OUTSOURCING DECISION EXAMPLE WITH EXPENSES ONLY COMPARISON
Example USA

INTRODUCTION
This example shows how to compare two investments that;

Involves an investment in equipment
Incurs operating costs

Uses the "Make Expenses Only Yearly" and "Outsource Expenses Only Yearly" templates and the "Incremental Cash Flow Report" because revenues are not relevant to the investment decisions.

EXAMPLE
A manufacturer is introducing a new line of "Excel" pumps has to decide whether to;

1. Purchase and install the equipment for $10,000,000 and manufacture the pump casing or;

2. Outsource the manufacturing of the pump casing which will require an investment of $350,000 for material handlings equipment

General Information
Analysis Period: 9 Years
Corporate Marginal Tax Rate (Including State Taxes): 35.00%
Discount Rate (Before Tax): 15.00%

MAKE ANALYSIS

Project Info Folder
Project Name: Pump Casing. Make Analysis
Project Description: Casing for the Excel Pumps
Analysis Period: 9 years

Investor Folder
Marginal Tax Rate: 35.00%
Discount Rate (Before Tax): 15.00%

Investment Folder
Description: Plant and Equipment
Amount: $10,000,000
Depreciation Method: Personal Property 200% DB
Recovery Period: 7.0 years

Description: Leasehold Improvements
Amount: $600,000
Depreciation Method: Personal Prop. St Line
Recovery Period: 9.0 years

Working Capital Folder
Working Capital: Year 1 $400,000

Expenses Folder

Labor: $160,000 per month for one year increasing at 3.00% per year compounded for 2 years then 5.00% compounding per year

Materials:
Price: Year 1. $300 per Unit for the first year then increasing at 5.00% per year compounding
Quantity: Year 1: 1000 per year for 1 year then increasing at 5.00% per year compounded for 2 years then 3.00% compounding per year

Repair & Maintenance: $20,000 per month increasing at 3.00% compounding

Utilities: $7,000 per month increasing at 4.00% compounding

Insurance: $100,000 per year increasing at 3.00% compounding

Incremental Overhead: $40,000 per month increasing at 3.00% compounding

Rent: 3 Terms. 15,000 Sq. Ft.
Term 1: 3 Years at $10 per Sq. Ft per year
Term 2: 3 Years at $12 per Sq. Ft per year
Term 3: 3 Years at $16 per Sq. Ft per year

Financing Folder

Start Date: Year 1 January
Type: Interest Only Mortgage
Amount: $4,000,000
Time Period: 6 years
Interest Rate: 7.00% per year
Payments: Monthly
Compounding Period: Monthly

Salvage Value Folder

Disposition Costs
Selling Expenses: 3.00% of Salvage Value
Removal Costs: $600,000
Salvage Value:
Plant and Equipment: $1,500,000
Leasehold Improvements: $0

OUTSOURCE ANALYSIS

Project Info Folder

Project Name: Pump Casing. Outsource Analysis
Project Description: Casing for Excel Pump Line
Analysis Period: 9 years

Investor Folder

Marginal Tax Rate: 35.00%
Discount Rate (Before Tax): 15.00%

Investment Folder

Description: Equipment & Facilities
Amount: $350,000
Depreciation Method: Personal Property 200% DB
Recovery Period: 7.0 years

Description: Leasehold Improvements
Amount: $200,000
Depreciation Method: Personal Prop. St Line
Recovery Period: 9.0 years

Working Capital Folder

Working Capital: Year 1 $250,000

Expenses Folder

Product Cost (China):
Price: 3 Term Stepped Projection
Term 1: 3 years at $3,000 per Unit
Term 2: 3 years at $5,000 per Unit
Term 3: 3 years at $7,000 per Unit
Quantity: Year 1: 1000 per year for 1 year then increasing at 5.00% per year compounded for 2 years then 3.00% compounding per year

Additional Labor: $6,000 per month for 1 year then increasing at 3.00% per year compounded for 2 years then 5.00% compounding per year

Insurance: $4,000 per year increasing at 3.00% compounding

Incremental Overhead: $5,000 per month increasing at 3.00% compounding

Rent: 3 Terms. 4,000 Sq. Ft.
Term 1: 3 Years at $10 per Sq. Ft per year
Term 2: 3 Years at $12 per Sq. Ft per year
Term 3: 3 Years at $16 per Sq. Ft per year

Transportation & Handling: 10.00% of Product Cost (China)

Financing Folder

No financing

Salvage Value Folder

Disposition Costs:
Removal Costs: $45,000
Salvage Value:
Plant and Equipment: $70,000
Leasehold Improvements: $0

TEMPLATE SELECTION

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

1. The analysis is not impacted by the revenues, which is the same for both options
2. Projections are Yearly
3. The analysis is comparing whether it is more cost effective to make pump casing themselves or outsourcing to a company in China

Templates: 'Make Expenses Only Yearly' projections and 'Outsource Expenses Only Yearly' projections

STEPS

Using the Make and Outsource Expenses Only Yearly projections templates;

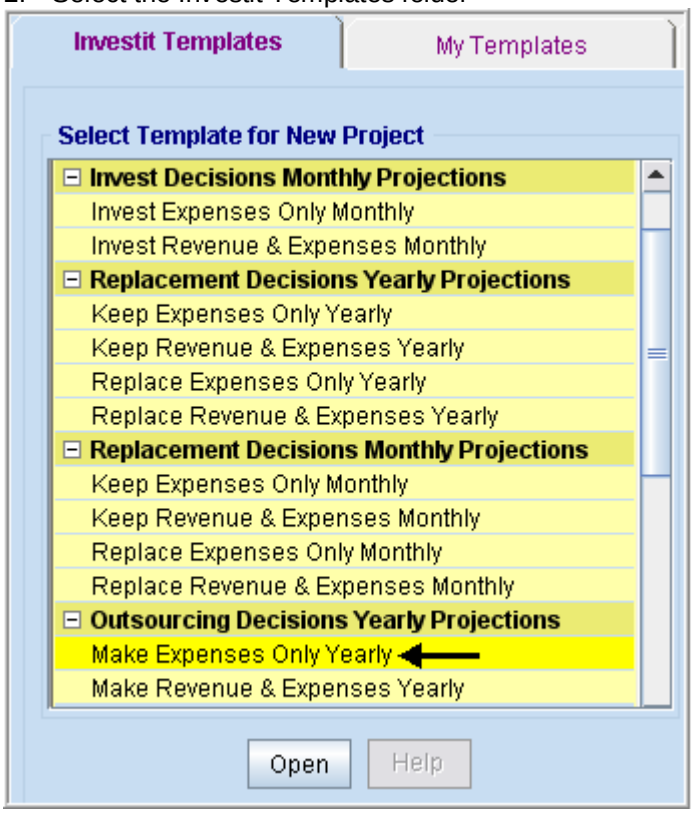
1. Enter the analysis for making the pump casings
2. Enter the analysis for outsourcing the pump casings
3. Use the "Project Comparison Report" or the "Incremental Cash Flow Report" to compare the two options

INSTRUCTIONS FOR ENTERING the MAKE ANALYSIS

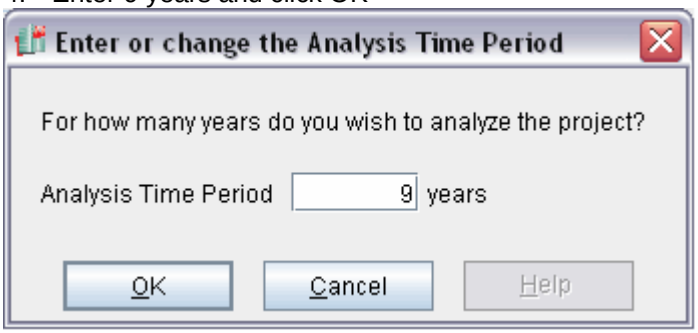
Getting started

The first step is to open the Investit Decisions Template "Make Expenses Only Yearly" as follows:

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



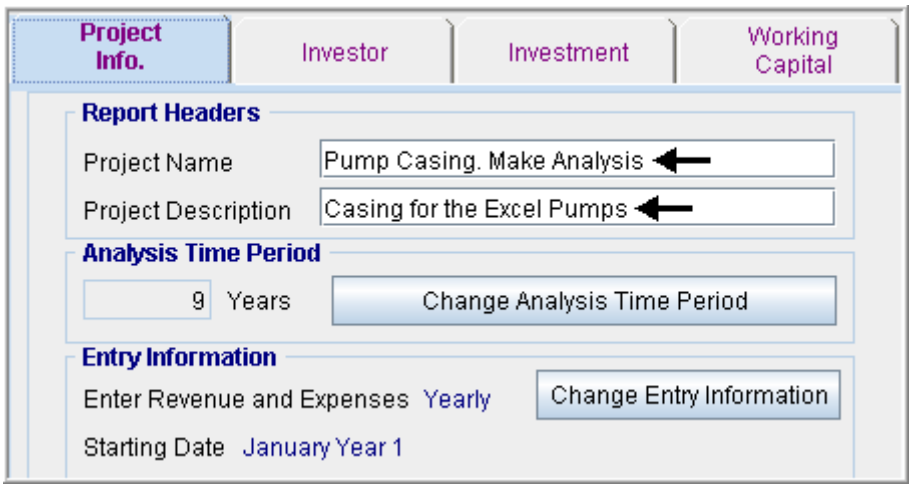
3. Select and open the Investit template "Make Expenses Only Yearly". The analysis period dialog will open at this point.
4. Enter 9 years and click OK



Entering the project data and information

Project Info Folder

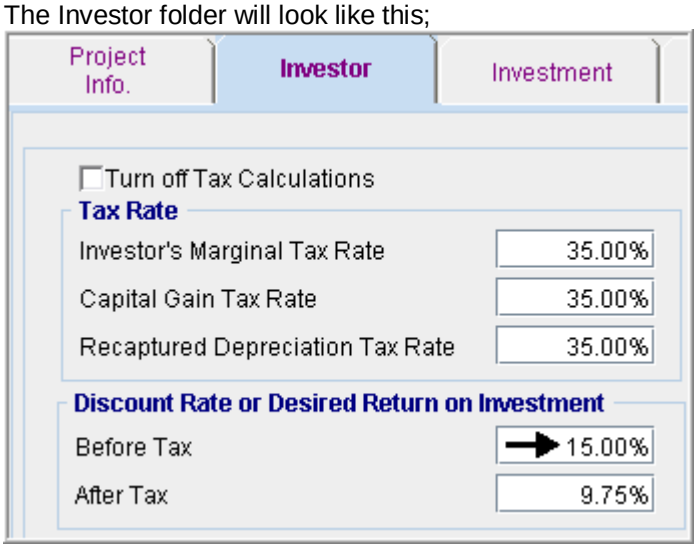
Project Name: Pump Casing. Make Analysis
Project Description: Casing for the Excel Pumps
Analysis Period: 9 years


Project Info.
Investor
Investment
Working Capital
Report Headers
Project Name
Pump Casing. Make Analysis
Project Description
Casing for the Excel Pumps
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

Marginal Tax Rate: 35.00%
Discount Rate (Before Tax): 15.00%

The Investor folder will look like this;



Investment Folder

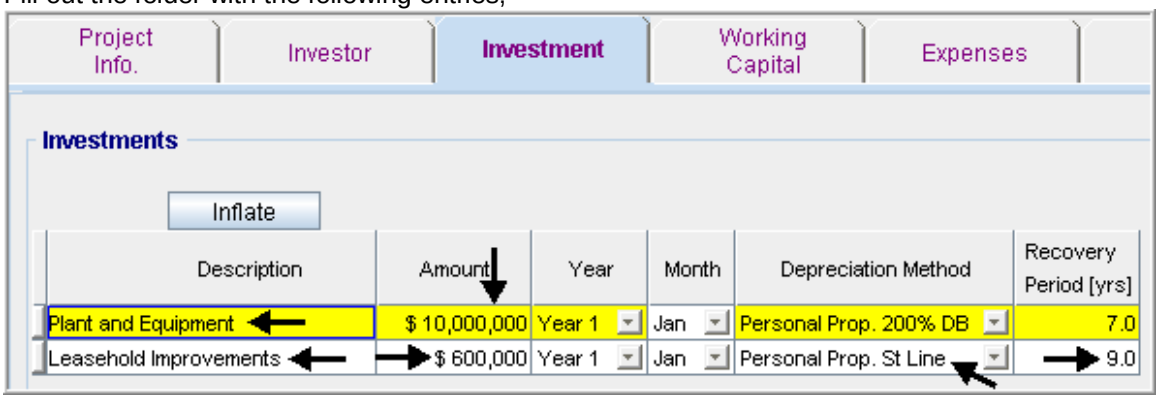
Description: Plant and Equipment
Amount: $10,000,000
Depreciation Method: Personal Property 200% DB
Recovery Period: 7.0 years

Description: Leasehold Improvements
Amount: $600,000
Depreciation Method: Personal Prop. St Line
Recovery Period: 9.0 years

Instructions for setting up the Investment folder

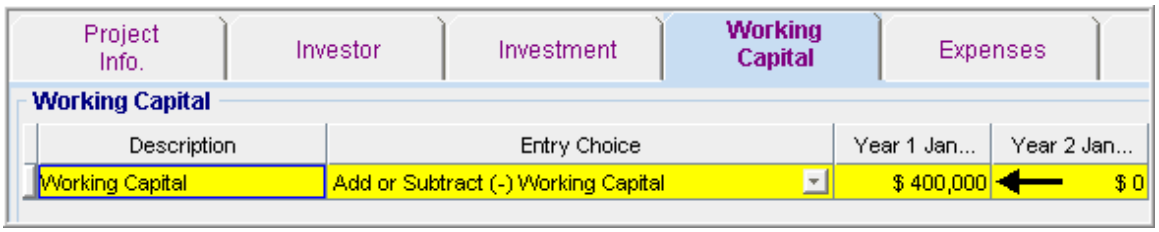
1. Delete rows 1 and 2 with description ‘Land’ and ‘Building’
2. Change ‘Equipment & Machinery’ to ‘Plant and Equipment’
3. Press the Add button to create the Leasehold Improvements

Fill out the folder with the following entries;



Working Capital Folder

Working Capital: Year 1 $400,000



Expenses Folder

Labor: $160,000 per month increasing at 3.00% per year compounded for 2 years then 5.00% compounding per year

Materials:
Price: Year 1. $300 per Unit for the first year then increasing at 5.00% per year compounding
Quantity: Year 1: 1000 per year for 1 year then increasing at 5.00% per year compounded for 2 years then 3.00% compounding per year

Repair & Maintenance: $20,000 per month increasing at 3.00% compounding

Utilities: $7,000 per month increasing at 4.00% compounding

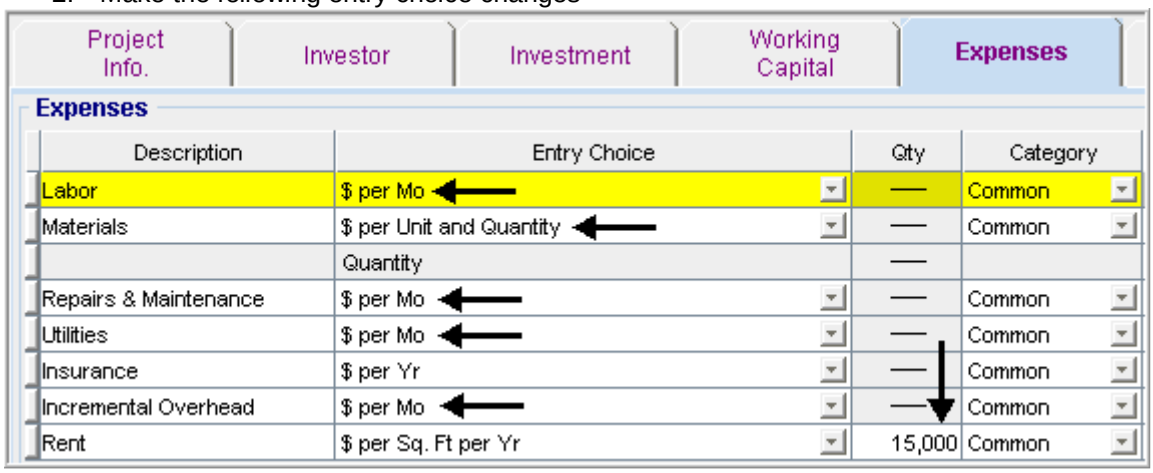
Insurance: $100,000 per year increasing at 3.00% compounding

Incremental Overhead: $400,000 per month increasing at 3.00% compounding

Rent: 3 Terms. 15,000 Sq. Ft.
Term 1: 3 Years at $10 per Sq. Ft per year
Term 2: 3 Years at $12 per Sq. Ft per year
Term 3: 3 Years at $16 per Sq. Ft per year

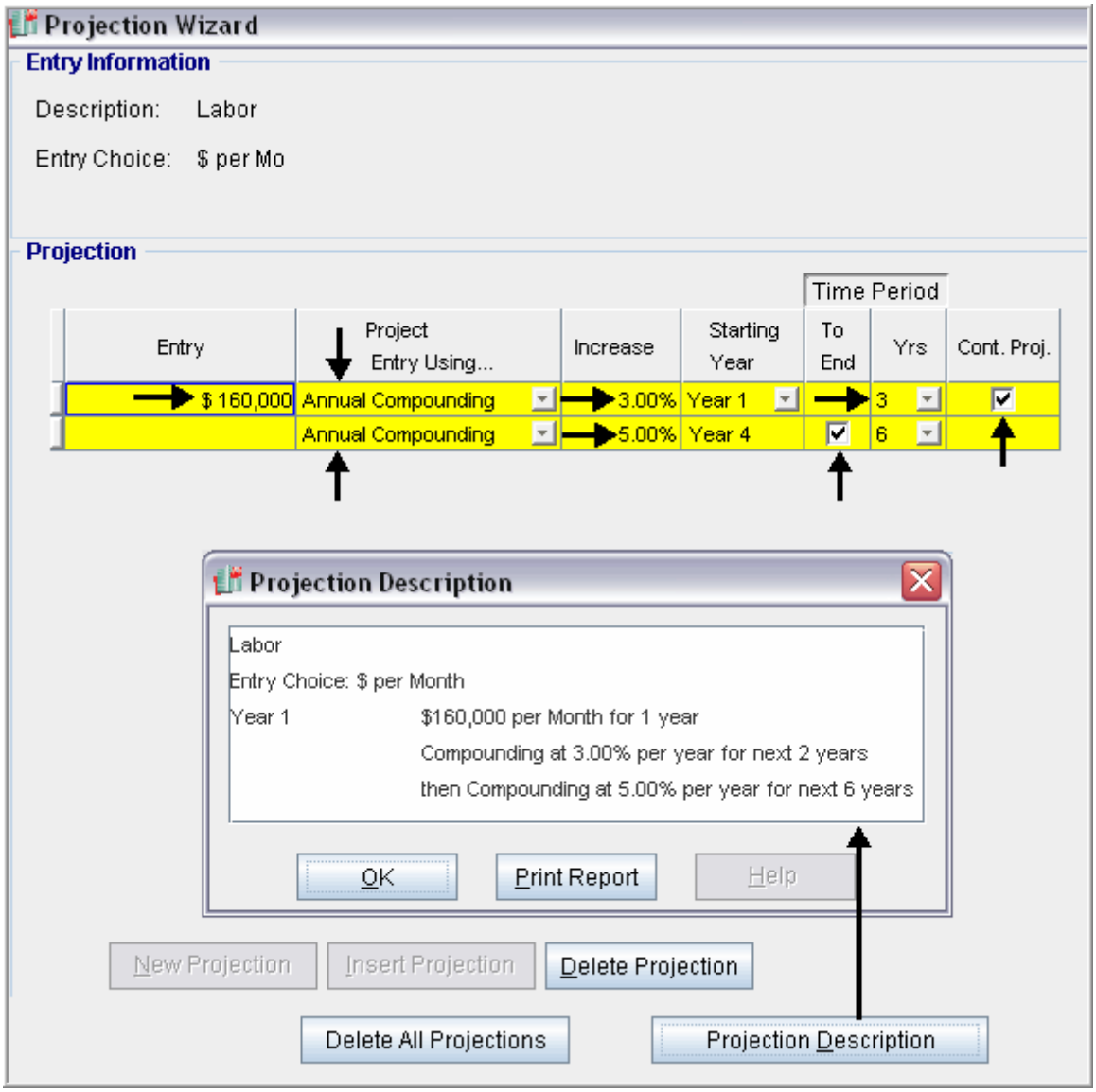
Setting up the Expenses folder

1. Press the Add button to add the Building Rent row
2. Make the following entry choice changes



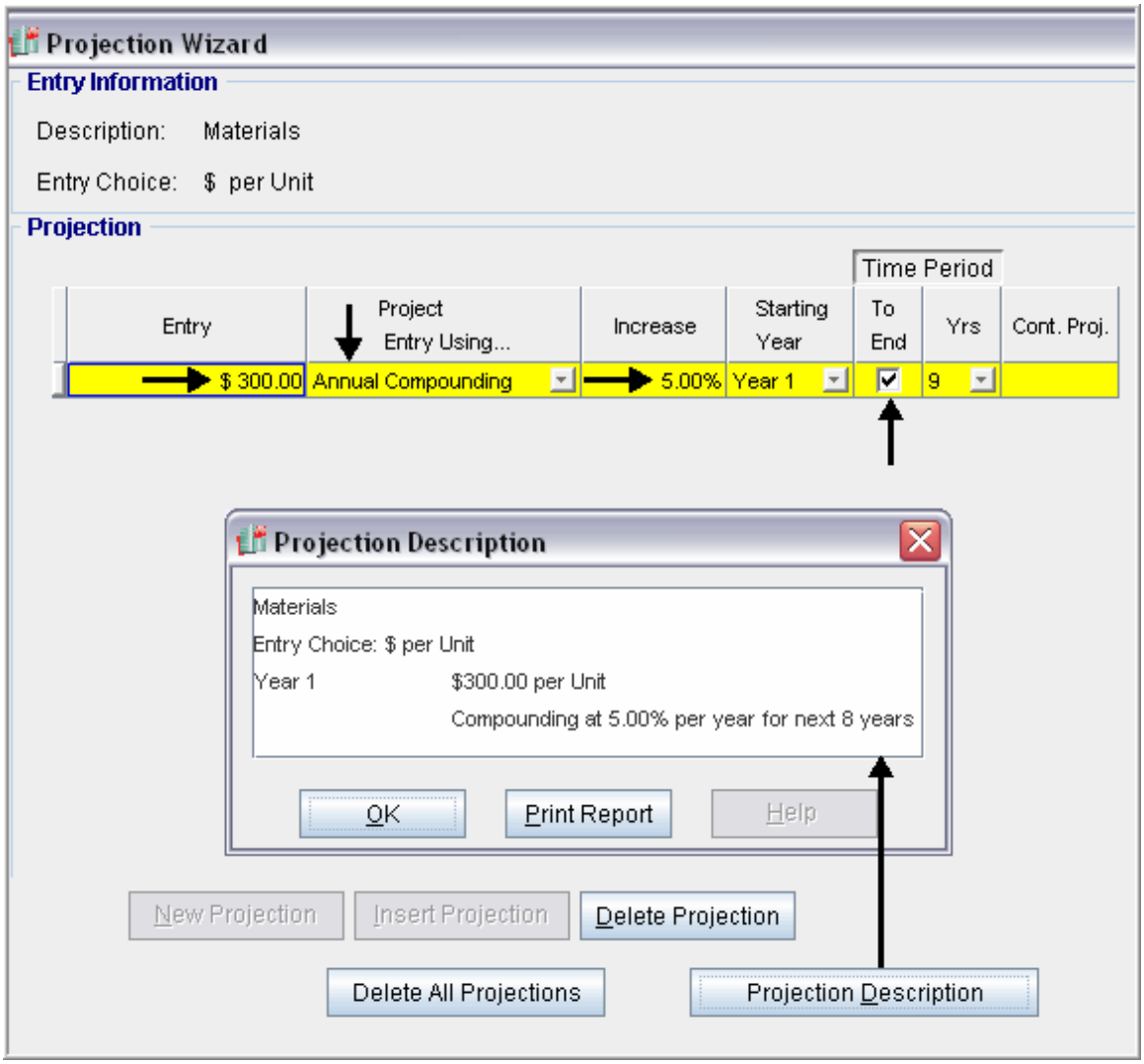
Setting up Labor

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



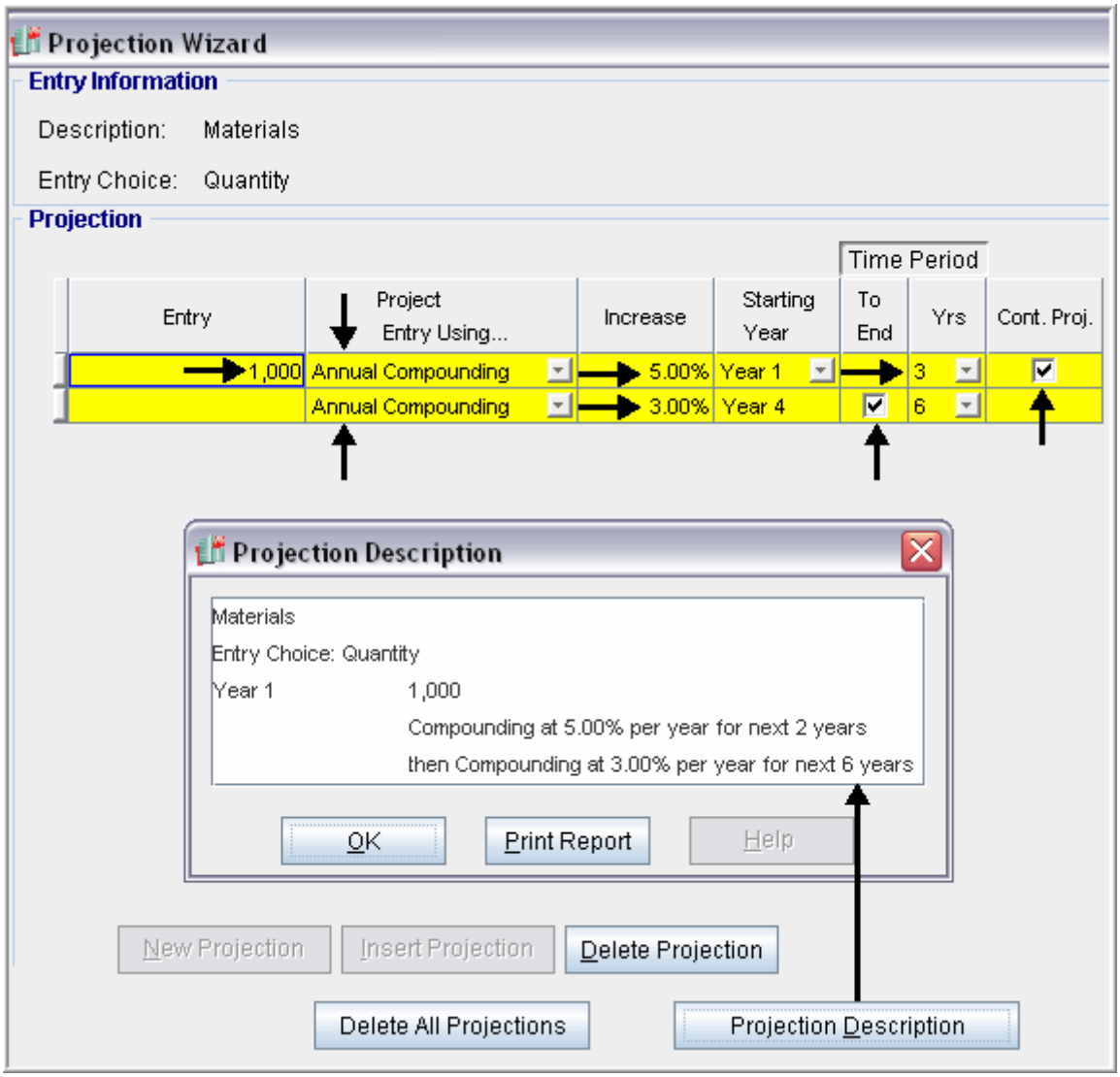
Setting up Materials

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



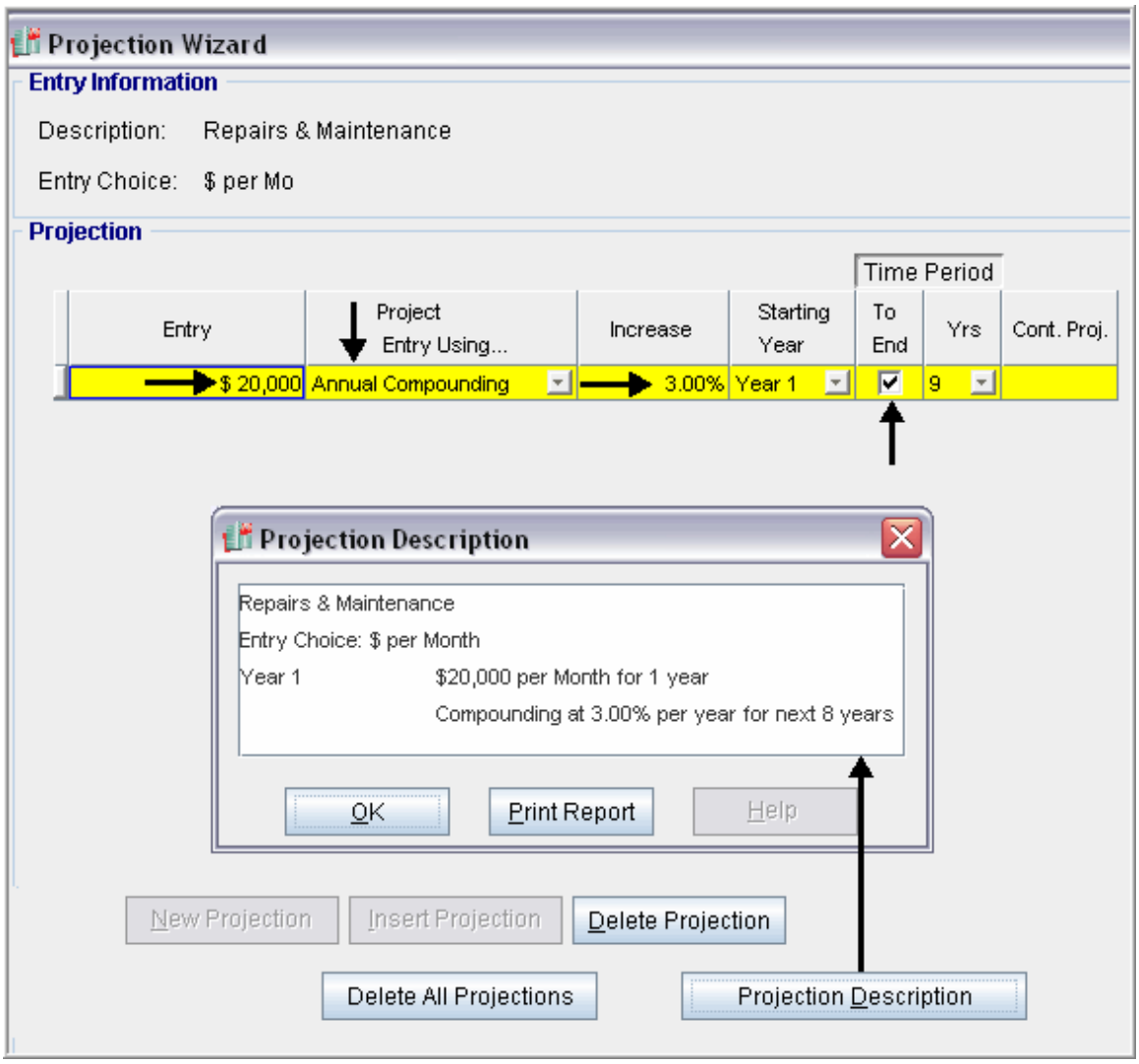
Setting up the Quantity for Materials

1. Select the Quantity row and click on the Projection Wizard button
2. Enter the following entries into the Projection Wizard



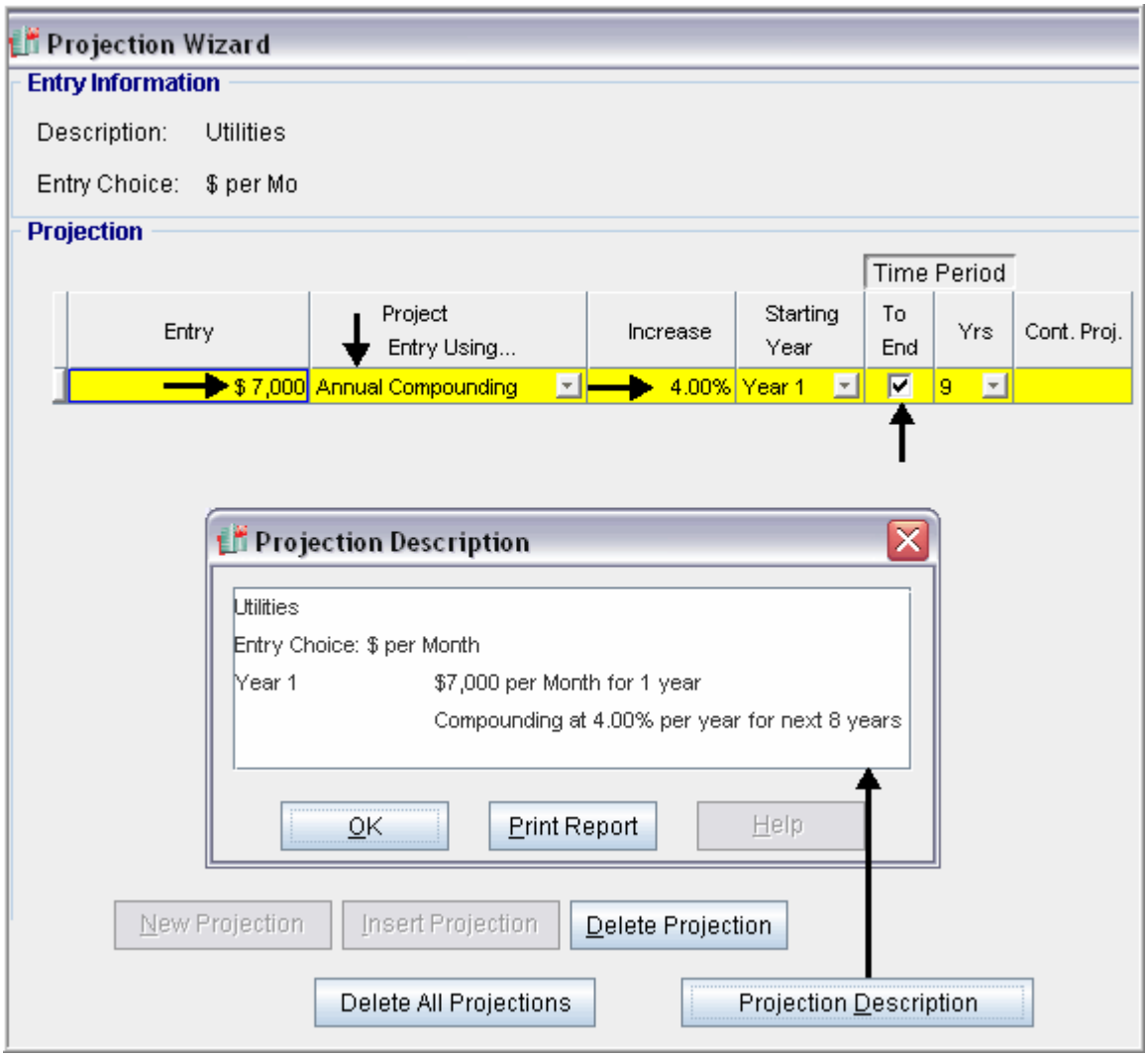
Steps for entering Repairs & Maintenance

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



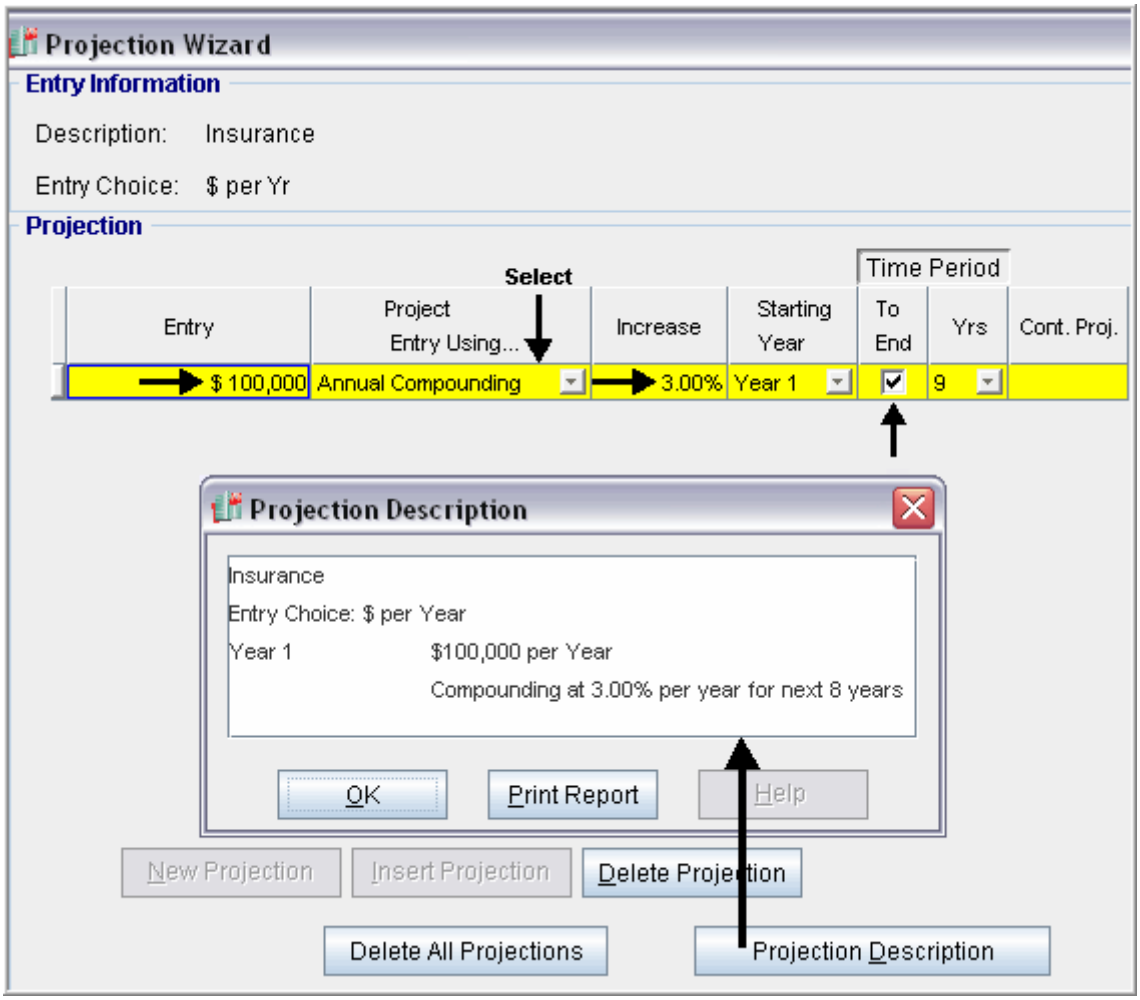
Steps for entering Utilities

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



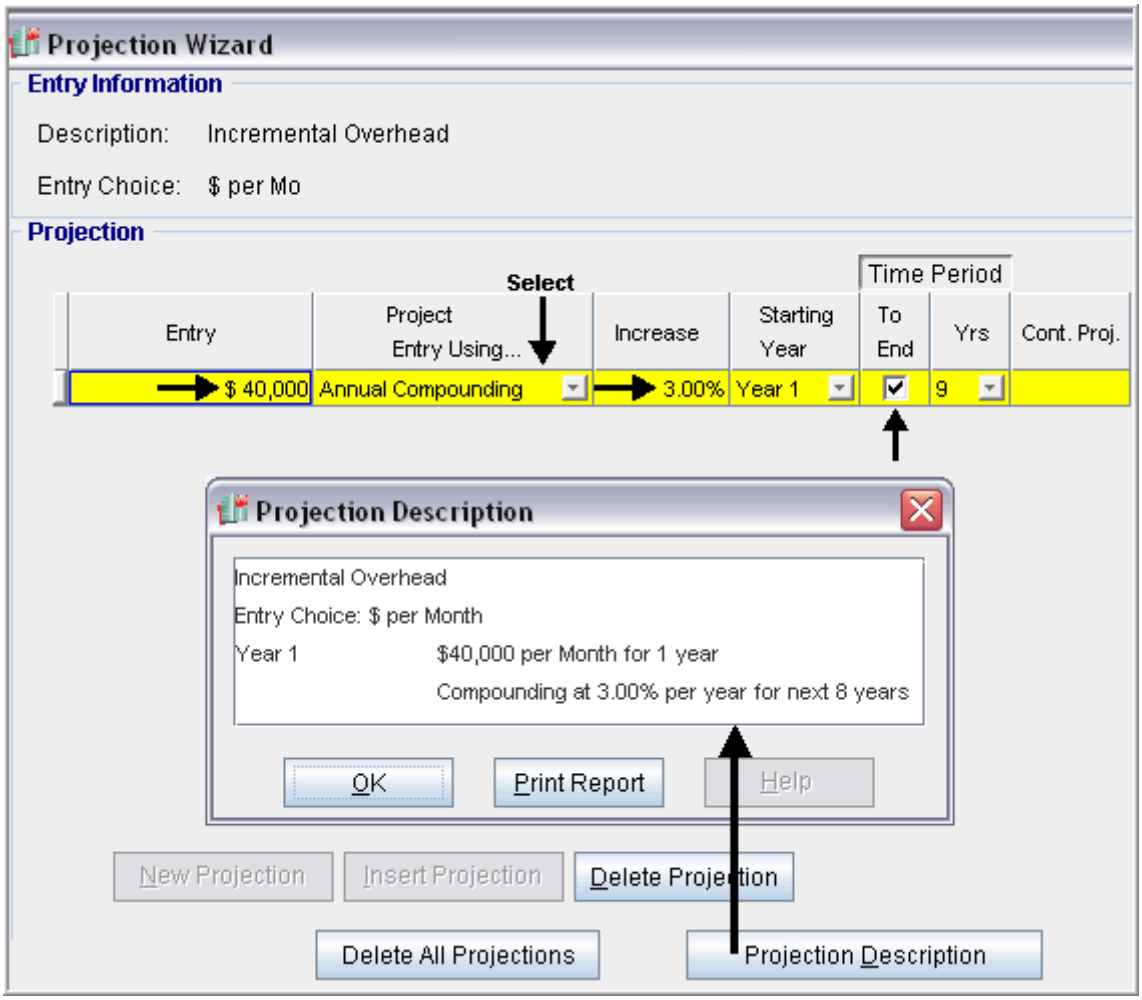
Steps for entering Insurance

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



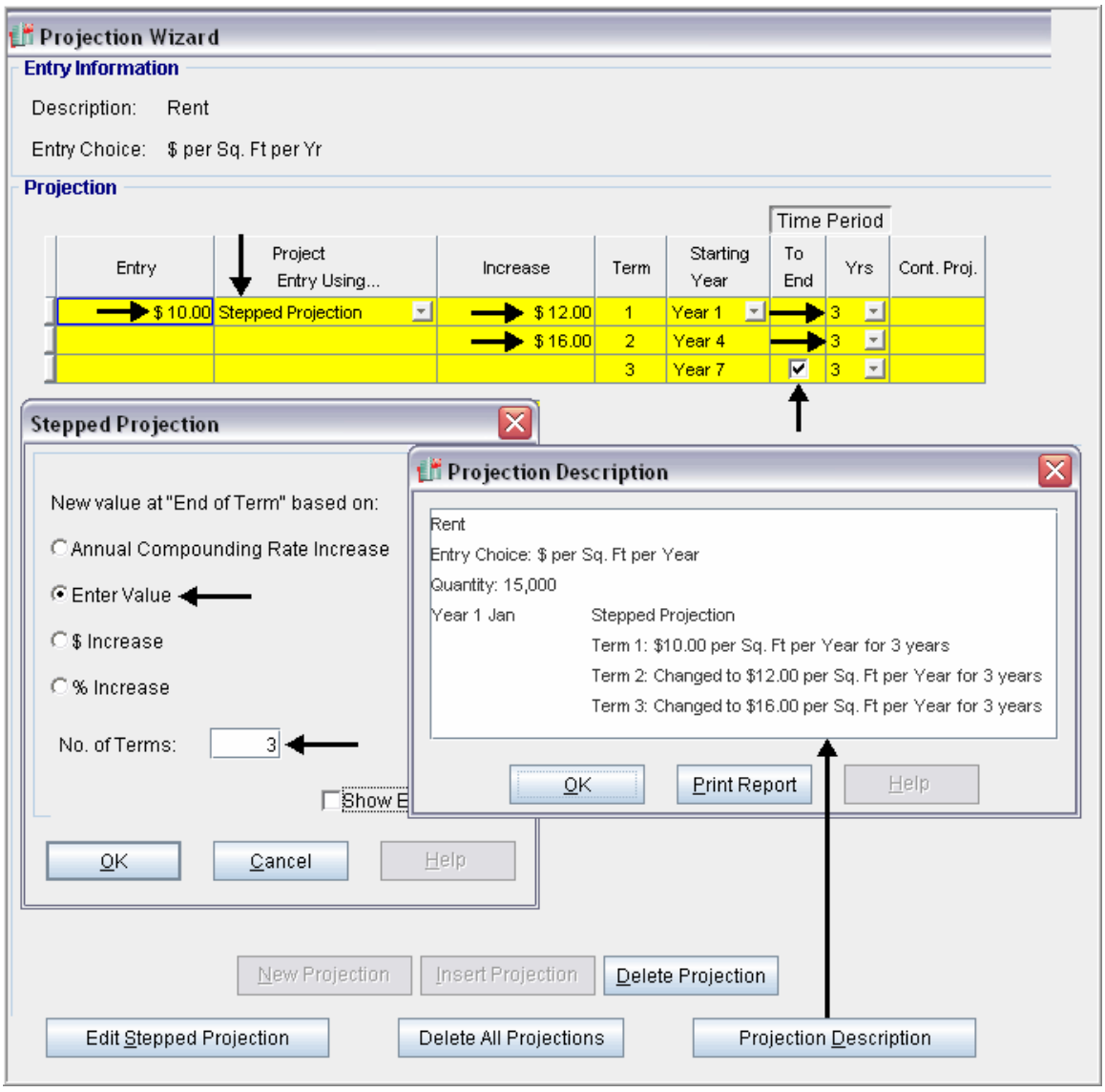
Steps for entering Incremental Overhead

1. Select the Incremental Overhead row
2. Click on the Projection Wizard button and enter the following entries



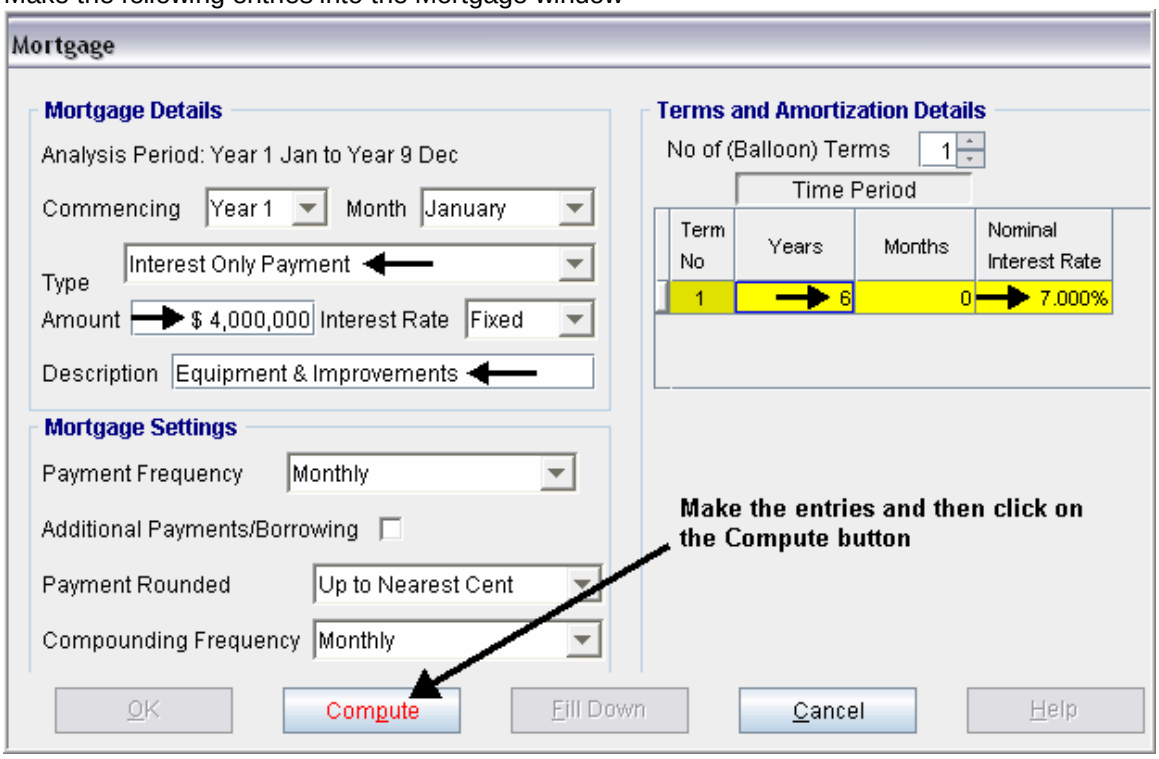
Steps for entering Rent

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


Projection Wizard
Entry Information
Description: Rent
Entry Choice: $ per Sq. Ft per Yr
Projection
Time Period
Entry
Project Entry Using...
Increase
Term
Starting Year
To End
Yrs
Cont. Proj.
$ 10.00
Stepped Projection
$ 12.00
1
Year 1
3
$ 16.00
2
Year 4
3
3
Year 7
3
Stepped Projection
New value at "End of Term" based on:
Annual Compounding Rate Increase
Enter Value
$ Increase
% Increase
No. of Terms:
3
Show E
OK
Cancel
Help
Projection Description
Rent
Entry Choice: $ per Sq. Ft per Year
Quantity: 15,000
Year 1 Jan
Stepped Projection
Term 1: $10.00 per Sq. Ft per Year for 3 years
Term 2: Changed to $12.00 per Sq. Ft per Year for 3 years
Term 3: Changed to $16.00 per Sq. Ft per Year for 3 years
OK
Print Report
Help
New Projection
Insert Projection
Delete Projection
Edit Stepped Projection
Delete All Projections
Projection Description

Financing Folder
Start Date: Year 1 January
Type: Interest Only Mortgage
Amount: $4,000,000
Time Period: 6 years
Interest Rate: 7.00% per year
Payments: Monthly
Compounding: Monthly

Make the following entries into the Mortgage window

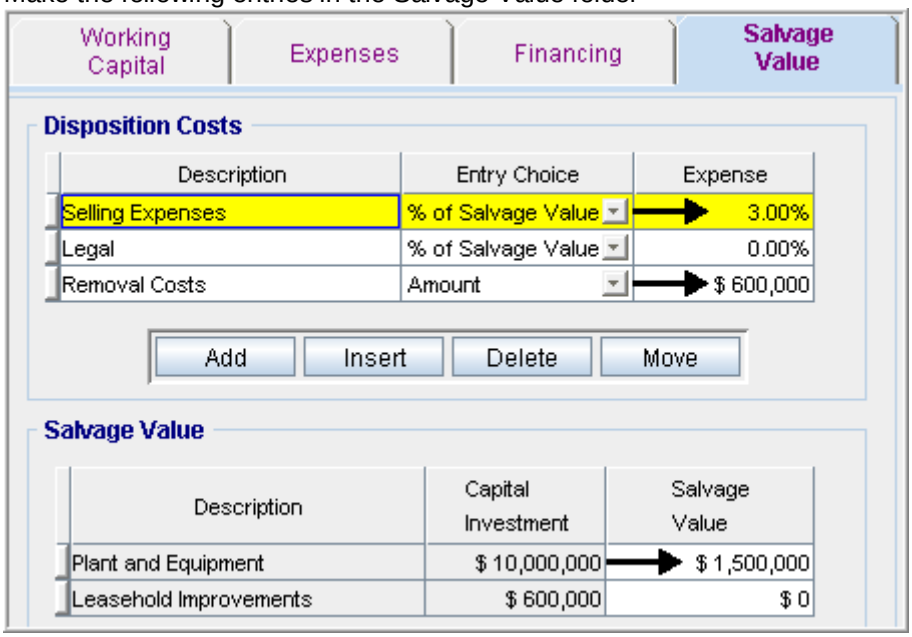


Salvage Value Folder

Disposition Costs:
- Selling Expenses: 3.00%
- Removal Costs: $600,000

Salvage Value:
- Plant and Equipment: $1,500,000
- Leasehold Improvements: $0

Make the following entries in the Salvage Value folder



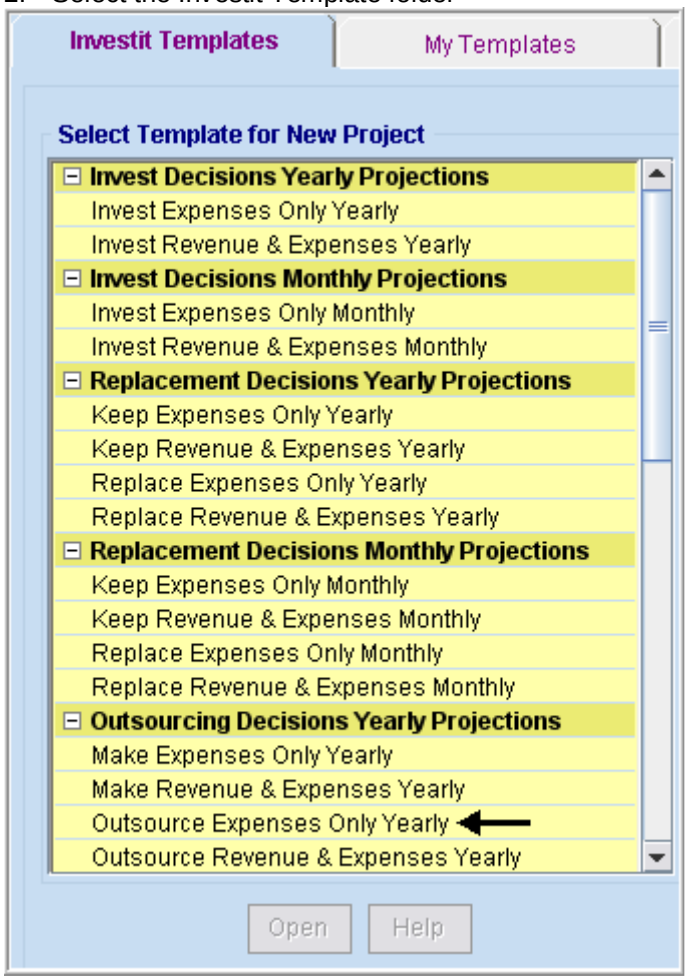
SAVE YOUR PROJECT

INSTRUCTIONS FOR ENTERING the OUTSOURCE ANALYSIS

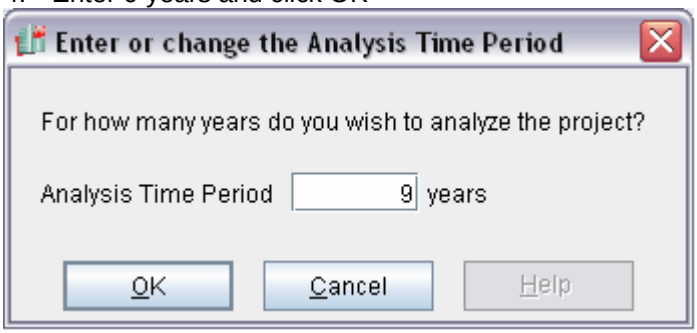
Getting started

The first step is to open the Investit Decisions Template "Outsource Expenses Only Yearly" as follows:

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



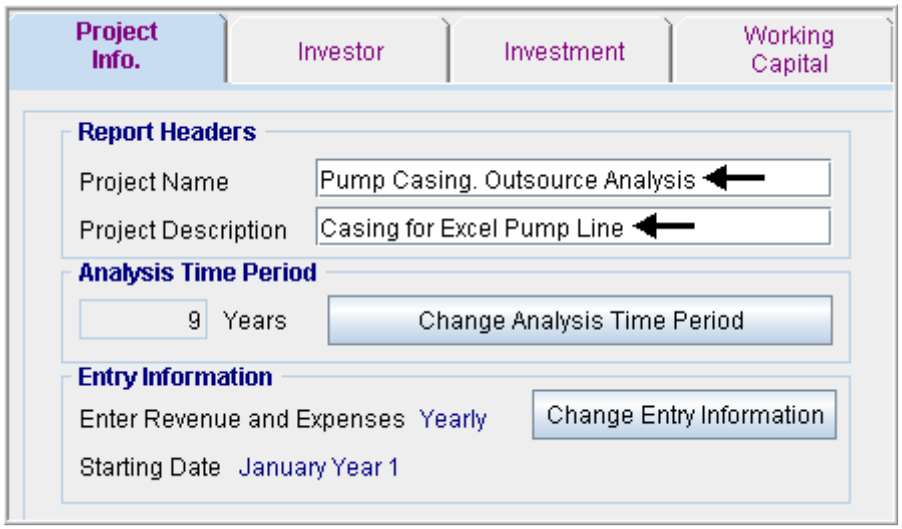
3. Select and open the Investit template "Outsource Expenses Only Yearly". The analysis period dialog will open at this point.
4. Enter 9 years and click OK



Entering the project data and information

Project Info Folder

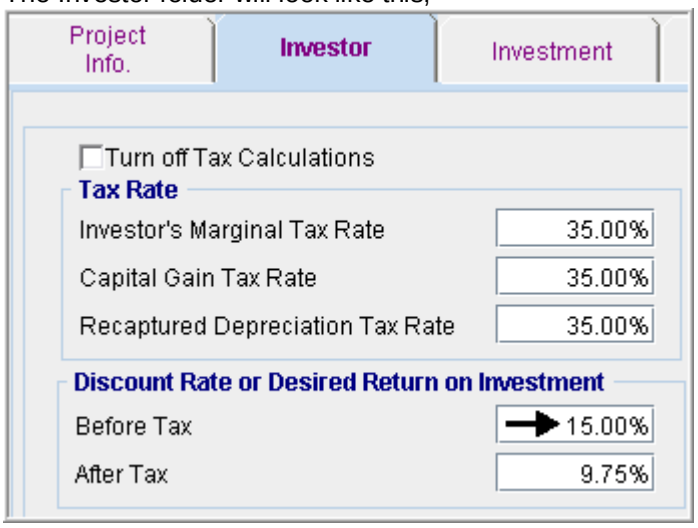
Project Name: Pump Casing. Outsource Analysis
Project Description: Casing for Excel Pump Line
Analysis Period: 9 years



Investor Folder

Marginal Tax Rate: 35.00%
Discount Rate (Before Tax): 15.00%

The Investor folder will look like this;



Investment Folder

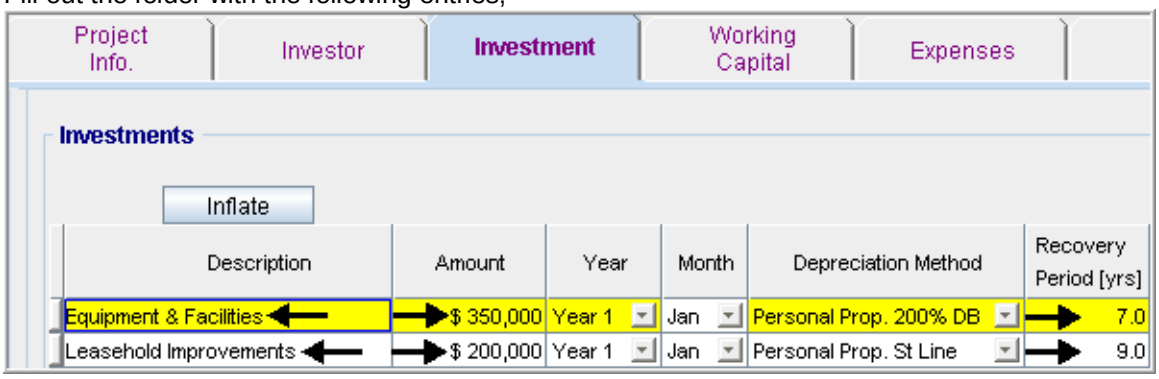
Description: Equipment & Facilities
Amount: $350,000
Depreciation Method: Personal Property 200% DB
Recovery Period: 7.0 years

Description: Leasehold Improvements
Amount: $200,000
Depreciation Method: Personal Prop. St Line
Recovery Period: 9.0 years

Instructions for setting up the Investment folder

1. Press the Add button to add the Leasehold Improvements Row
2. Enter the following data to complete the Investment folder;

Fill out the folder with the following entries;



Working Capital Folder

Working Capital: Year 1 $250,000

Expenses Folder

Product Cost (China):
Price: 3 Term Stepped Projection
Term 1: 3 years at $3,000 per Unit
Term 2: 3 years at $5,000 per Unit
Term 3: 3 years at $7,000 per Unit
Quantity: Year 1: 1000 per year for 1 year then increasing at 5.00% per year compounded for 2 years then 3.00% compounding per year

Additional Labor: $6,000 per month increasing at 3.00% per year compounded for 2 years then 5.00% compounding per year

Insurance: $4,000 per year increasing at 3.00% compounding

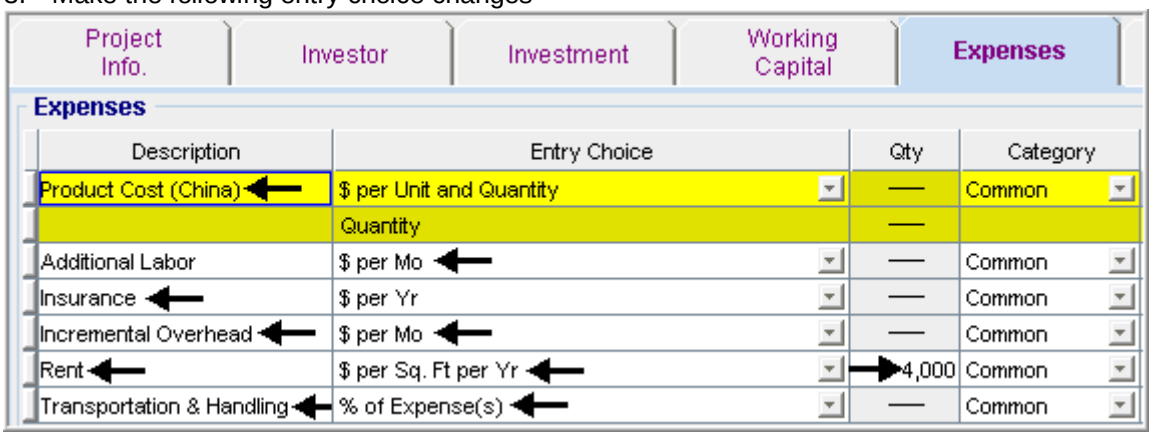
Incremental Overhead: $5,000 per year increasing at 3.00% compounding

Rent: 3 Terms. 4,000 Sq. Ft.
Term 1: 3 Years at $10 per Sq. Ft per year
Term 2: 3 Years at $12 per Sq. Ft per year
Term 3: 3 Years at $16 per Sq. Ft per year

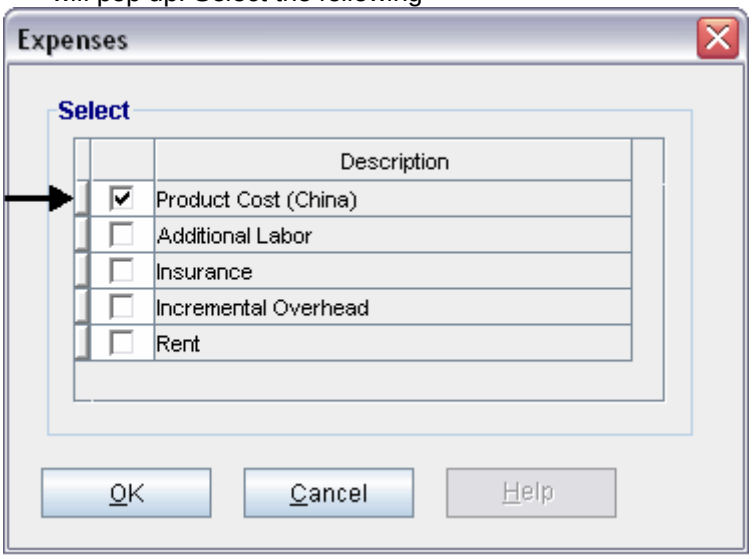
Transportation & Handling: 10.00% of Product Cost (China)

Setting up the Expenses folder

1. Press the Add button twice to add the Rent and Transportation rows
2. Select the Incremental Overhead and press the Insert button to add the Insurance row
3. Make the following entry choice changes

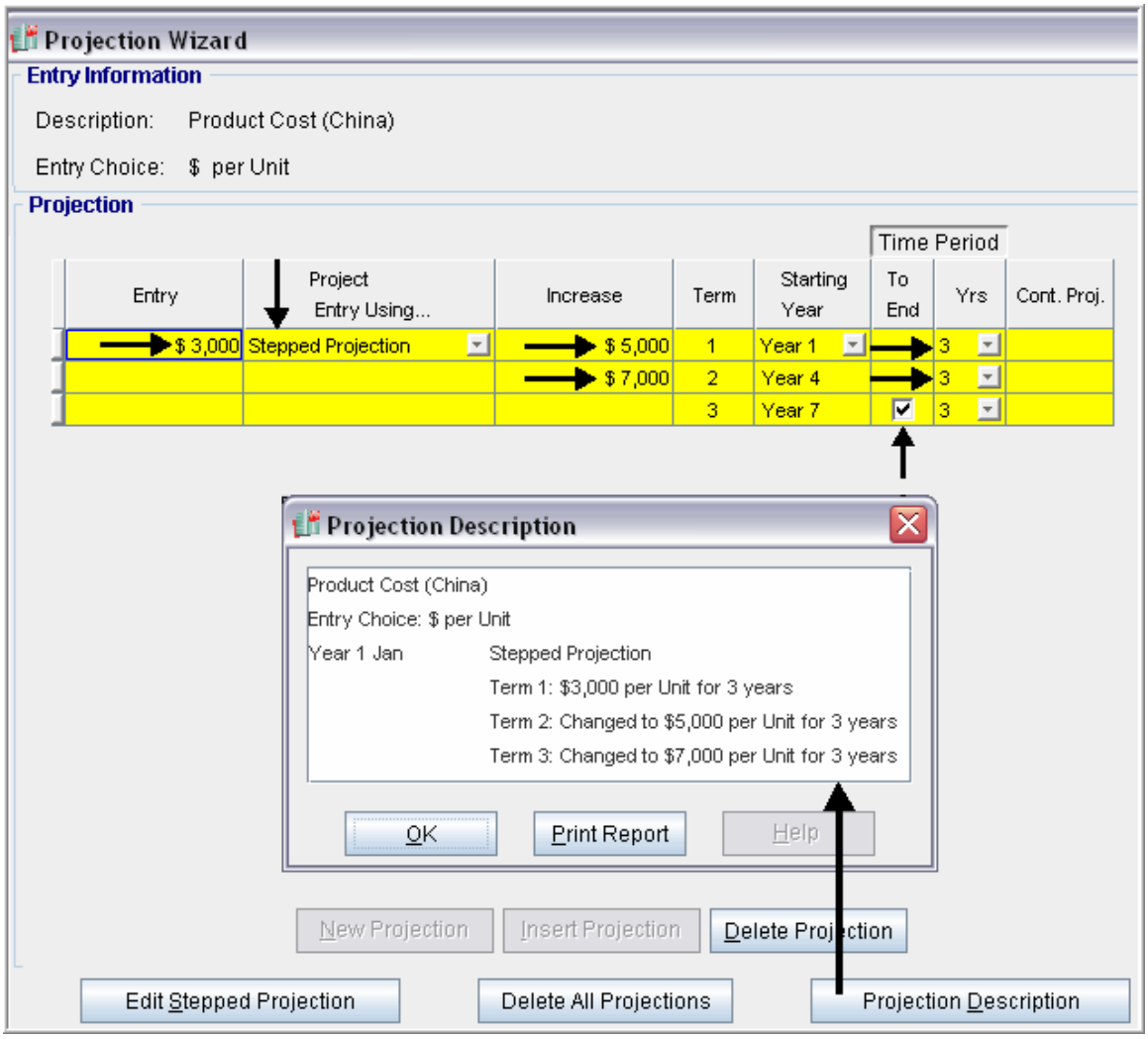


4. When selecting the Entry Choice "% of Expense(s)" for Transportation & Handling a window will pop up. Select the following



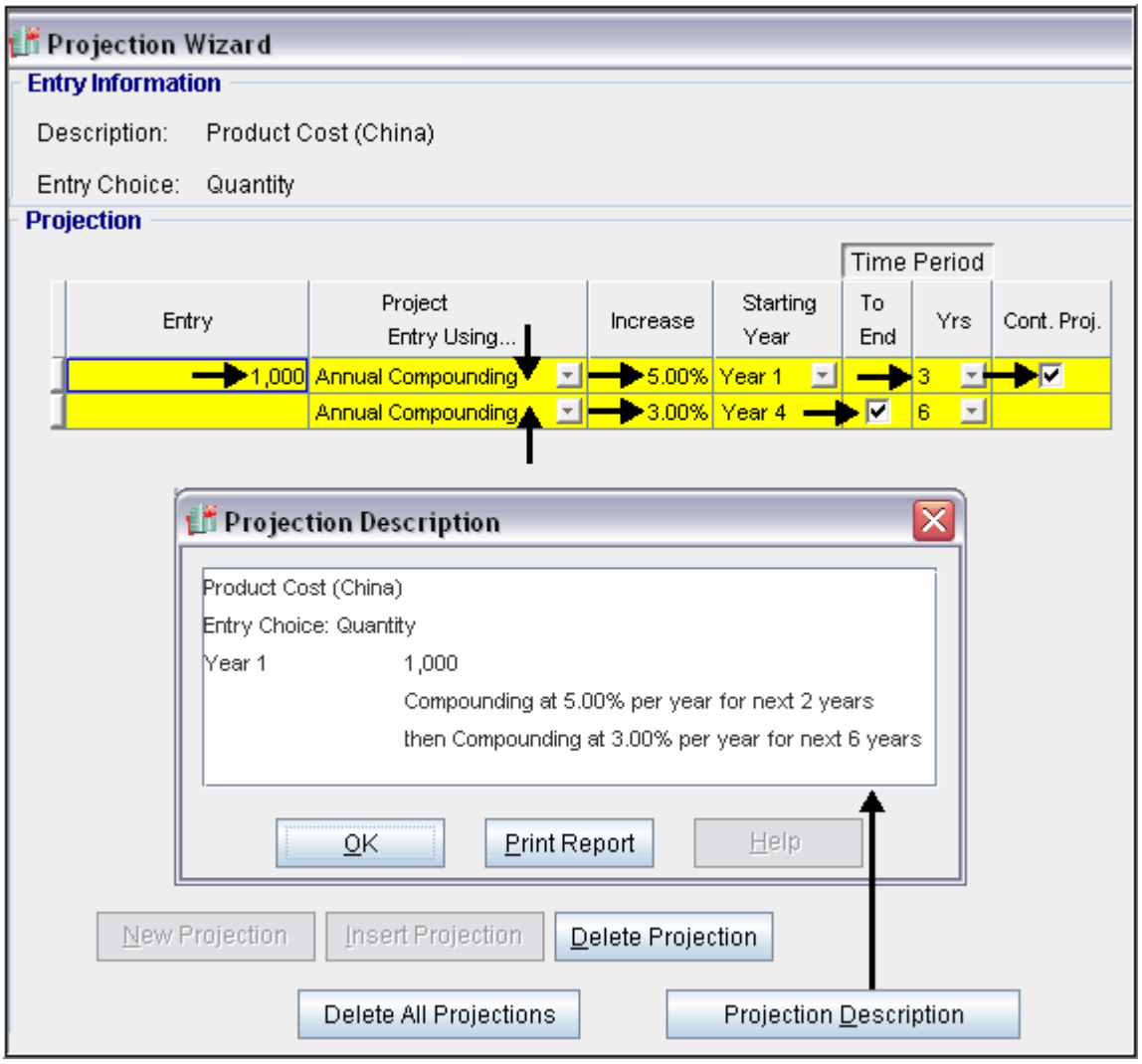
Setting up Product Cost (China)

1. Select row 1 'Product Cost (China)
2. Click on the Projection Wizard button and enter the following entries



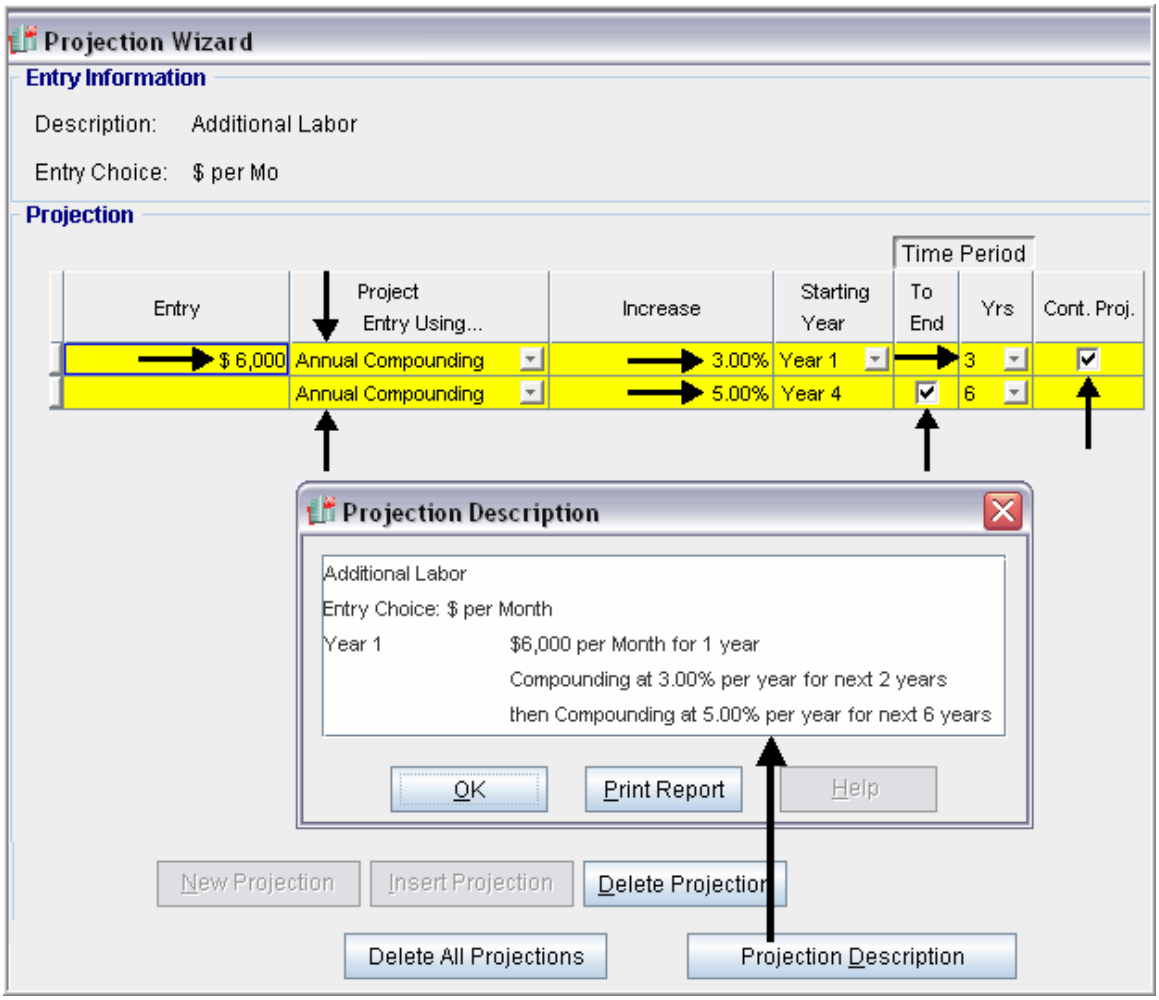
Setting up the Quantity for 'Product Cost (China)'

3. Select the Quantity row for 'Product Cost (China)'
4. Click on the Projection Wizard button and enter the following entries



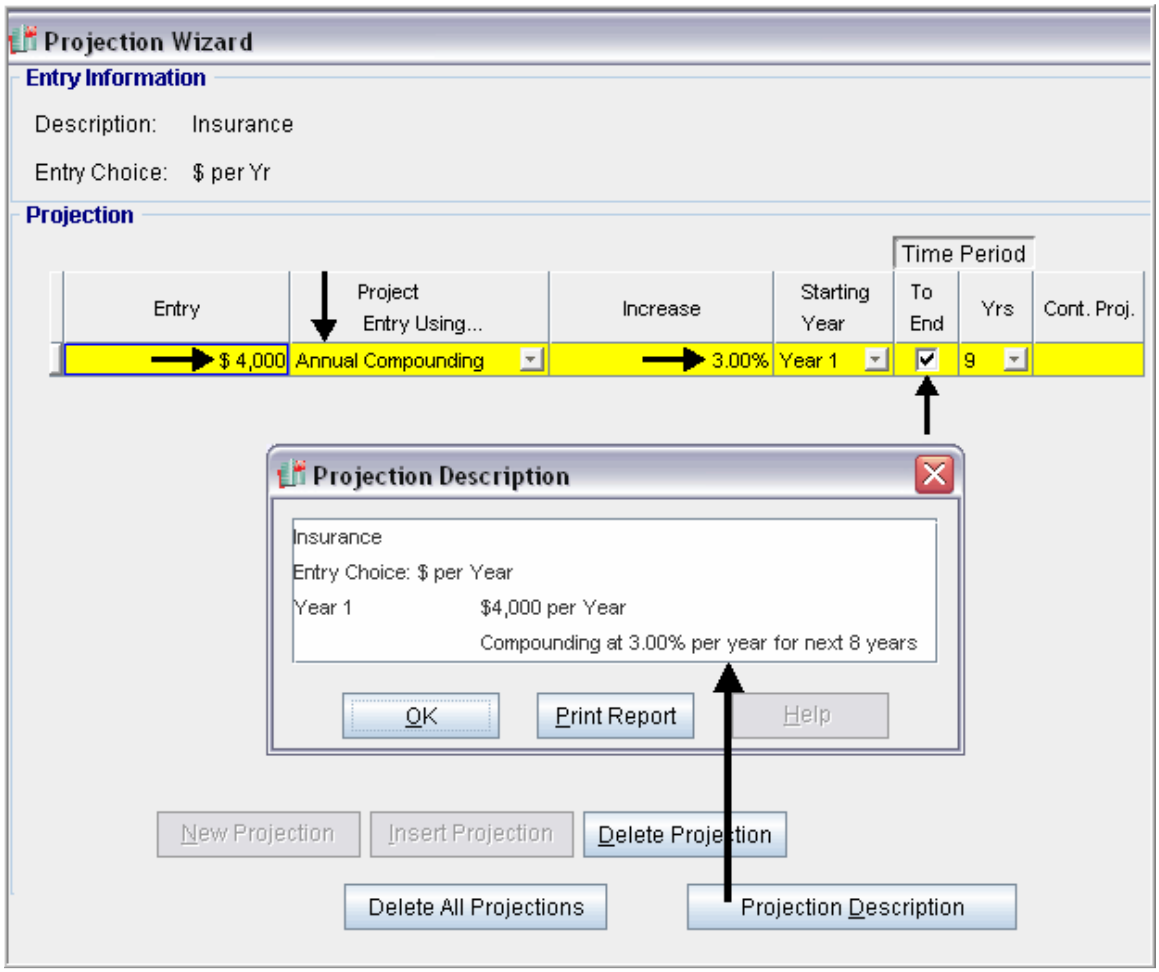
Setting up Additional Labor

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



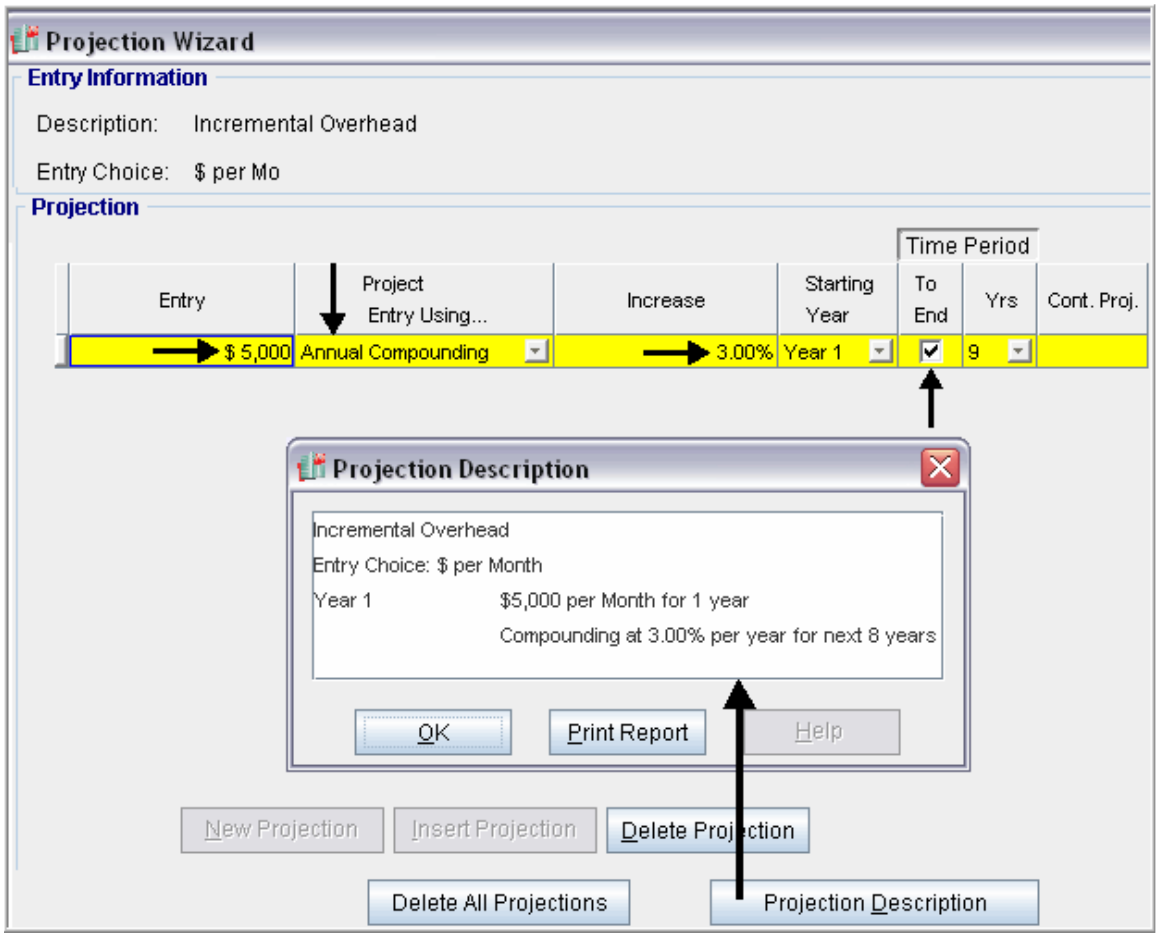
Setting up the Insurance

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



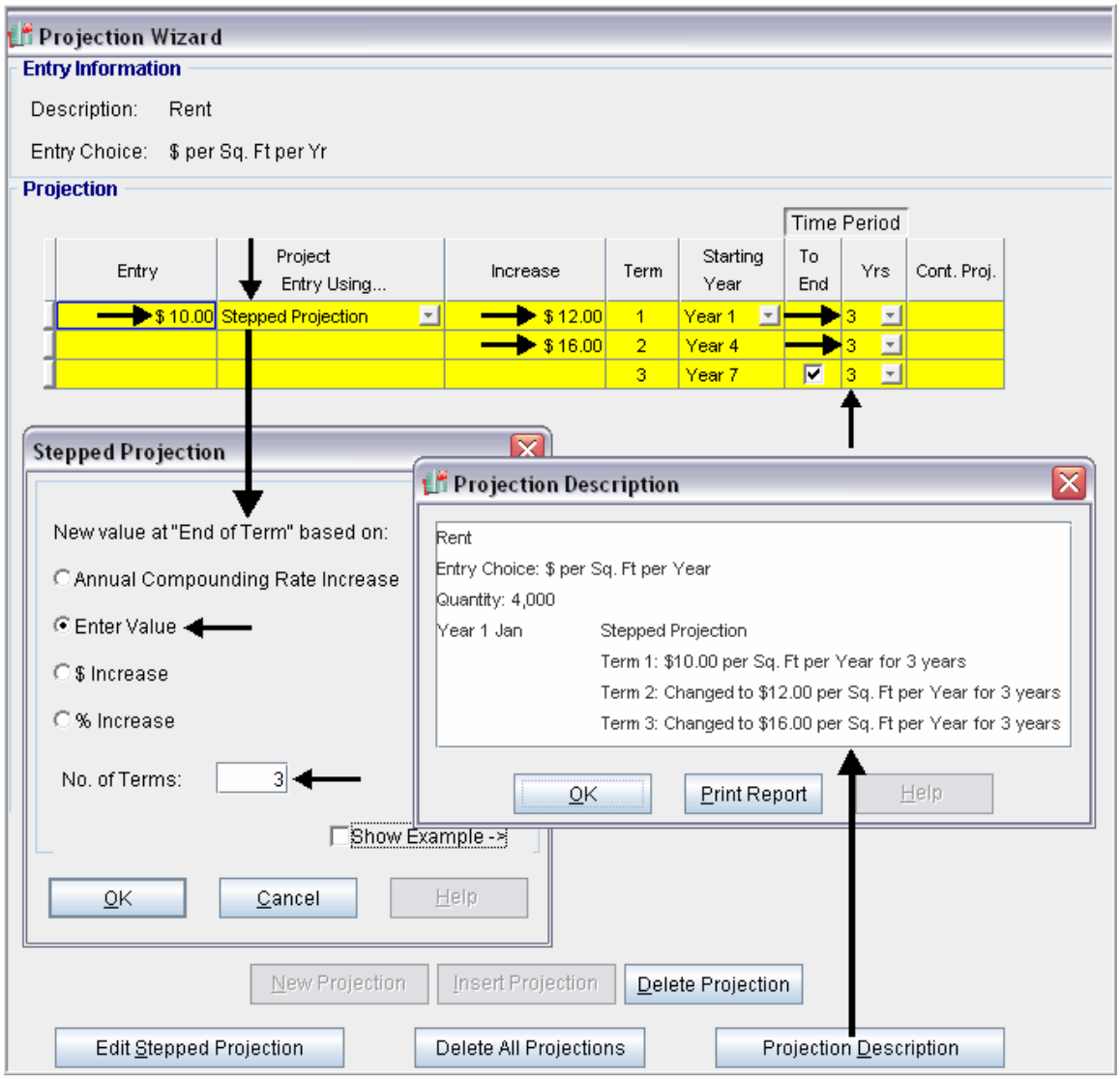
Steps for entering Incremental Overhead

1. Select the Incremental Overhead row
2. Click on the Projection Wizard button and enter the following entries



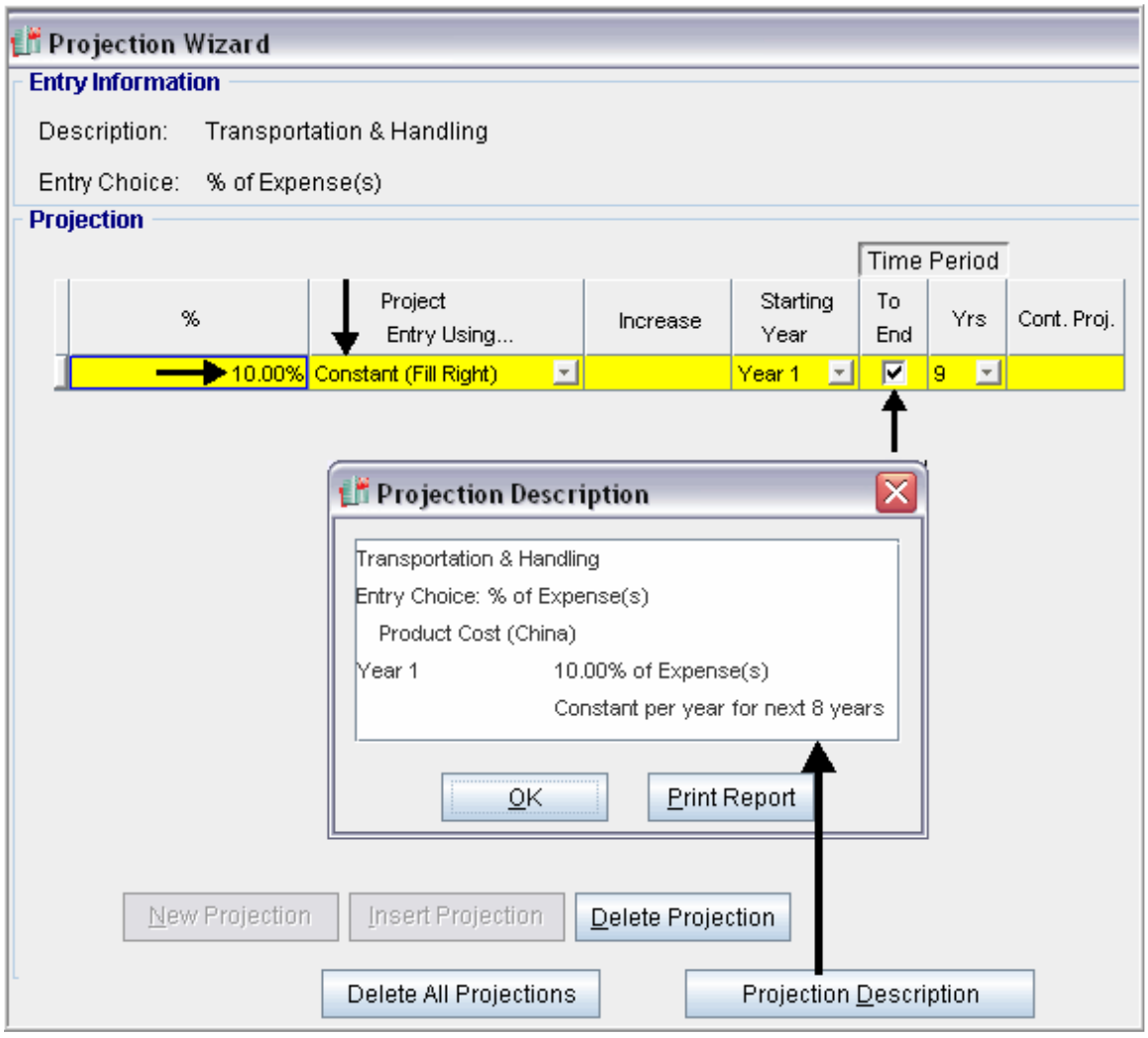
Steps for entering Rent

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



Steps for entering Transportation & Handling

1. Select the Transportation & Handling row
2. Click on the Projection Wizard button and enter the following entries



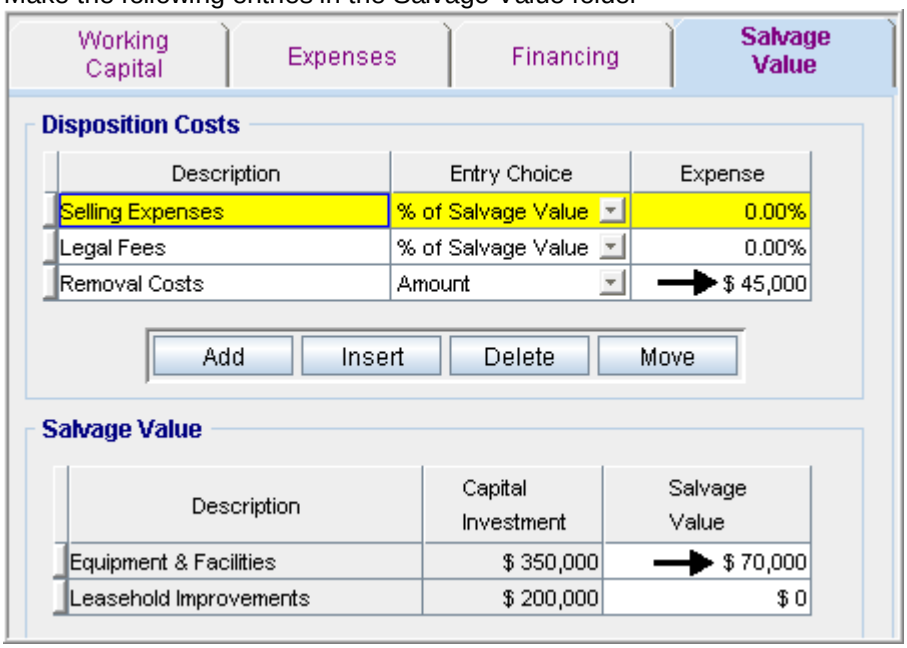
Financing Folder

No Financing

Salvage Value Folder

Disposition Costs:
Removal Costs: $45,000
Salvage Value:
Plant and Equipment: $70,000
Leasehold Improvements: $0

Make the following entries in the Salvage Value folder



SAVE YOUR PROJECT

DECIDING BETWEEN THE "MAKE" or "BUY"

To decide between the two options use the;

a) The Project Comparison Report and
b) The Incremental Cash Flow Report

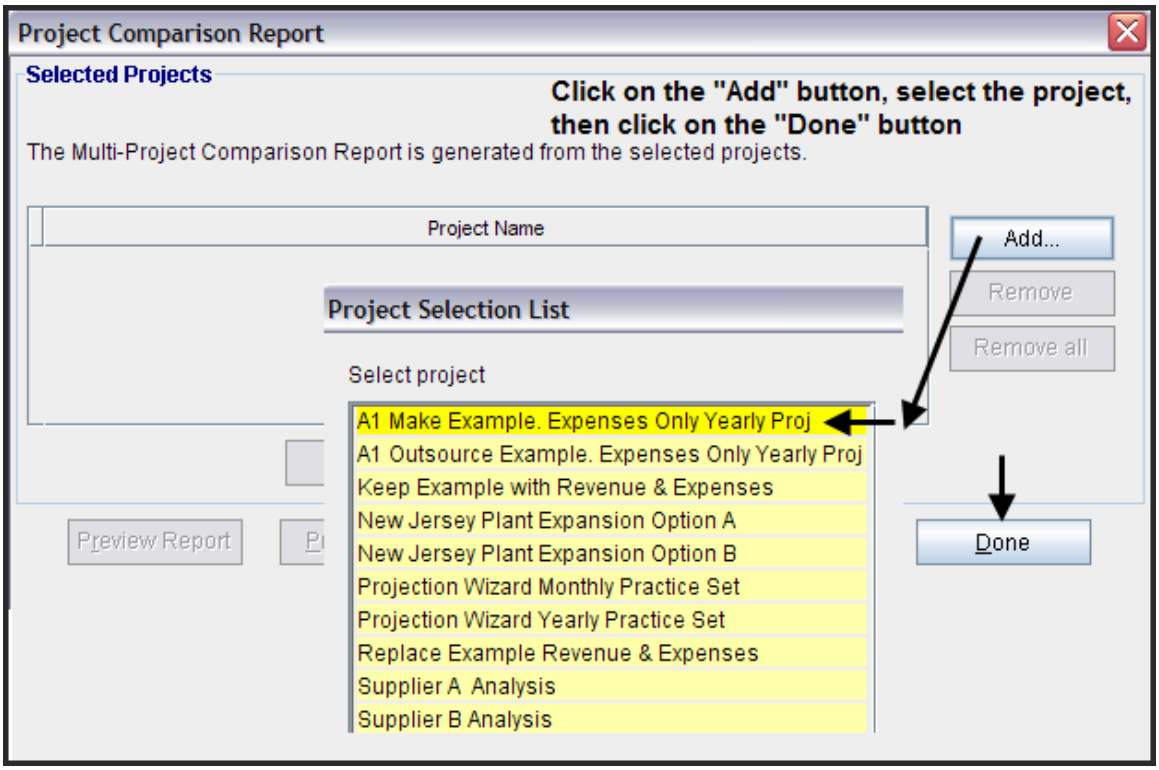
Project Comparison Report

Up to four projects can be compared side by side.

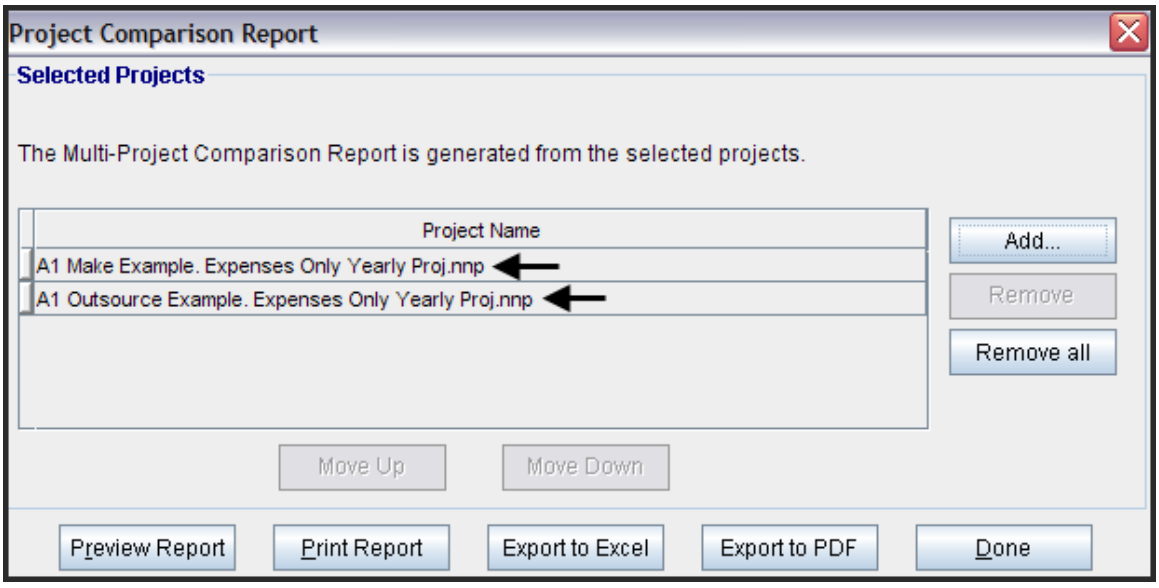
Steps involved in selecting the projects for the Project Comparison Report.

1. Select the Project Comparison Report on the Report 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(s).



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)

		A1 Make Example. Expenses Only Yearly Proj	A1 Outsource Example. Expenses Only Yearly Proj
Year	0	(7,000,000)	(800,000)
	1	(3,954,000)	(3,726,000)
	2	(3,670,310)	(3,645,080)
	3	(3,792,535)	(3,824,184)
	4	(3,983,822)	(6,446,135)
	5	(4,153,535)	(6,639,242)
	6	(8,332,173)	(6,838,105)
	7	(4,300,224)	(9,788,960)
	8	(4,498,631)	(10,088,495)
	9	(3,052,132)	(9,863,335)
	Total	(46,737,364)	(61,659,536)

Financial Return Before Tax

Internal Rate of Return (IRR)	N/A	N/A
MIRR	N/A	N/A
Short term financing rate		
Short term reinvestment rate		
Net Present Value (NPV)	($ 27,607,060) at 15.00%	($ 29,035,199) at 15.00%
Annual Equivalency	($ 5,785,722) at 15.00%	($ 6,085,023) at 15.00%
Benefit to Cost Ratio	N/A	N/A
Payback Period (Years)	N/A	N/A
Discounted Pay Back Period (Years)	N/A	N/A

Note
Unable to calculate the IRR and MIRR because all the Cash Flows are negative.

Interpretation and Decision

Financial Results

Option	Net Present Value (NV) at 15.00%	Annual Equivalency at 15.00`%
Make	($27,607,060)	($5,785,722)
Outsource	($29,035,199)	($6,085,023)

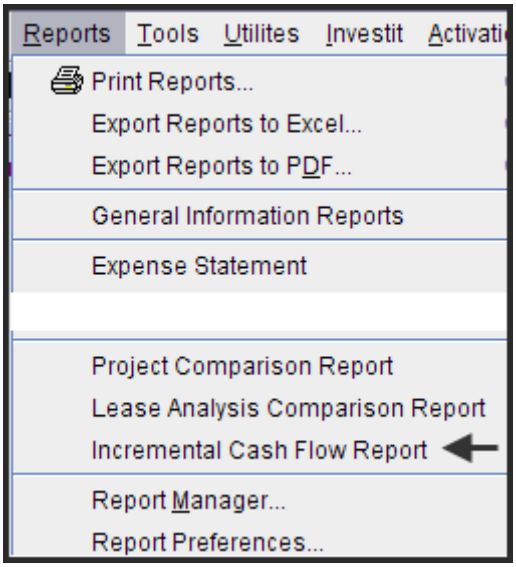
The company should choose the option that provides the lowest Net Present Value (NPV), which is to “Make” the pumps rather than “Outsource” them

Incremental Cash Flow Report

Can be used the show the differences in the cash for “Make” versus “Outsource”

Steps

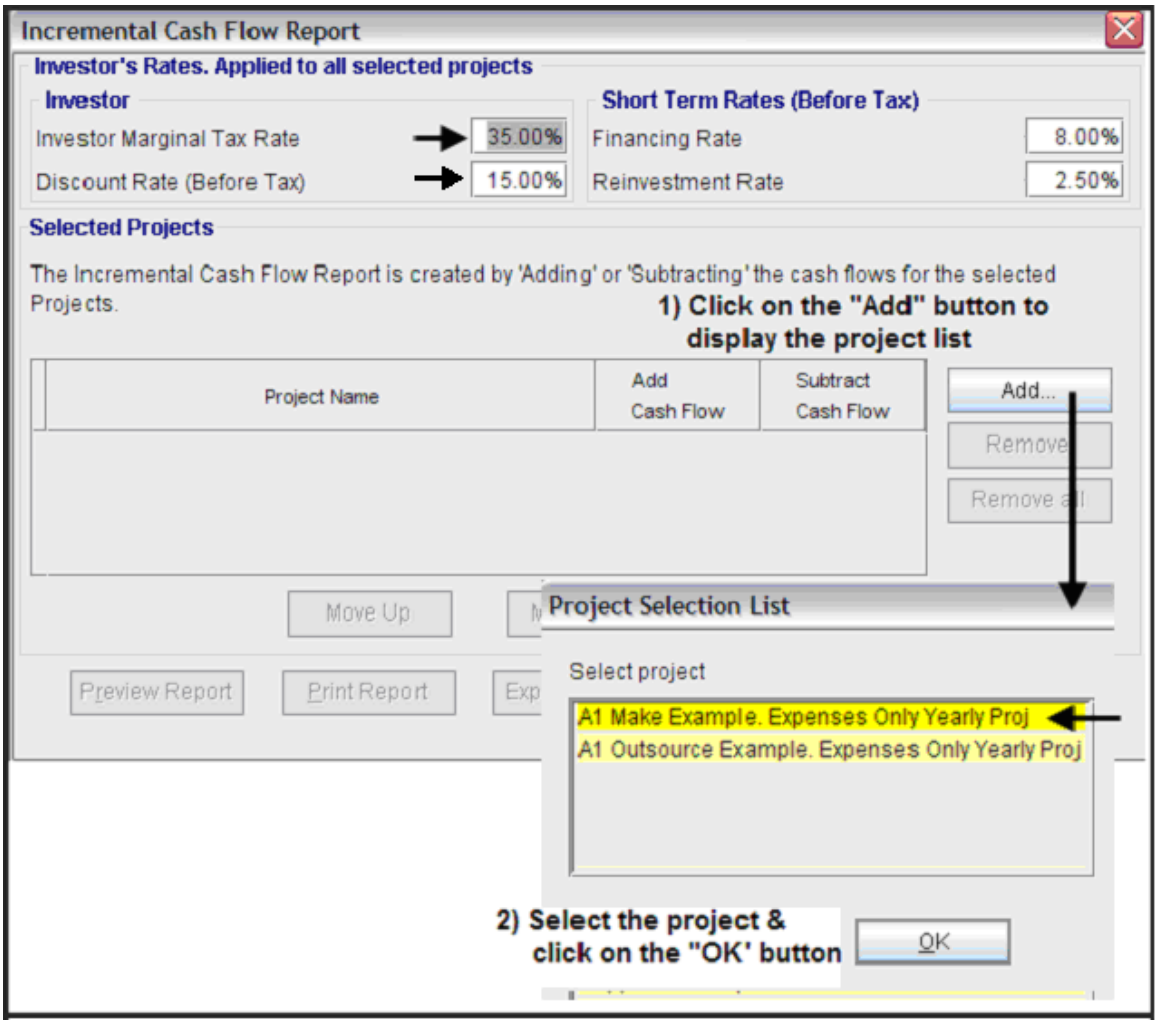
Select the Incremental Cash Flow on the Report menu



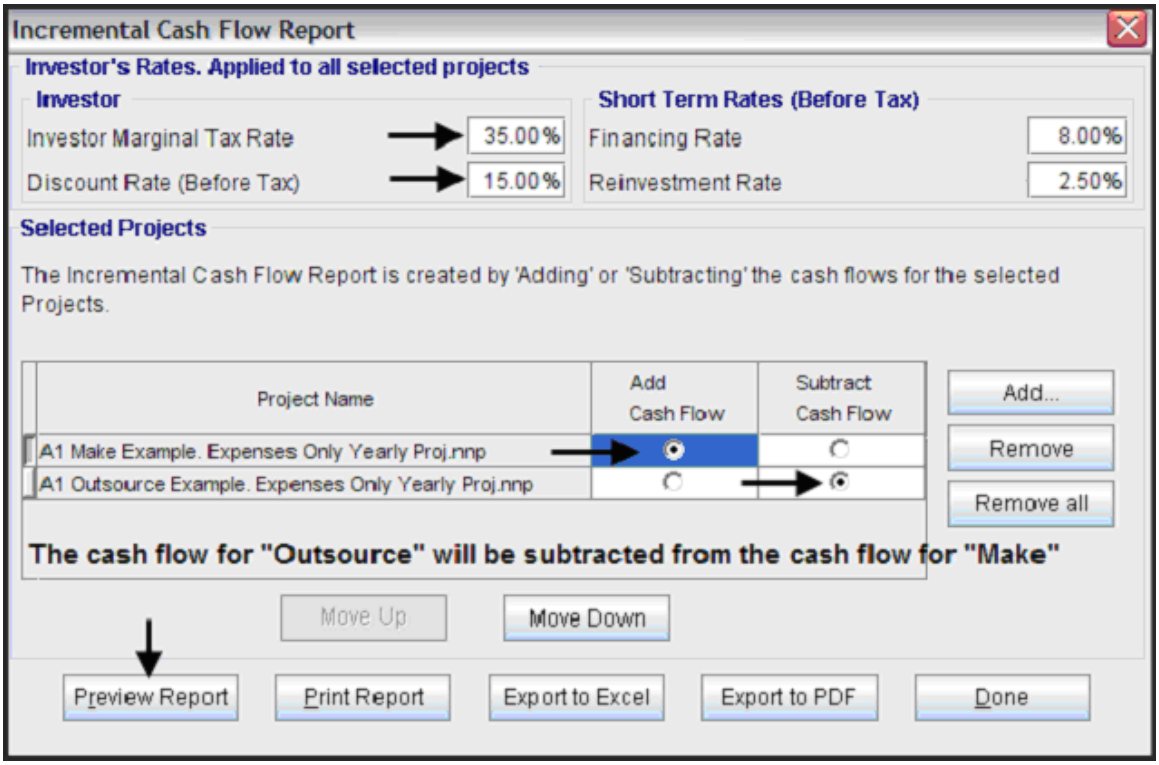
Enter;

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(s).



The selected projects for the Incremental Cash Flow Report are;



Click on the “Preview Report” button to display the “Incremental Cash Flow Report”

Incremental Cash Flow Report (Before Tax)

		Plus A1 Make Example. Expenses Only Yearly Proj	Minus A1 Outsource Example. Expenses Only Yearly Proj	Incremental Net Cash Flow (Before Tax)
Year	0	(7,000,000)	(800,000)	(6,200,000)
	1	(3,954,000)	(3,726,000)	(228,000)
	2	(3,670,310)	(3,645,080)	(25,230)
	3	(3,792,535)	(3,824,184)	31,649
	4	(3,983,822)	(6,446,135)	2,462,313
	5	(4,153,535)	(6,639,242)	2,485,707
	6	(8,332,173)	(6,838,105)	(1,494,068)
	7	(4,300,224)	(9,788,960)	5,488,736
	8	(4,498,631)	(10,088,495)	5,589,864
	9	(3,052,132)	(9,863,335)	6,811,203
	Total	(46,737,364)	(61,659,536)	14,922,172
Before Tax Financial Return				
Internal Rate of Return (IRR)		N/A	N/A	18.42%
Net Present Value (NPV) at 15.00%		($ 27,607,060)	($ 29,035,199)	$ 1,428,139
Modified Internal Rate of Return (MIRR)		N/A	N/A	13.94%
Short term financing rate		8.00%	8.00%	8.00%
Short term reinvestment rate		2.50%	2.50%	2.50%
Annual Equivalency at 15.00%		($ 5,785,722)	($ 6,085,023)	$ 299,301
Benefit to Cost Ratio at 15.00%		N/A	N/A	N/A
Payback Period		N/A	N/A	6.54 years
Discounted Pay Back Period at 15.00%		N/A	N/A	8.26 years

Interpretation and conclusion

Making the pumps will save $1,428,139 when discounted at 15.00% and provide an Internal Rate of Return (IRR) of 18.42%