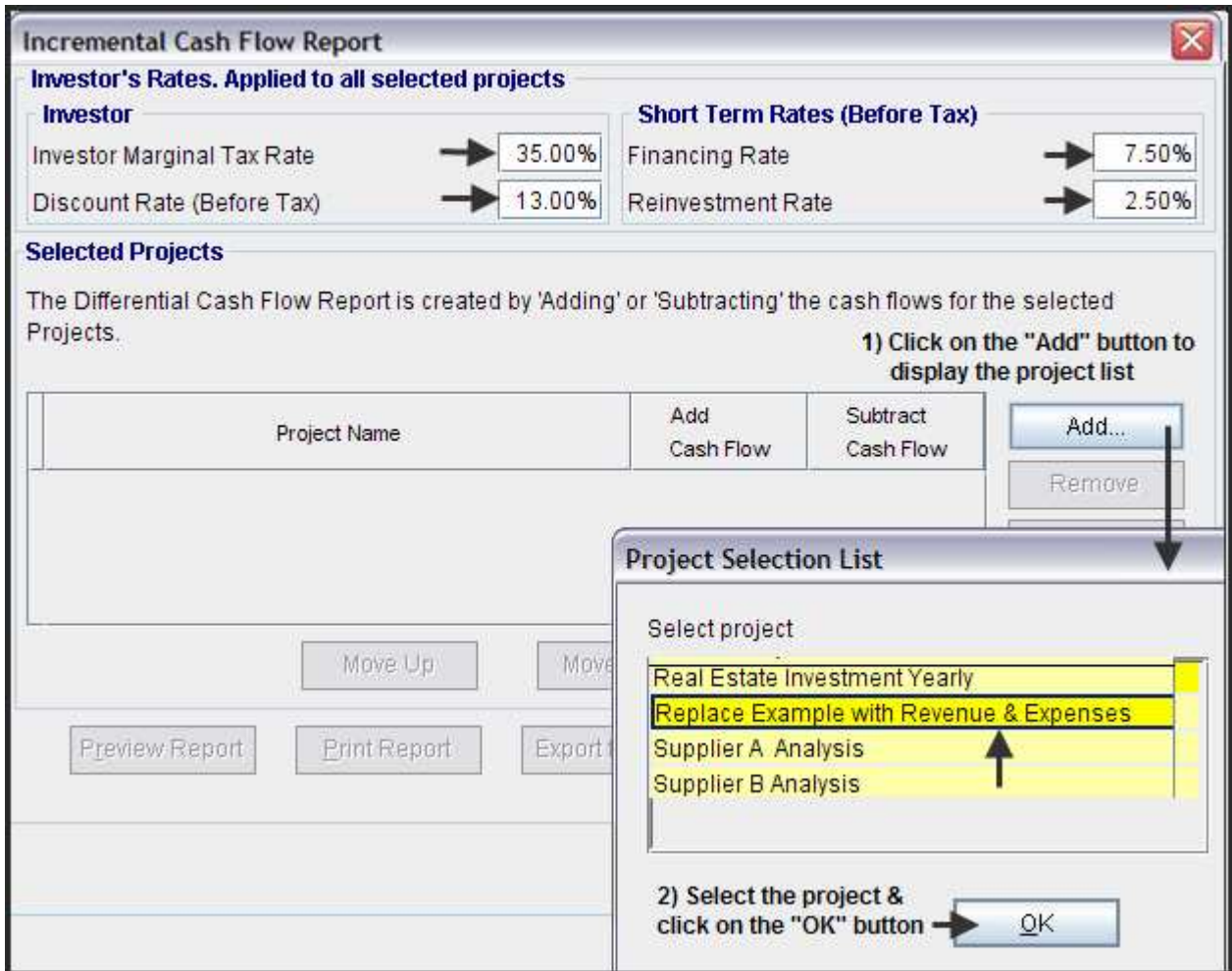
Select the Incremental Cash Flow on the Report menu



Enter;

Investor's Marginal Tax Rate
Discount Rate
Short Term Rates

On the "Incremental Cash Flow Report" dialog click on the "Add" button to display the Report Selection List. Select the Project and click 'Ok'. Repeat the process to add another project. The Option B project was selected first because it the investment of \$12,260,000 is larger than the \$8,200,000 investment for Option A.



The selected projects for the Incremental Cash Flow Report are:

Incremental Cash Flow Report X

Investor's Rates. Applied to all selected projects

<p>Investor</p> <p>Investor Marginal Tax Rate <input style="width: 80px;" type="text" value="35.00%"/></p> <p>Discount Rate (Before Tax) <input style="width: 80px;" type="text" value="13.00%"/></p>	<p>Short Term Rates (Before Tax)</p> <p>Financing Rate <input style="width: 80px;" type="text" value="8.00%"/></p> <p>Reinvestment Rate <input style="width: 80px;" type="text" value="2.50%"/></p>
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Selected Projects

The Incremental Cash Flow Report is created by 'Adding' or 'Subtracting' the cash flows for the selected Projects.

Project Name	Add Cash Flow	Subtract Cash Flow	
Replace Example with Revenue & Expenses.nnp ←	→ <input checked="" type="radio"/>	<input type="radio"/>	<input type="button" value="Add..."/> <input type="button" value="Remove"/> <input type="button" value="Remove all"/>
Keep Example with Revenue & Expenses.nnp ←	<input type="radio"/>	→ <input checked="" type="radio"/>	

The Net Cash Flow for the "Keep" option will be subtracted from the Net Cash

Click on the "Preview Report" button to display the "Incremental Cash Flow Report"

Net Cash Flow(Before Tax)		Incremental Cash Flow Report (Before Tax)		
		Plus	Minus	Incremental Net Cash Flow (Before Tax)
		Replace Example with Revenue & Expenses	Keep Example with Revenue & Expenses	
Year	0	(5,668,479)	-	(5,668,479)
	1	565,586	(64,617)	630,203
	2	746,636	(42,787)	788,423
	3	840,149	619,839	220,311
	4	939,348	741,965	197,384
	5	1,043,461	764,139	279,322
	6	1,152,735	786,282	366,453
	7	1,267,422	808,303	459,119
	8	2,546,205	830,102	1,716,103
	9	3,852,539	926,566	2,925,973
	Total	7,284,604	5,369,792	1,914,812
Before Tax Financial Return				
Internal Rate of Return (IRR)		→ 14.62%	→ 246.54%	→ 4.60%
Net Present Value (NPV) at 13.00%		→ \$ 473,360	→ \$ 2,550,627	→ (\$ 2,077,267)
Modified Internal Rate of Return (MIRR)		10.39%	57.86%	3.98%
Shortterm financing rate		8.00%	8.00%	8.00%
Shortterm reinvestment rate		2.50%	2.50%	2.50%
Annual Equivalency at 13.00%		\$ 92,243	\$ 497,038	(\$ 404,795)
Benefit to Cost Ratio at 13.00%		0.97	86.39	N/A
Payback Period		6.30 years	2.17 years	8.35 years
Discounted Pay Back Period at 13.00%		8.63 years	2.21 years	N/A

Interpretation and decision using the “Incremental Cash Flow Report”

If the organization’s minimum acceptable rate of return (IRR) is 13.00% before tax, both the “Keep” and the “Replace” options seem to be acceptable because they both provide a return (IRR) higher than 13.00% before tax.

However, the return (IRR) on the incremental investment for “Keep” is 4.60% which is far below the minimum acceptable value of 13.00%. In this case the “Replace” option should be rejected and the ‘Keep” option accepted.

The other approach is to select the project with the highest Net Present Value (NPV), which is “Keep” option which has a Net Present Value at 13.00% before tax of \$2,550,627 compared to \$473,360 for the Replace option

Both the ‘Incremental Cash Flow” approach or choosing the option with the highest Net Present Value (NPV) will result in the same choice when dealing with mutually exclusive investments.

