

PEAT VISUAL GUIDE

**VOLUME 2:
Quick Getting Started with Discounted Cash
Flow Module and Integrated Risk Management**

Instructions

- This is a quick getting started guide, not a detailed user manual. See the user manual and related books for more technical information.
- Text in **RED** is instructions, text in **BLUE** is notes for your information only.
- This visual guide showcases the Discounted Cash Flow module and summarizes how the following methods are implemented and run in PEAT using an example model:
 - DCF Metrics (Net Present Value, Internal Rate of Return, Modified Internal Rate of Return, Profitability Index, Return on Investment, Payback Period, and Discounted Payback Period), for individual projects/options and within a Portfolio
 - Analytics (Tornado Analysis for identifying critical success factors, and Scenario Analysis for identifying hot spots)
 - Risk Simulations (running tens of thousands of simulation trials to determine probabilistic risk metrics, comparing dynamic sensitivities of inputs, and comparing risk metrics and returns across multiple projects)
 - Real Options Strategies (visual representation of strategies with decision trees and strategy trees)
 - Real Options Valuation (computes the values of each individual real options path)
 - Portfolio Optimization (budget allocation and optimal project selection subject to budget and other strategic constraints)
 - Management Dashboards (create multiple results dashboards for management)
 - Knowledge and Training Center (quick lessons on using PEAT, project economics basics, and getting started videos)

1. Start PEAT and Select “Corporate Investments – Stochastic Discount Cash Flow (DCF) Analysis”
2. Click “Load Example”

PEAT



- Corporate Investments - Stochastic DCF Analysis
- Corporate Investments - Buy vs. Lease
- Oil and Gas Economics - Investment Decision Analysis
- Oil and Gas Economics - Oil Field Reserves
- Project Management - Dynamic Schedule and Cost Analysis
- Public Sector Analysis - Knowledge Value Added
- Customized Encrypted Models

- Saudi Aramco - FPD Standard Economic Model
- Saudi Aramco - FPD Standard Economic Model
- Saudi Aramco - FPD Expanded Economic Model
- Saudi Aramco - CFPD Specialized Corporate Finance Projects
- Saudi Aramco - Joint Venture Decision Analysis
- Saudi Aramco - New Business Development
- Saudi Aramco - Corporate Planning Portfolio Management
- Northrop Grumman - IR&D Model
- Northrop Grumman - S-Curve Analysis

Project Economics Analysis Tool

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Applying Integrated Risk Management methodologies (Monte Carlo risk simulation, strategic real options, stochastic forecasting, business analytics, and portfolio optimization) to project and portfolio economics and financial analysis.

Additional customized “Modules” will be added over time. Click on “Load Example” to follow along and walk through this Visual Guide...

Go to “DCF | Project 1 | DCF” to see the sample model data loaded and ready to go

The screenshot shows the 'ROV PROJECT ECONOMICS ANALYSIS TOOL' window. The 'Discounted Cash Flow' and 'Project1' tabs are highlighted. The main view displays a '1. Discounted Cash Flow Model (DCF)' with the following parameters:

- DCF Starting Year: 2016
- DCF Ending Year: 2043
- Discount Rate (%): 10.00%
- Marginal Tax Rate (%): 28.50%
- Revenues: 1 Rows
- Direct Costs: 4 Rows
- Indirect Expenses: 6 Rows

The data grid below shows the following values:

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Revenues	1,742.50	11,737.14	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12
Sales Revenue - Global Sales	1,742.50	11,737.14	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12
Direct Costs	1,141.09	1,141.09	26,392.75	26,392.75	26,392.75	26,456.81	27,888.82	27,888.82	27,888.82	27,888.82
Direct R&D	1,110.26	1,110.26	24,896.68	24,896.68	24,896.68	24,896.68	24,896.68	24,896.68	24,896.68	24,896.68
Manufacturing	18.50	18.50	414.95	414.95	414.95	453.38	829.89	829.89	829.89	829.89
Fabrication	12.33	12.33	25.62	25.62	25.62	51.25	51.25	51.25	51.25	51.25
Direct COGS	0.00	0.00	1,055.50	1,055.50	1,055.50	1,055.50	2,111.00	2,111.00	2,111.00	2,111.00
Gross Profit (Operating Income)	601.41	10,596.05	199,457.37	199,457.37	199,457.37	199,393.31	197,961.30	197,961.30	197,961.30	197,961.30
Indirect Expenses (General & Administrative)	799.42	3,073.28	9,212.61	9,212.61	9,212.61	9,212.61	10,877.49	10,877.49	9,567.71	9,567.71
Sales and Administrative	0.00	31.00	703.00	703.00	703.00	703.00	703.00	703.00	703.00	703.00
Marketing and Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operations	0.00	0.00	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07
Maintenance	799.42	2,997.82	4,758.48	4,758.48	4,758.48	4,758.48	4,758.48	6,423.36	5,113.58	5,113.58
Foreign Transactions	0.00	0.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00
Channel Partners	0.00	44.46	997.06	997.06	997.06	997.06	997.06	997.06	997.06	997.06
EBITDA: Earnings Before Interest, Taxes, Depreciation and Amortization	-198.01	7,522.77	190,244.76	190,244.76	190,244.76	190,180.70	188,748.69	187,083.81	188,393.59	188,393.59
Depreciation	0.00	9,874.00	39,827.00	39,074.00	38,161.00	37,206.00	36,172.00	35,223.00	34,478.00	33,835.00
Amortization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EBIT: Earnings Before Interest and Taxes	-198.01	-2,351.23	150,417.76	151,170.76	152,083.76	152,974.70	152,576.69	151,860.81	153,915.59	154,558.59
Interest	0.00	6,770.22	25,907.66	22,767.15	10,274.25	15,842.52	12,062.00	12,202.70	11,571.22	9,077.15

In your own model, simply enter the required inputs (input boxes) or Copy | Paste from Excel or another data source. You can add/reduce the number of rows to show for each category, and Copy Grid to paste into Excel/Word/PowerPoint, etc.

Go to “DCF | Project 1 | Cash Flow Ratios” and see the sample inputs and results

1. Discounted Cash Flow Model (DCF) **2. Cash Flow Ratios** 3. Economic Results 4. Information and Details

Current Asset	32,806.00	Current Liabilities	18,370.00	Long-Term Operating Assets	114,095.00	Total Inventories	676.61
Accounts Receivables	4,016.00	Shares Outstanding	1,132,357,090...	Stock Price Per Share	27.00	Common Equity	70,530.00
Total Assets	146,901.00	Total Debt	58,001.00	Total Net Operating Capital	128,531.00		

Show Earnings and Cash Flow Values View Full Grid Copy Grid

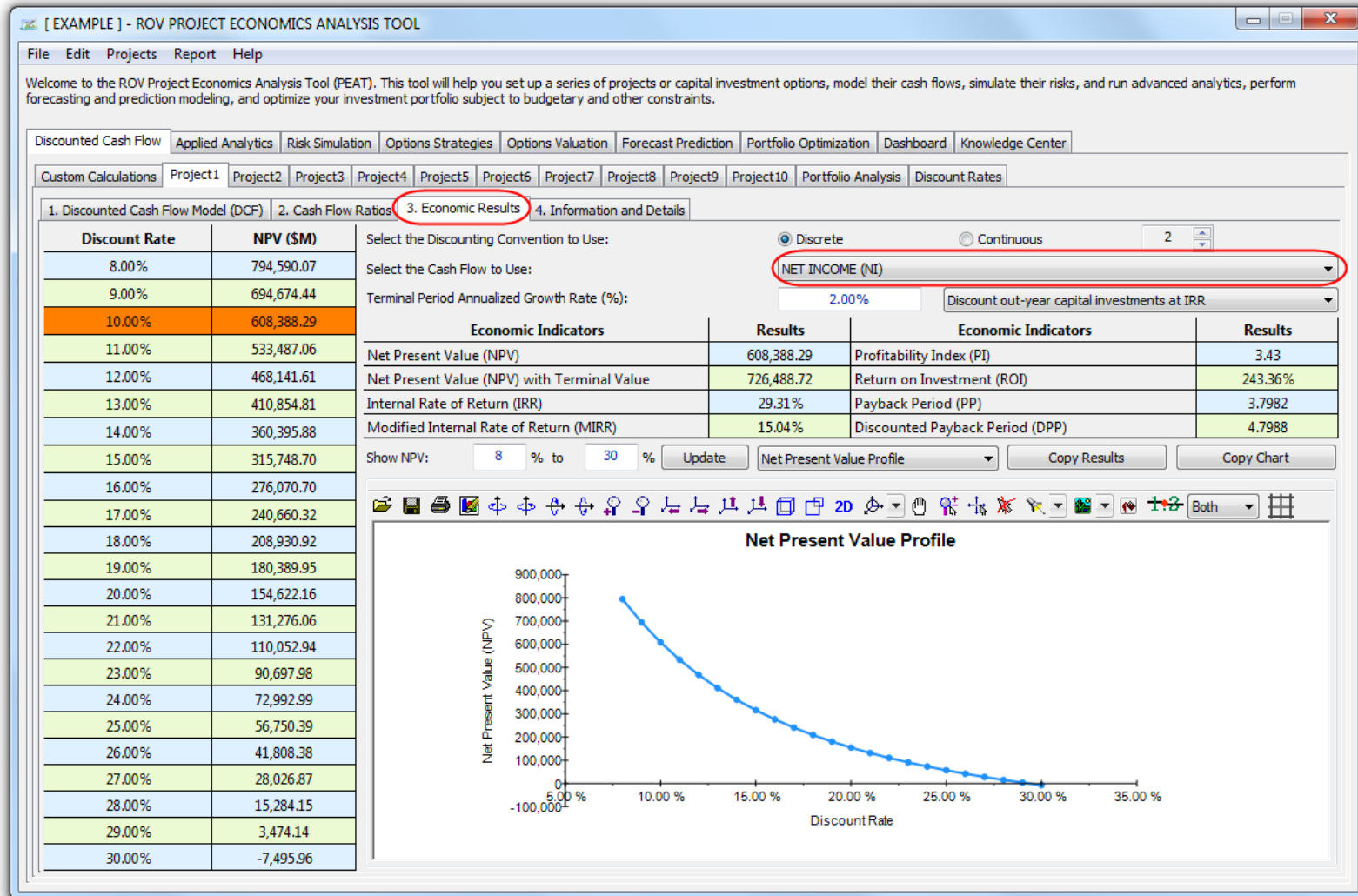
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2
EARNINGS BEFORE INT. TAX, DEP. AMORT (EBITDA)	-198.01	7,522.77	190,244.76	190,244.76	190,244.76	190,180.70	188,748.69	187,083.81	188,393.59	188,
EARNINGS BEFORE INTEREST AND TAXES (EBIT)	-198.01	-2,351.23	150,417.76	151,170.76	152,083.76	152,974.70	152,576.69	151,860.81	153,915.59	154,
NET INCOME (NI)	-141.58	-6,528.34	89,035.45	91,808.58	94,994.48	98,049.50	99,753.00	99,783.27	101,776.22	104,
NET OPERATING PROFIT AFTER TAXES (NOPAT)	-141.58	-1,681.13	107,548.70	108,087.09	108,739.89	109,376.91	109,092.33	108,580.48	110,049.65	110,
NET CASH FLOW (NCF)	-141.58	3,345.66	128,862.45	130,882.58	133,155.48	135,255.50	135,925.00	135,006.27	136,254.22	137,
OPERATING CASH FLOW (OCF)	-141.58	8,192.87	147,375.70	147,161.09	146,900.89	146,582.91	145,264.33	143,803.48	144,527.65	144,
FREE CASH FLOW (FCF)	-141.58	8,192.87	147,375.70	147,161.09	146,900.89	146,582.91	145,264.33	143,803.48	144,527.65	144,
RETURN ON INVESTED CAPITAL (ROIC)	-0.11%	-1.31%	83.68%	84.09%	84.60%	85.10%	84.88%	84.48%	85.62%	85
ECONOMIC VALUE ADDED (EVA)	-1,299,467.71%	-1,453,422.95%	9,469,559.84%	9,523,399.34%	9,588,678.84%	9,652,381.05%	9,623,923.34%	9,572,737.92%	9,719,654.69%	9,765,
TIMES INTEREST EARNED (TIE)		-0.35	5.81	6.64	7.91	9.66	11.68	12.34	13.30	1
NET PROFIT MARGIN (NPM)	-8.12%	-55.62%	39.42%	40.65%	42.06%	43.41%	44.17%	44.18%	45.06%	46

Balance Sheet Ratios

CURRENT RATIO (CR)	1.79	BOOK VALUE PER SHARE (BV)	0.00
QUICK RATIO (QR)	1.75	DEBT TO ASSET RATIO	39.48%
NET OPERATING WORKING CAPITAL (NOWC)	14,436.00	MARKET TO BOOK RATIO (MB)	433,484.21
NET OPERATING CAPITAL (NOC)	128,531.00	EQUITY MULTIPLIER (EM)	2.08
MARKET VALUE ADDED (MVA)	30,573,570,900.00	DEBT TO EQUITY RATIO (DE)	0.82

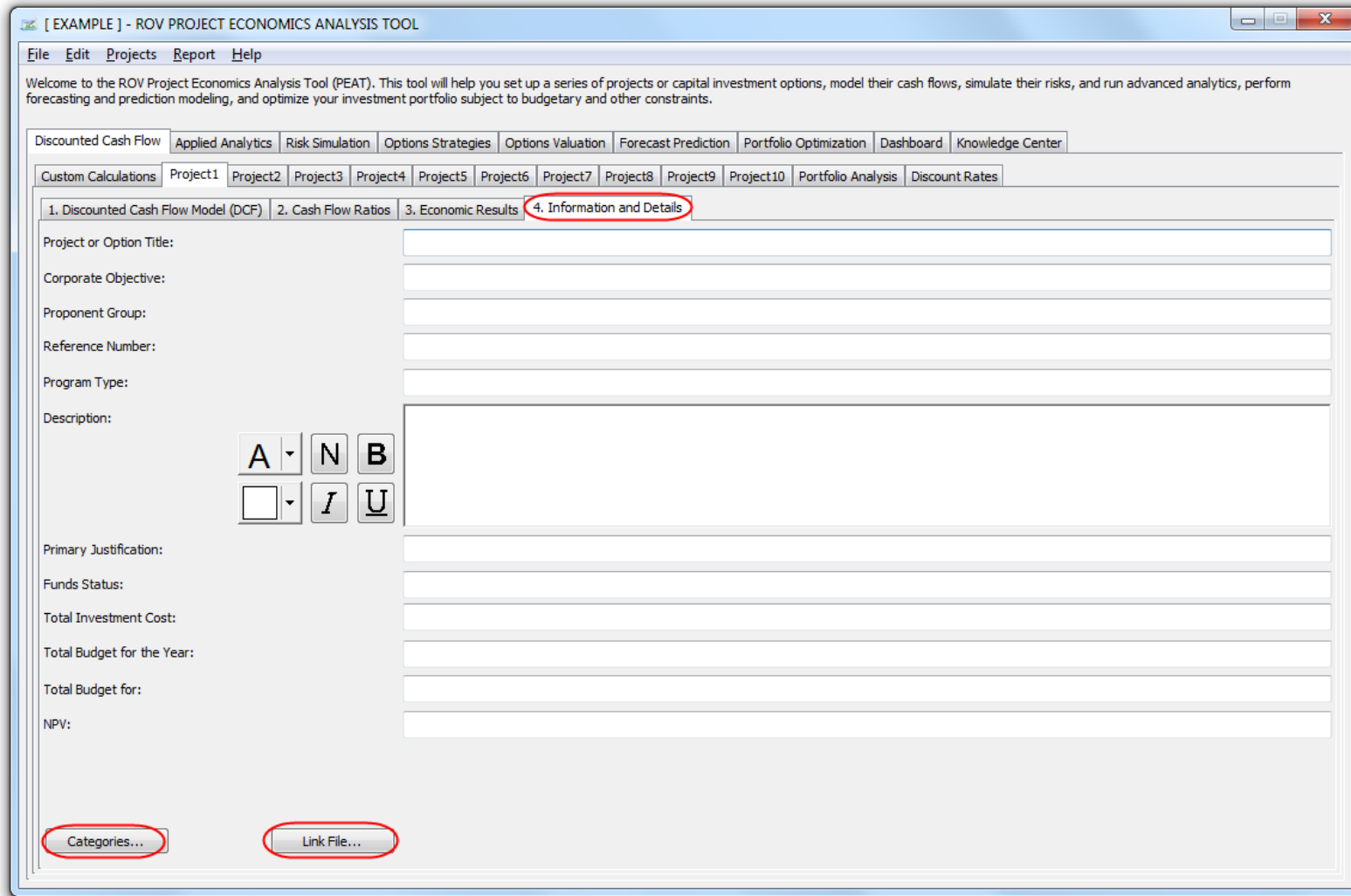
You can click on the droplist to view results in dollars or in relative percentages, View Full Grid or to Copy Grid to paste into another software like Excel...

Go to “DCF | Project 1 | Economic Results” and see the computed results.
 No other actions are required other than playing with some droplists...



You can compute the project economic and financial metrics using different cash flows by choosing the relevant droplist items. You can also change the type of chart to display from the chart droplist as well as change the look and feel of the chart as required...

Go to “DCF | Project 1 | Information and Details”



You can enter in the project specific details as required, and replicate this on other projects as required... Categories can be customized and you can also link external files that may be relevant to this project using the Link File button... When you are done with this Project, note that you can continue to view other projects or proceed to the next step... As information, you can DUPLICATE, ADD, DELETE Project tabs as required without any limit...

Go to “DCF | Portfolio Analysis” and play with some of the checklists and droplists...

The screenshot displays the ROV Project Economics Analysis Tool (PEAT) interface. The main window shows a table of economic results for 10 projects. The table includes columns for Project 1... through Project 10... and rows for various metrics. A red box highlights the 'Economic Results' table and the 'Charts...' section below it. The 'Charts...' section includes dropdown menus for selecting the chart type and view, and buttons for 'Charts...' and 'Copy Chart'.

	Project 1...	Project 2...	Project 3...	Project 4...	Project 5...	Project 6...	Project 7...	Project 8...	Project 9...	Project 10...
Net Present Value (NPV)	605,966.21	113,128.55	25,361.10	17,041.94	59,061.34	69,507.57	728,339.38	361,833.73	-22,923.68	-20,150.38
Net Present Value (NPV) with Terminal Value	724,066.65	218,004.89	53,306.45	39,268.21	120,157.44	-22,422.35	1,124,579.59	538,114.39	-13,275.72	-17,635.81
Internal Rate of Return (IRR)	29.12%	10.31%	13.63%	13.17%	17.89%	29.92%	11.20%	12.43%	7.69%	11.29%
Modified Internal Rate of Return (MIRR)	15.03%	10.11%	11.48%	11.24%	12.68%	17.36%	10.39%	10.88%	10.47%	15.41%
Profitability Index (PI)	3.42	1.08	1.37	1.30	1.62	2.77	1.29	1.28	0.54	0.49
Return on Investment (ROI)	242.19%	7.53%	37.41%	30.17%	61.96%	176.85%	29.29%	28.47%	-46.31%	-50.80%
Payback Period (PP)	3.8262	10.6601	6.8968	7.1760	5.3903	3.4430	8.9689	8.3505	9.7328	8.1825
Discounted Payback Period (DPP)	4.8386	28.9398	12.4596	12.8518	8.3949	4.4399	22.3462	16.5935		

The 'Charts...' section shows the following configuration:

- Chart 1: Net Present Value (NPV) with Terminal Value (Y-axis), Investment Portfolio View (X-axis)
- Chart 2: Internal Rate of Return (IRR) (Y-axis), Net Present Value (NPV) (X-axis)

The 'Investment Portfolio View' chart shows a scatter plot of IRR vs. NPV with Terminal Value for 10 projects. The 'Net Present Value (NPV)' chart shows a 3D bar chart of NPV for 10 projects.

All projects are summarized in this tab as a Portfolio. You can now compare all single point results of the main project economic metrics, modify and view different charts, copy the results and charts to Excel or PowerPoint, and change details as well as the look and feel of the charts as required...

Go to “DCF | Custom Calculations” and play with the worksheet and its functions, as well as perform some Live Excel Links

The screenshot displays the Microsoft Excel interface with a financial model. The 'Custom Calculations' tab is active, showing a table of data from 2014 to 2023. The 'Excel Linking' dialog box is open, showing a list of links with 'Excel Source File Product Pricing' selected. The 'Link Excel' dialog box is also open, showing the 'Excel File Path' as 'C:\Users\Dr. Johnathan Mun\Desktop\Excel Source File.xls' and the 'Excel Range' as 'From C12 To L14'. The 'Custom Calculations Starting Cell' is set to 'B2' and the 'Link Name' is 'Product Pricing'. The 'Auto Update Links When This *.rovprojecn Opens' checkbox is checked.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Product A Avg Price/Unit	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5
Product B Avg Price/Unit	12.25	12.5	12.75	13	13.25	13.5	13.75	14	14.25	14.5
Product C Avg Price/Unit	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Product A Sale Quantity ('000s)	50	50	50	50	50	50	50	50	50	50
Product B Sale Quantity ('000s)	35	35	35	35	35	35	35	35	35	35
Product C Sale Quantity ('000s)	20	20	20	20	20	20	20	20	20	20

Custom Calculations tab’s Excel button allows you to add/edit/delete Live Links from Excel to this tab. You can add multiple links from multiple workbooks and worksheets into this single tab. Reopening the file will auto update the data if you check the Auto Update option. From Custom Worksheet, you can now link to other tabs within PEAT.

Go to “DCF | Custom Calculations” enable links from/to other tabs in PEAT

Custom Calculations | Project 1... | Project 2... | Project 3... | Project 4... | Project 5... | Project 6... | Project 7... | Project 8... | Project 9... | Project 10... | Portfolio Analysis | Discount Rates

Use this custom calculations sheet to perform your own intermediate computations that will be saved with the current file that can also be linked to the input sheets (simply select the cells you wish to create a live link, right-click and select LINK TO... then in the input worksheets, select the relevant input cells, right-click and select LINK FROM... and choose the relevant inputs to use). Alternatively, select the cells you wish, right-click COPY and paste the contents into the relevant input assumption sheet location. The main functions supported by this custom calculation sheet include: +, -, /, *, ^, ABS, LN, LOG, POWER, SUM, AVERAGE, MIN, MAX.

f(x) >> 50.0000 Update Grid Excel...

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2		10.0000	10.5000	11.0000	11.5000	12.0000	12.5000	13.0000	13.5000	14.0000	14.5000					
3		12.2500	12.5000	12.7500	13.0000	13.2500	13.5000	13.7500	14.0000	14.2500	14.5000					
4		15.1500	15.3000	15.4500	15.6000	15.7500	15.9000	16.0500	16.2000	16.3500	16.5000					
5																
6																
7		50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000					
8		35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000					
9		20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000					
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Select the area in Custom tab and right-click to Link To. Then select the appropriate area in another tab and right-click Link From...

Custom Calculations | Project 1... | Project 2... | Project 3... | Project 4... | Project 5... | Project 6... | Project 7... | Project 8... | Project 9... | Project 10... | Portfolio Analysis | Discount Rates

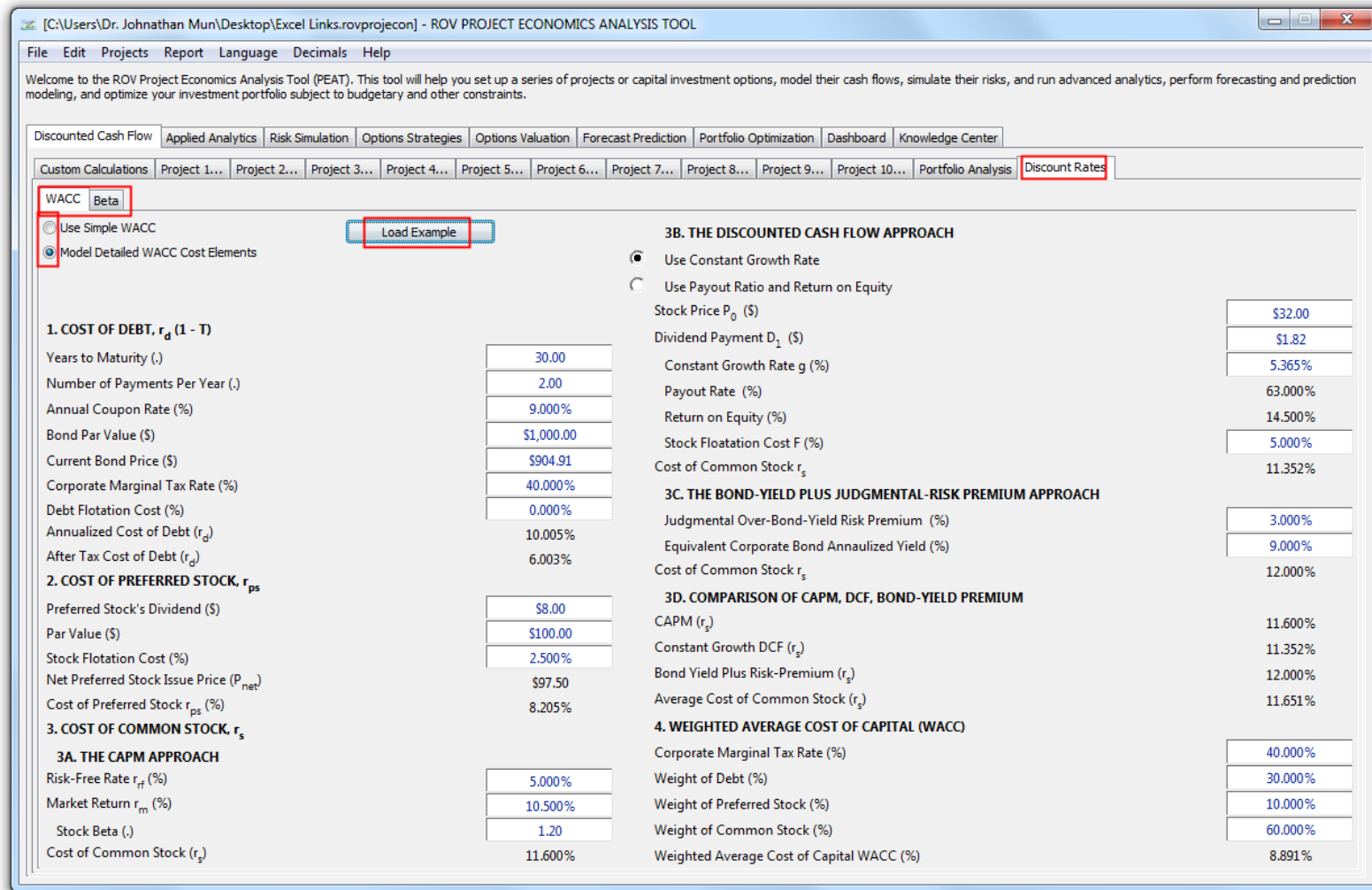
1. Discounted Cash Flow Model (DCF) | 2. Cash Flow Ratios | 3. Economic Results | 4. Information and Details

DCF Starting Year: 2016 DCF Ending Year: 2043 Discount Rate (%): 10.00% Marginal Tax Rate (%): 28.50%

Revenues: 1 Rows Direct Costs: 4 Rows Indirect Expenses: 6 Rows Copy Grid View Full Grid Manually Enter Custom Taxes

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Revenues	1,742.50	11,737.14	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12	225,850.12
Sales Revenue - Global Sales	1,742.50	11,737.14					225,850.12	225,850.12	225,850.12	225,850.12	225,850.12
Direct Costs	1,141.09	1,141.09					27,888.82	27,888.82	27,888.82	27,888.82	27,888.82
Direct R&D	1,110.26	1,110.26					24,896.68	24,896.68	24,896.68	24,896.68	24,896.68
Manufacturing	18.50	18.50					829.89	829.89	829.89	829.89	829.89
Fabrication	12.33	12.33					51.25	51.25	51.25	51.25	51.25
Direct COGS	0.00	0.00					2,111.00	2,111.00	2,111.00	2,111.00	2,111.00
Gross Profit (Operating Income)	601.41	10,596.05					197,961.30	197,961.30	197,961.30	197,961.30	197,961.30
Indirect Expenses (General & Administrative)	884.42	3,127.28					8,594.61	10,259.49	8,949.71	8,949.71	12,187.27
Sales and Administrative	50.00	50.00					50.00	50.00	50.00	50.00	703.00
Marketing and Advertising	35.00	35.00					35.00	35.00	35.00	35.00	0.00
Operations	0.00	0.00	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07	1,248.07
Maintenance	799.42	2,997.82	4,758.48	4,758.48	4,758.48	4,758.48	4,758.48	6,423.36	5,113.58	5,113.58	7,733.14
Foreign Transactions	0.00	0.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00	1,506.00
Channel Partners	0.00	44.46	997.06	997.06	997.06	997.06	997.06	997.06	997.06	997.06	997.06

Go to “Discounted Cash Flow | Discount Rates” and load an example to run



You can compute the weighted average cost of capital (WACC) and CAPM Beta estimates here. Load example data to get started or enter your assumptions to compute WACC. You can also paste stock prices and stock returns to compute a market-based Beta coefficient.

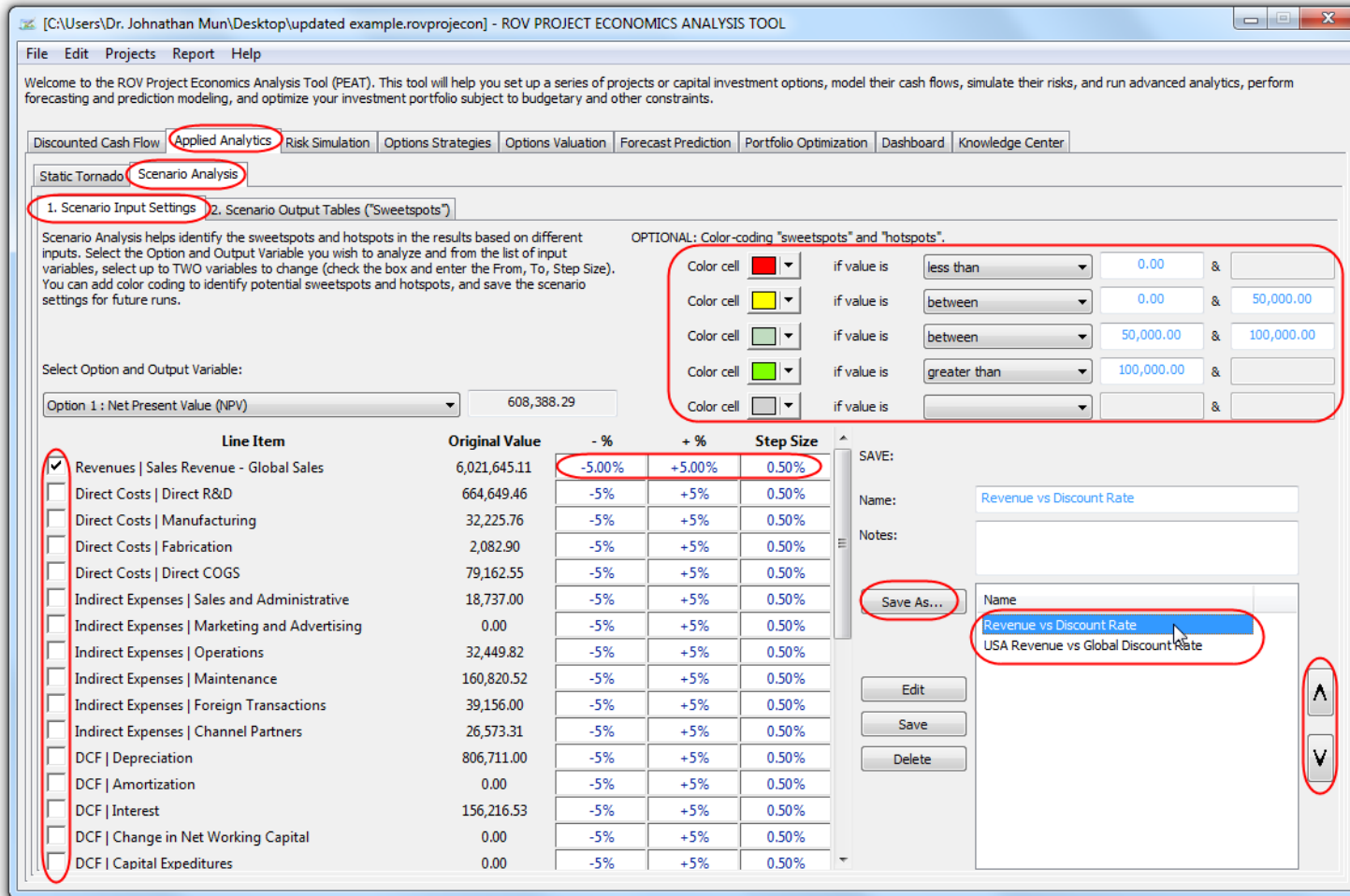
Go to “Applied Analytics | Static Tornado” and play with some of the checklists...

Option 1 : Net Present Value (NPV)

Input	Output Downside	Output Upside	Effective Range	Input Downside	Input Upside	Base Case Value
Revenues	471,501.67	745,274.91	273,773.24	5,419,480.60	6,623,809.62	6,021,645.11
DCF Discount Rate (%)	694,674.44	533,487.06	161,187.38	9.00%	11.00%	10.00%
DCF Marginal Tax Rate (%)	642,603.76	574,172.81	68,430.95	25.65%	31.35%	28.50%
DCF CAPITAL INVESTMENTS	633,388.29	583,388.29	50,000.00	225,000.00	275,000.00	250,000.00
DCF Depreciation	629,216.89	587,559.68	41,657.22	726,039.90	887,382.10	806,711.00
Direct Costs	625,471.55	591,305.02	34,166.54	700,308.60	855,932.74	778,120.67

You can view the Tornado analysis (critical success factors) of each Project’s economic metrics, copy the chart and sensitivity results, change the look and feel of the charts, and re-run the analysis based on your sensitivity settings etc.

Go to “Applied Analytics | Scenario Analysis | Scenario Input Settings”
 Double click on a saved scenario model (bottom right) to view its settings or to make and save your own scenario model...



You can create and save multiple Scenario Analyses by selecting the Option droplist, checking up to two inputs, modifying the ranges to test, choosing color settings if required, entering a name, and “Save As” the scenario model... when done, proceed to the next step to view the results. You can Edit a saved model as well.

Go to “Applied Analytics | Scenario Analysis | Scenario Output Tables”
 Select a saved scenario model from the droplist to run

1. Scenario Input Settings | 2. Scenario Output Tables ("Sweetspots")

Select one of the saved scenarios to run the scenario table. In the event you make any changes in the inputs or settings, remember to click Update to manually update the scenario table.

Select the Saved Scenario to Compute: **Revenue vs Discount Rate** [Update] [Copy Grid] [View Full Grid]

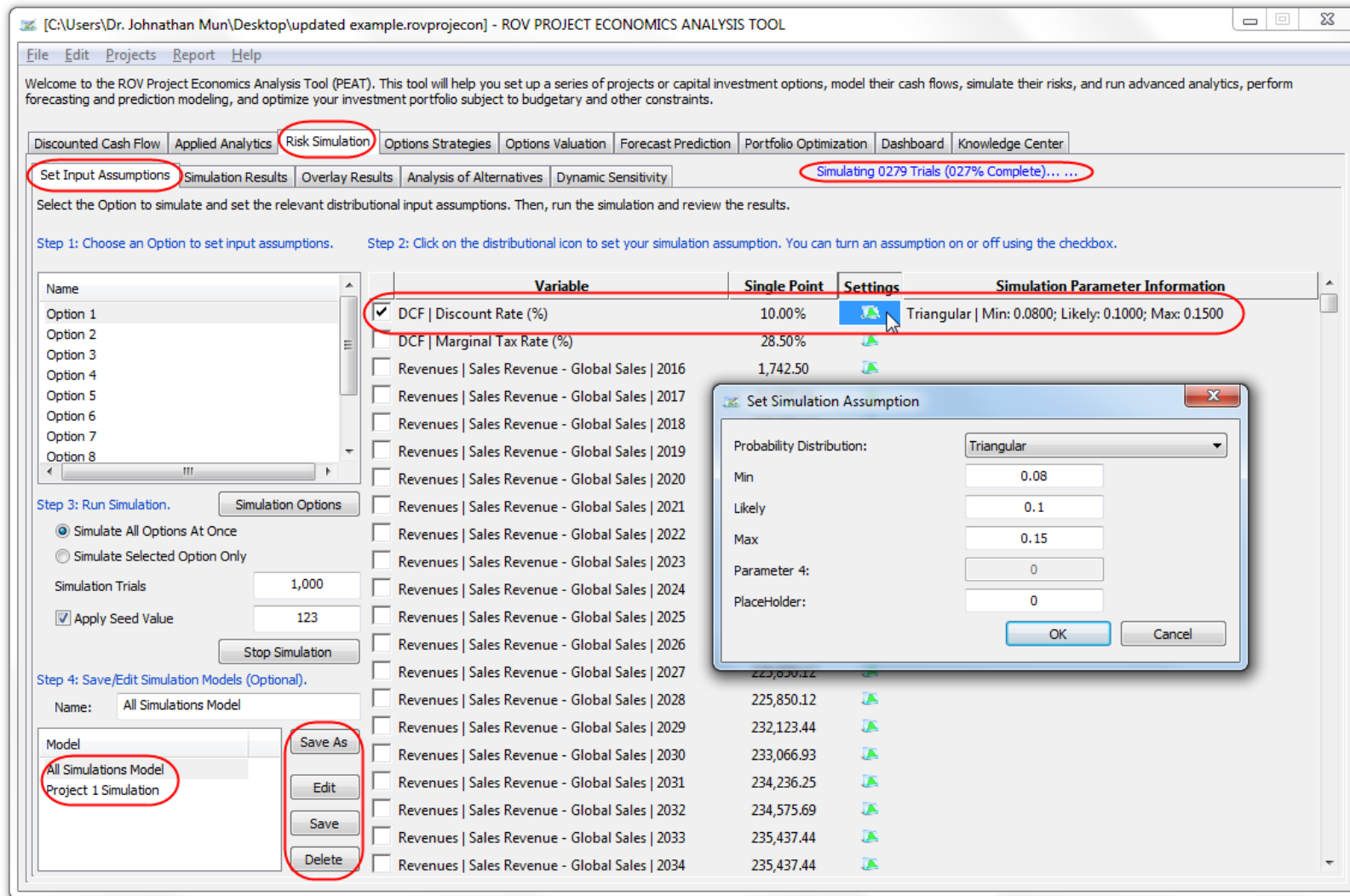
Show results with 0 decimals Scenario table is for: Option 1 : Net Present Value (NPV)

NOTE: The Row variable (down) is Revenues | Sales Revenue - Global Sales and the Column variable (across) is DCF | Discount Rate (%)

	20.00%	21.00%	22.00%	23.00%	24.00%	25.00%	26.00%	27.00%	28.00%	29.00%	30.00%	31.00%	32.00%	33.00%	34.00%	35.00%	36.00%	37.00%	38.00%
5,720,563	120,704	99,179	79,617	61,782	45,473	30,515	-16,759	4,074.7	-7,650.1	-18,514	-28,602	-37,990	-46,745	-54,925	-62,581	-69,759	-76,501	-82,843	-88,818
5,750,671	124,096	102,388	82,660	64,674	48,225	33,139	-19,264	6,469.9	-5,356.7	-16,315	-26,491	-35,962	-44,794	-53,045	-60,769	-68,012	-74,814	-81,212	-87,241
5,780,779	127,488	105,598	85,704	67,565	50,977	35,762	-21,769	8,865.1	-3,063.3	-14,116	-24,381	-33,934	-42,843	-51,166	-58,958	-66,264	-73,126	-79,581	-85,663
5,810,888	130,880	108,808	88,748	70,457	53,729	38,386	-24,274	11,260	-769.84	-11,917	-22,270	-31,906	-40,891	-49,287	-57,147	-64,516	-71,438	-77,950	-84,086
5,840,996	134,271	112,018	91,791	73,348	56,481	41,009	-26,779	13,656	1,523.6	-9,718.6	-20,160	-29,877	-38,940	-47,408	-55,335	-62,769	-69,751	-76,319	-82,508
5,871,104	137,663	115,227	94,835	76,240	59,233	43,633	-29,284	16,051	3,817.0	-7,519.8	-18,049	-27,849	-36,989	-45,529	-53,524	-61,021	-68,063	-74,688	-80,931
5,901,212	141,055	118,437	97,878	79,132	61,985	46,256	-31,789	18,446	6,110.4	-5,321.0	-15,938	-25,821	-35,037	-43,650	-51,713	-59,273	-66,376	-73,057	-79,353
5,931,320	144,447	121,647	100,922	82,023	64,737	48,880	-34,294	20,841	8,403.9	-3,122.2	-13,828	-23,792	-33,086	-41,771	-49,901	-57,526	-64,688	-71,426	-77,776
5,961,429	147,839	124,857	103,966	84,915	67,489	51,503	-36,798	23,236	10,697	-923.44	-11,717	-21,764	-31,135	-39,892	-48,090	-55,778	-63,000	-69,795	-76,198
5,991,537	151,230	128,066	107,009	87,806	70,241	54,127	-39,303	25,632	12,991	1,275.3	-9,606.6	-19,736	-29,184	-38,013	-46,278	-54,031	-61,313	-68,164	-74,621
6,021,645	154,622	131,276	110,053	90,698	72,993	56,750	-41,808	28,027	15,284	3,474.1	-7,496.0	-17,708	-27,232	-36,133	-44,467	-52,283	-59,625	-66,533	-73,043
6,051,753	158,014	134,486	113,097	93,590	75,745	59,374	-44,313	30,422	17,578	5,672.9	-5,385.3	-15,679	-25,281	-34,254	-42,656	-50,535	-57,938	-64,902	-71,466
6,081,862	161,406	137,696	116,140	96,481	78,497	61,997	-46,818	32,817	19,871	7,871.7	-3,274.7	-13,651	-23,330	-32,375	-40,844	-48,788	-56,250	-63,271	-69,888
6,111,970	164,798	140,905	119,184	99,373	81,249	64,621	-49,323	35,213	22,164	10,071	-1,164.1	-11,623	-21,378	-30,496	-39,033	-47,040	-54,562	-61,640	-68,311
6,142,078	168,189	144,115	122,227	102,264	84,001	67,245	-51,828	37,608	24,458	12,269	946.50	-9,594.4	-19,427	-28,617	-37,222	-45,292	-52,875	-60,009	-66,733
6,172,186	171,581	147,325	125,271	105,156	86,753	69,868	-54,333	40,003	26,751	14,468	3,057.1	-7,566.1	-17,476	-26,738	-35,410	-43,545	-51,187	-58,378	-65,156

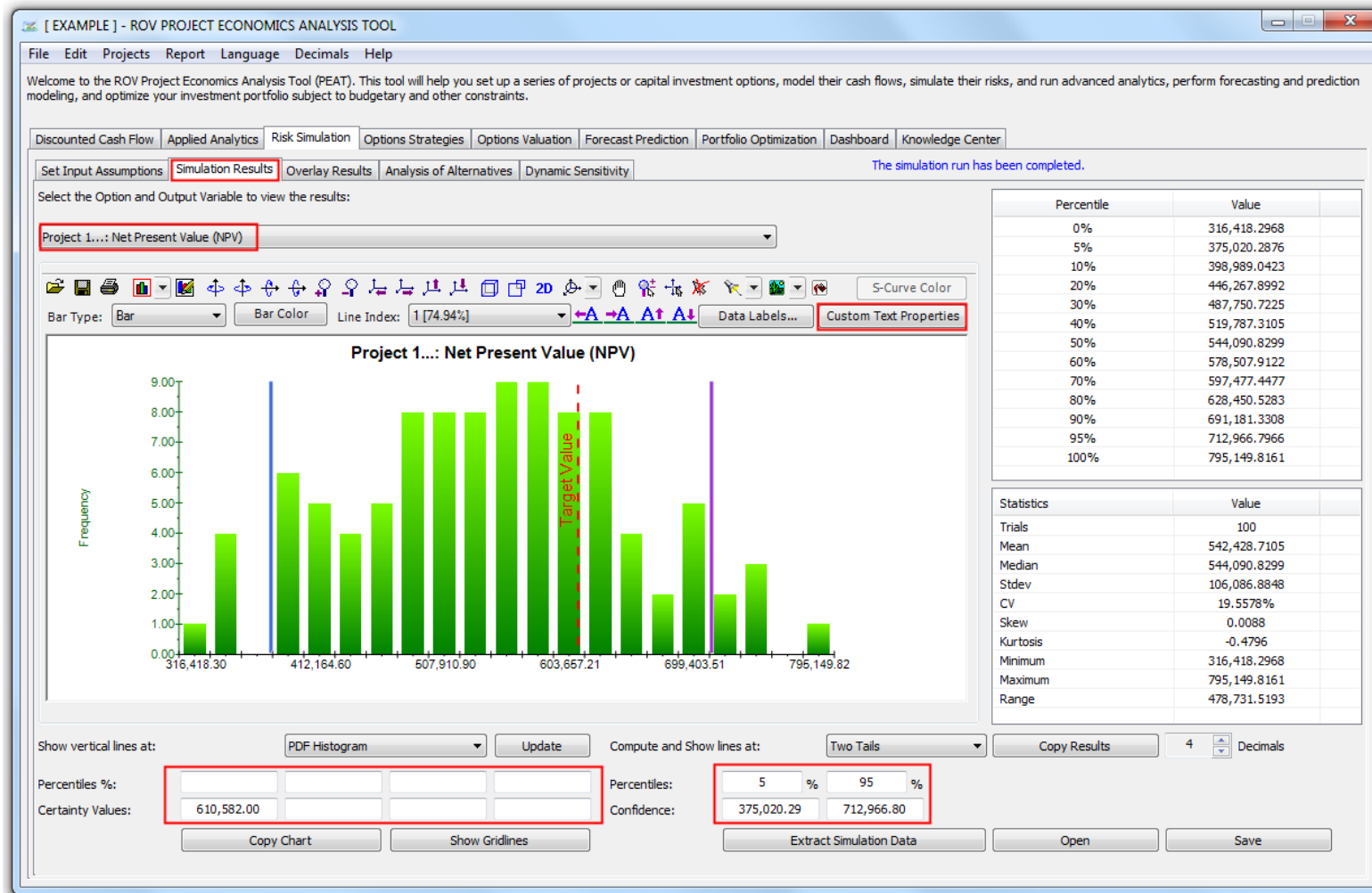
You can view all your saved scenario models here by selecting them from the droplist, complete with color codes. You can copy the results grid as required for pasting into PowerPoint or Excel...

Go to “Risk Simulation | Set Input Assumptions”
 Double click on a saved simulation model to run (e.g., All Simulations Model)



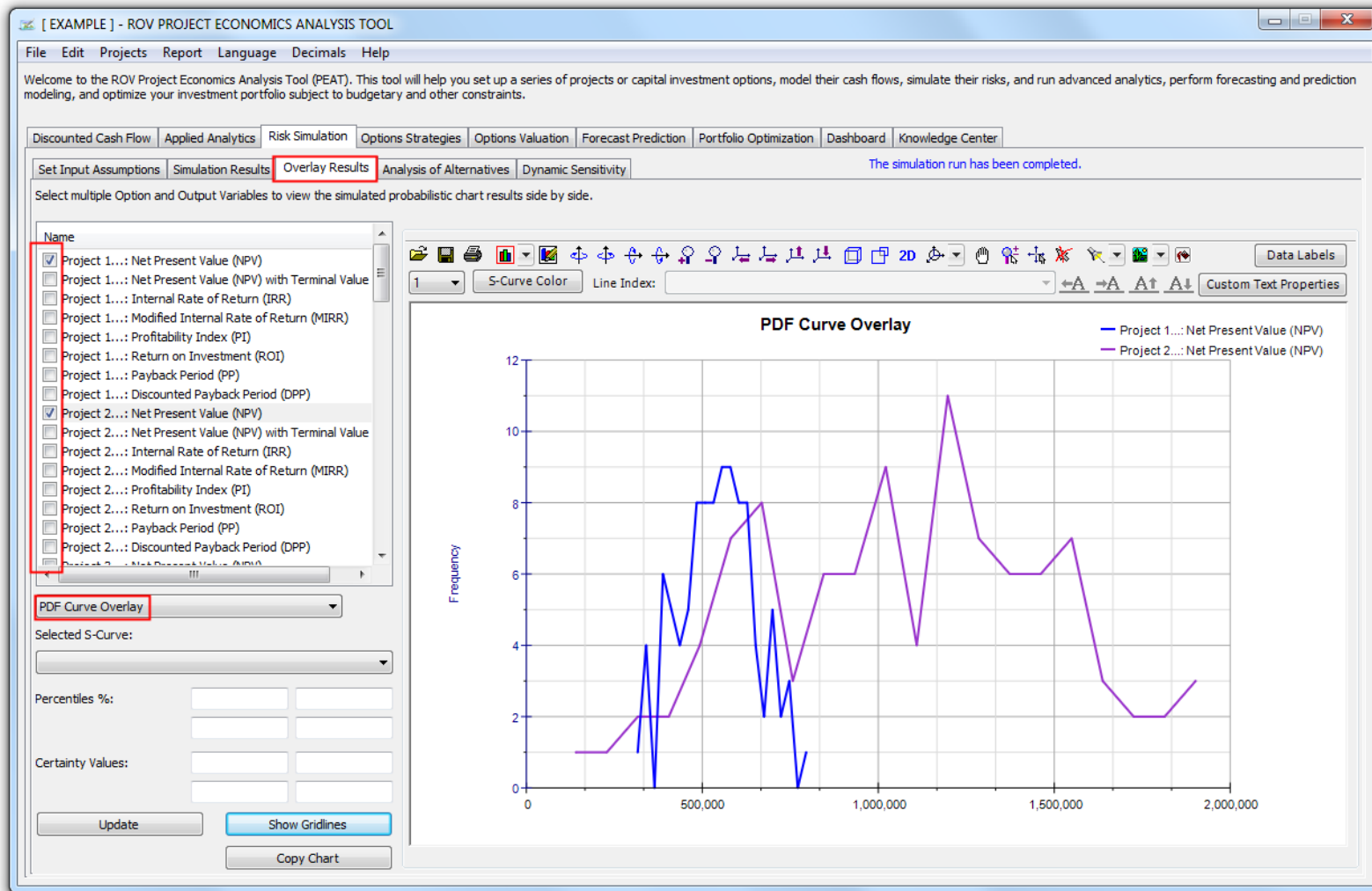
You can create and save your own risk simulation models by selecting the Option/Project, then checking the boxes of the input variables you wish to set assumptions on, entering the distributional inputs, and saving the model..

Go to “Risk Simulation | Simulation Results”
 Type in some sample Percentiles to obtain Confidence Levels or vice versa...



The risk simulated results and respective statistics are shown in this tab. You can select the distribution tails (left, right, two-tails), type in confidence levels and obtain percentiles, or enter in percentiles to calculate the confidence values, edit/modify/copy the charts and extract the simulated results, etc.

Go to “Risk Simulation | Overlay Results”
Select one or more output results and the chart type



You can “overlay” multiple risk simulated results over one another using this tool... Risk Simulation must first be run in order for this tab to be populated. You can add chart-specific percentiles and certainty lines as well as modify the chart’s look and feel or copy the chart for pasting into Excel or PowerPoint.

Go to “Risk Simulation | Analysis of Alternatives”

[C:\Users\Dr. Johnathan Mun\Desktop\updated example.rovprojecon] - ROV PROJECT ECONOMICS ANALYSIS TOOL
 File Edit Projects Report Help
 Welcome to the ROV Project Economics Analysis Tool (PEAT). This tool will help you set up a series of projects or capital investment options, model their cash flows, simulate their risks, and run advanced analytics, perform forecasting and prediction modeling, and optimize your investment portfolio subject to budgetary and other constraints.

Discounted Cash Flow | Applied Analytics | Risk Simulation | **Options Strategies** | Options Valuation | Forecast Prediction | Portfolio Optimization | Dashboard | Knowledge Center
 Set Input Assumptions | Simulation Results | Overlay Results | **Analysis of Alternatives** | Dynamic Sensitivity

The simulation run has been completed. Simulate Time: 52s.

You can compare the dynamic simulated results of all your options. A simulation must first be run before you can obtain any results. Choose if you wish to compare all options as standalone (Analysis of Alternatives) or against a base case (Incremental Analysis).

ANALYSIS OF ALTERNATIVES AND BASE CASE INCREMENTAL ANALYSIS
 Analysis of Alternatives (No Base Case) Incremental Analysis (Choose Base Case): Option 1

Economic Results: Net Present Value (NPV) 2 Decimals

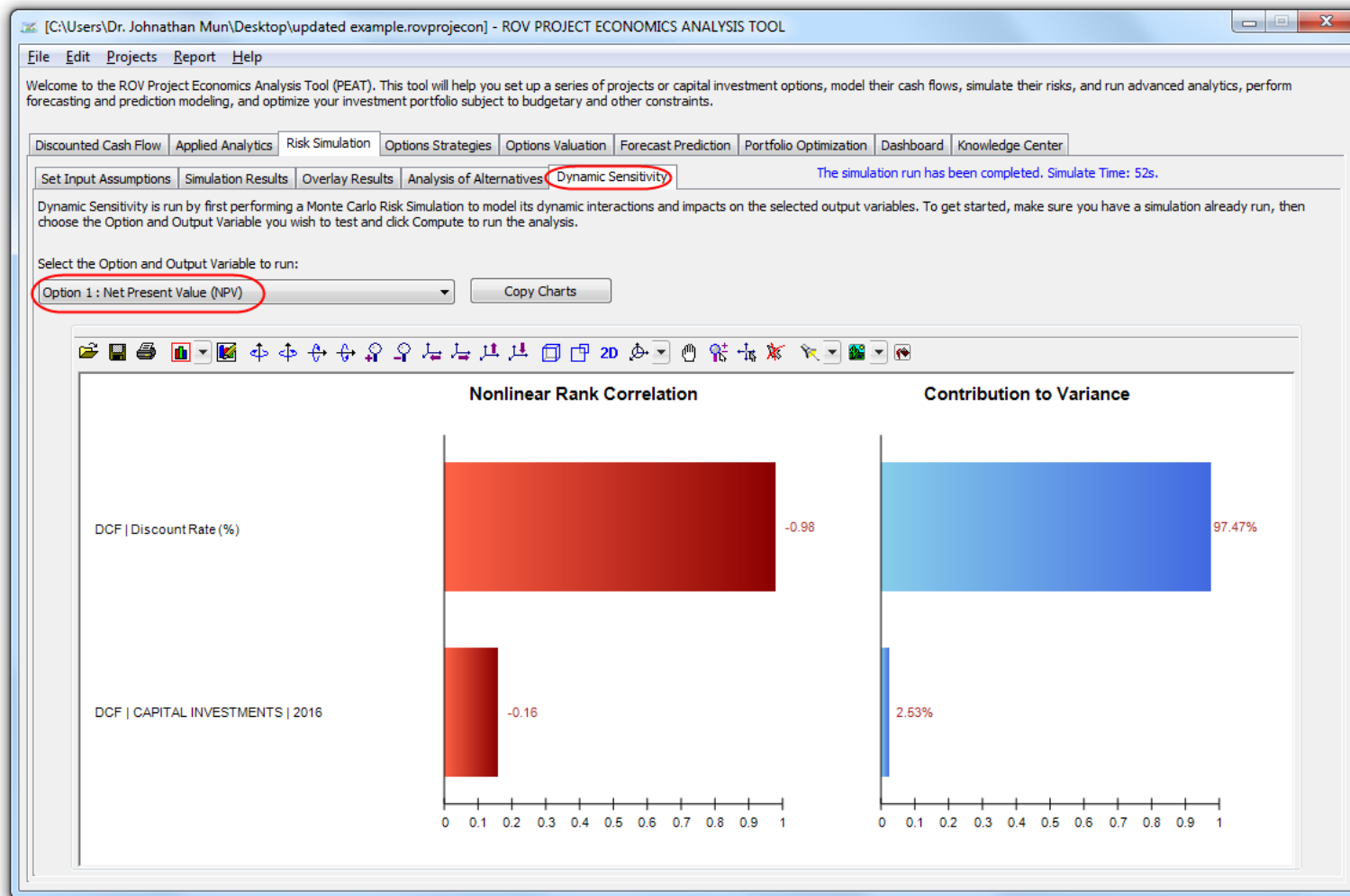
OPTIONS	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
Mean	545,410.42	1,079,535.22	18,725.33	1,937.62	30,406.70	48,841.38	1,047,018.61	-259.89	
Median	543,229.06	1,088,791.18	19,483.32	2,438.84	30,201.12	48,922.04	996,274.73	-287.67	
Stdev	103,365.99	457,400.00	15,435.45	11,360.23	19,683.29	12,434.57	976,562.42	299,411	
Variance	1.07E+010	2.09E+011	2.38E+008	1.29E+008	3.87E+008	1.55E+008	9.54E+011	8.96E+011	
CV	18.95%	42.37%	82.43%	586.30%	64.73%	25.46%	93.27%	115.20%	
Skew	0.01	0.07	-0.16	-0.10	-0.03	-0.14	0.07	0.12	
Kurtosis	-0.78	-0.74	-0.79	-0.97	-0.88	-0.90	-1.08	-1.12	
Minimum	311,005.47	110,596.35	-19,449.11	-24,852.54	-15,415.46	16,894.20	-827,113.65	-823,12	
Maximum	787,244.55	2,222,651.96	56,602.33	26,100.52	79,858.83	74,573.75	2,917,827.34	357,466	
Range	476,239.08	2,112,055.60	76,051.44	50,953.06	95,274.28	57,679.56	3,744,940.99	1,180,58	
0% Percentile	311,005.47	110,596.35	-19,449.11	-24,852.54	-15,415.46	16,894.20	-827,113.65	-823,12	
5% Percentile	377,855.20	348,721.93	-7,759.02	-16,788.69	-1,603.84	28,068.26	-432,815.29	-709,88	
10% Percentile	404,273.49	454,679.88	-2,934.99	-13,186.88	3,241.17	31,794.91	-265,266.58	-648,78	
20% Percentile	448,621.71	645,988.76	3,918.62	-9,451.82	11,364.30	37,328.13	93,610.06	-551,91	
30% Percentile	488,540.13	792,917.28	9,655.91	-5,223.87	18,193.93	41,533.43	404,668.27	-469,29	
40% Percentile	514,837.70	951,689.97	14,747.88	-1,366.51	24,740.85	44,992.27	683,320.17	-379,15	
50% Percentile	543,229.06	1,088,791.18	19,483.32	2,438.84	30,201.12	48,922.04	996,274.73	-287,67	
60% Percentile	576,425.96	1,220,762.26	24,029.69	5,717.75	36,750.05	53,237.31	1,342,652.96	-183,20	
70% Percentile	610,582.17	1,335,584.22	28,816.84	9,779.77	43,308.78	57,090.98	1,678,149.03	-60,722	
80% Percentile	642,293.21	1,491,996.23	33,017.35	13,105.99	49,442.60	61,488.11	2,057,595.65	54,734	
90% Percentile	685,578.37	1,691,257.75	38,742.64	16,777.98	55,811.36	65,305.63	2,401,656.70	158,426	
95% Percentile	714,304.71	1,854,667.41	42,135.11	19,280.69	61,015.92	67,577.56	2,642,747.29	225,212	
100% Percentile	787,244.55	2,222,651.96	56,602.33	26,100.52	79,858.83	74,573.75	2,917,827.34	357,466	

CV

2D Bar Copy Grid Copy Chart

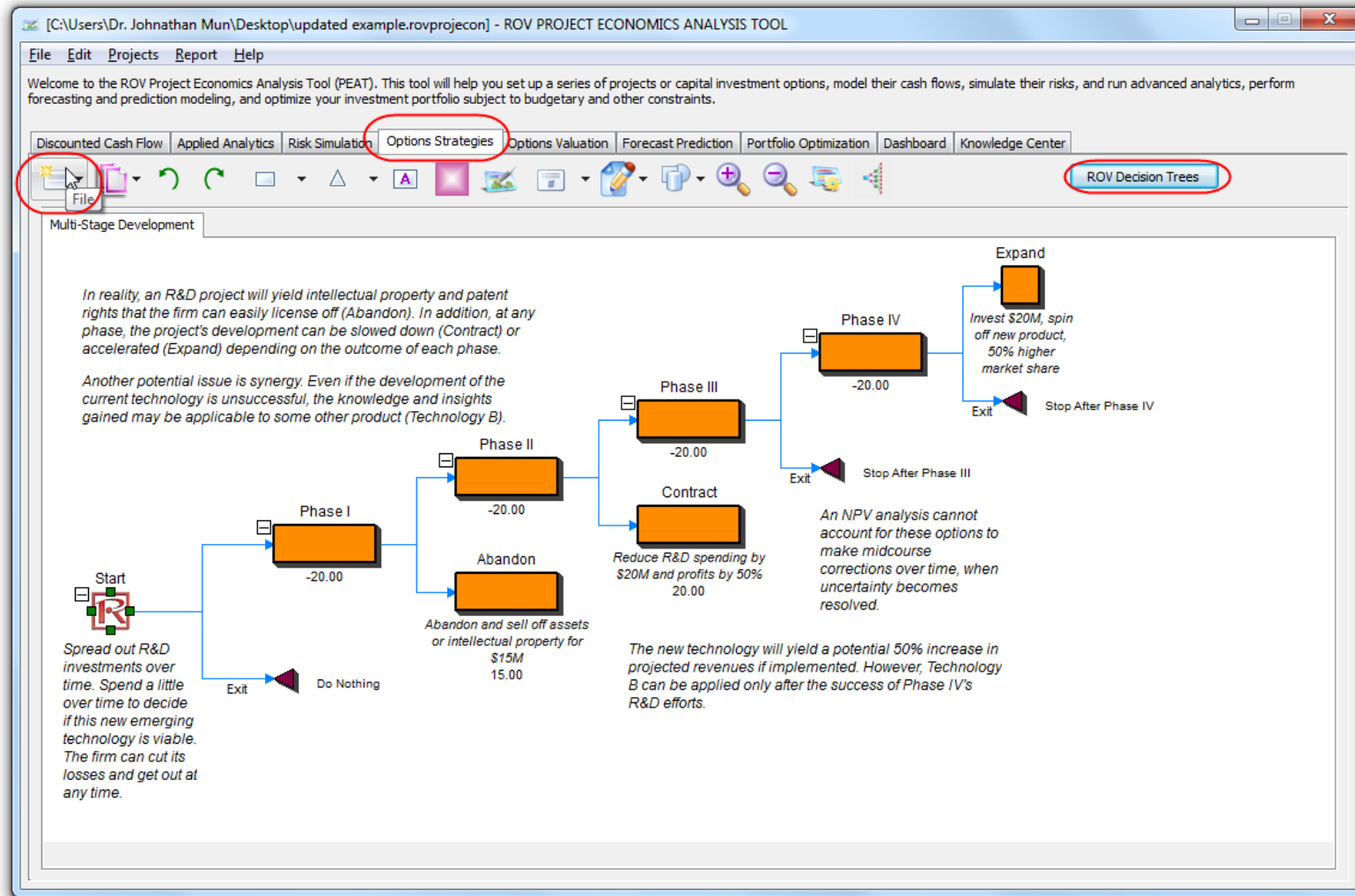
Similarly, you can view each Project or Option’s risk simulation results side by side as an Analysis of Alternative or as Incremental Analysis (please be aware that some statistics may not be appropriate to use for incremental analysis due to the nature of simulations).

Go to “Risk Simulation | Dynamic Sensitivity” and select any output from the droplist



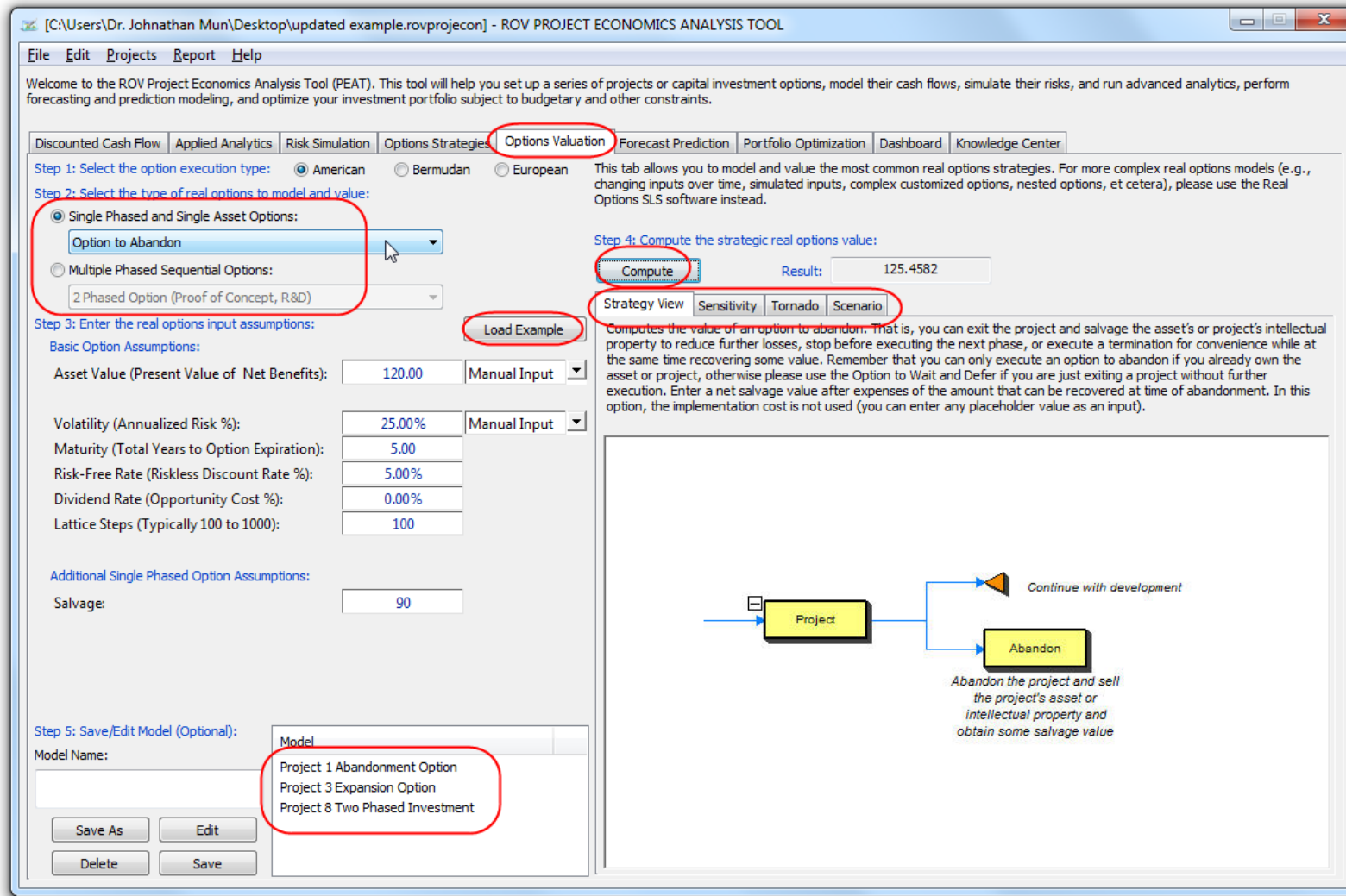
Tornado shows a static sensitivity whereas a Dynamic Sensitivity shows the impacts of each probabilistic input assumption on the risk simulated outcome where all inputs are changed simultaneously.

Go to "Options Strategies"



You can select any example model from the File icon, create your own strategy trees, or run example/create your own decision tree model. The last saved strategy tree model that is viewed will be opened the next time the PEAT profile is opened, assuming the corresponding strategy tree file has not changed its name or location. You can also run the ROV Decision Tree for stochastic simulations on decision trees.

Go to “Options Valuation” and double click on any of the saved models to run them



The most commonly used real options models are preset for you in this tab. Start by selecting the option type and enter your inputs, click on Load Example to view a sample set of inputs as a guideline, or click on several available droplists to link to the relevant project’s values. Save the options model for later retrieval. You can also view a sample strategy tree of the selected option type, and view the sensitivity, tornado, and scenario analysis of the selected option.

Go to “Options Valuation,” run a model, and go to the “Sensitivity” subtab

Options Valuation

Step 1: Select the option execution type: American Bermudan European

Step 2: Select the type of real options to model and value:

Single Phased and Single Asset Options:
Option to Abandon

Multiple Phased Sequential Options:
2 Phased Option (Proof of Concept, R&D)

Step 3: Enter the real options input assumptions:

Basic Option Assumptions:

Asset Value (Present Value of Net Benefits): 120.00 Manual Input

Volatility (Annualized Risk %): 25.00% Manual Input

Maturity (Total Years to Option Expiration): 5.00

Risk-Free Rate (Riskless Discount Rate %): 5.00%

Dividend Rate (Opportunity Cost %): 0.00%

Lattice Steps (Typically 100 to 1000): 100

Additional Single Phased Option Assumptions:

Salvage: 90

Step 4: Compute the strategic real options value:

Compute Result: 125.4582

Strategy View **Sensitivity** Tornado Scenario

Sensitivity +/-: 10 %

Show the top: 10 variables

Show results with: 2 decimals

American::Option to Abandon

	Base Value:	125.46			Input Changes	
Inputs	Output Downside	Output Upside	Effective Range	Input Downside	Input Upside	Base Case Value
Asset Value (Present Value of Net Benefits)	115.45	136.04	20.58	108.00	132.00	120.00
Salvage	123.52	127.96	4.44	81.00	99.00	90.00
Volatility (Annualized Risk %)	124.08	126.91	2.83	22.50%	27.50%	25.00%
Risk-Free Rate (Riskless Discount Rate %)	125.85	125.10	0.75	4.50%	5.50%	5.00%
Maturity (Total Years to Option Expiration)	125.10	125.77	0.67	4.50	5.50	5.00
Lattice Steps (Typically 100 to 1000)	125.46	125.45	0.00	90.00	110.00	100.00
Dividend Rate (Opportunity Cost %)	125.46	125.46	0.00	0.00%	0.00%	0.00%

Step 5: Save/Edit Model (Optional):

Model Name:

Model

- Project 1 Abandonment Option
- Project 3 Expansion Option
- Project 8 Two Phased Investment

Save As Edit

Delete Save

Double click on any saved model to run it. You can then view the model’s sensitivity, tornado, or scenario analysis results.

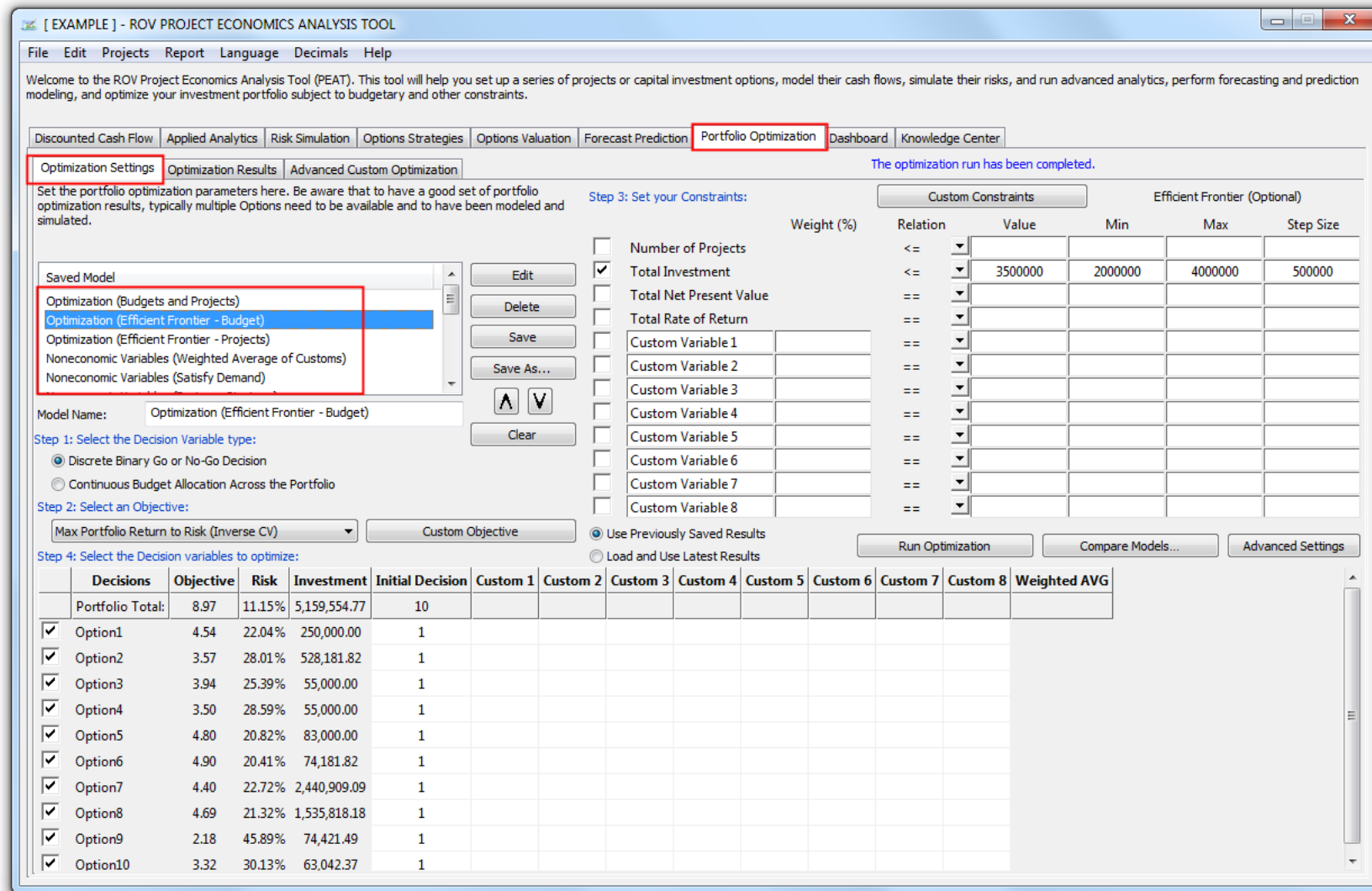
Go to "Forecast Prediction" and double click on any saved model to run

The screenshot shows the ROV Project Economics Analysis Tool (PEAT) interface. The 'Forecast Prediction' tab is selected. The 'Options' button is circled in red. A list of 15 modeling and forecast methods is shown, with 'Sample Sales Forecast Prediction' highlighted in blue and circled in red. A line chart titled 'Actual vs. Forecast' is visible at the bottom left.

NO...	VAR1	VAR2	VAR3	VAR4	VAR5	VAR6	VAR7	VAR8	VAR9	VAR10
1	736934...	0.330900	0.156700	2.947700	4.160800	684.20...	459.11...	0.083333	0.045500	
2	243132...	0.276100	0.154800	4.603200	7.025000	584.10...	460.71...	0.250000	0.044700	
3	36805....	0.194100	0.123700	0.669200	7.211800	765.40...	460.34...	0.500000	0.045200	
4	31656....	0.183400	0.123400	0.575600	8.128400	892.30...	460.68...	1.000000	0.043900	
5	69999....	0.215600	0.126800	0.843400	6.218100	885.40...	460.83...	2.000000	0.041300	
6	19726....	0.189100	0.115900	0.265900	5.232900	677.00...	461.68...	3.000000	0.041600	
7	279068...	0.231300	0.124200	1.143300	6.200000	1006.6...	461.66...	5.000000	0.042600	
8	162026...	0.222300	0.126700	1.055000	6.252300	1122.1	461.64	7.000000	0.043800	

This tab has over 150 modeling and forecast methods available to run on your data. Follow the "Steps" and instructions to set up and save/retrieve your forecast model. Click on "Options" to open/load some example data and models or to save your forecast model as its own profile, or to recover an existing set of data/models.

Go to “Portfolio Optimization | Optimization Settings” and double click on a saved model to run



Double click on any saved model to run it or create your own portfolio optimization models here. You have to first set up the model’s Decision Variables, Objective, and Constraints. You can set variable constraints with a range to run an investment efficient frontier analysis.

Go to “Portfolio Optimization | Optimization Results”

Optimization Results

The optimization run has been completed.

Risk Optimizer Report: Date Fri Jul 26 11:41:42 2013 Runtime: 0.41 seconds
 Problem Title: PEAT Portfolio Optimization
 Problem Parameters:
 Number of variables 10
 Number of functions 2
 Objective function will be MAXimized

Starting Values

Functions:

No.	Function Name	Status	Type	Initial Value	Lower Bound	Upper Bound
1	G		RNGE	1.97882e+006	-1.79769e+308	2e+006
2	G		OBJ	6.94092		

Objective Function	6.9409	7.8211	8.0545	8.0545	8.0545
Frontier Variable	2,000,000	2,500,000	3,000,000	3,500,000	4,000,000
Optimized Constraint	1,978,800	2,487,000	2,718,600	2,718,600	2,718,600
Option1	1	1	1	1	1
Option2	0	1	1	1	1
Option3	1	1	1	1	1
Option4	1	1	1	1	1
Option5	1	0	1	1	1
Option6	0	0	1	1	1
Option7	0	0	0	0	0
Option8	1	1	1	1	1
Option9	0	0	1	1	1
Option10	0	1	1	1	1

Chart Type: Standard 2D Line

Show Values on Chart

Double clicking on any saved optimization model in the previous Optimization Settings tab will run the optimization model and automatically bring you to this results tab.

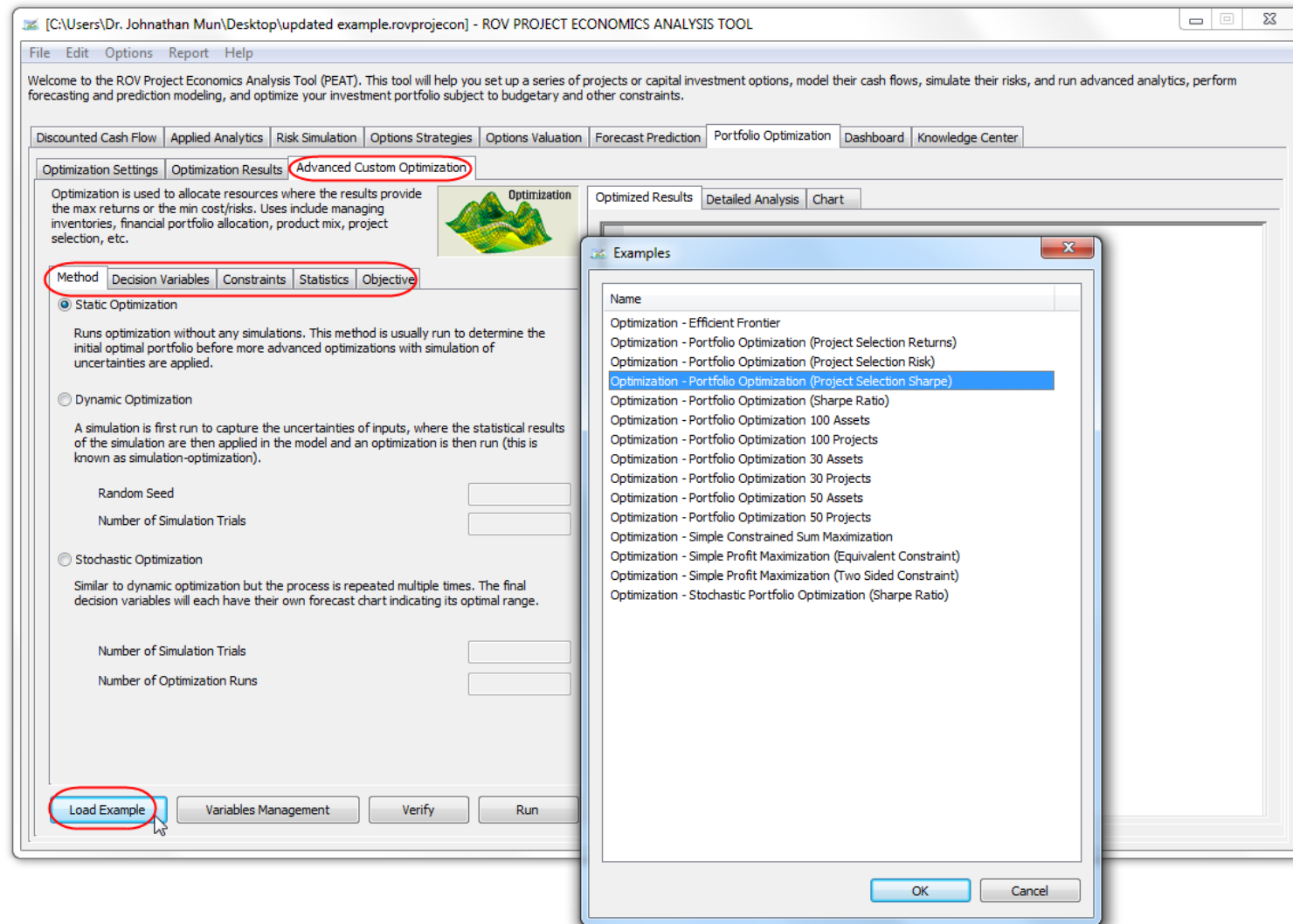
Go to “Portfolio Optimization | Optimization Settings” and click Compare Models, then select the five Noneconomic Variables to run and compare...

The screenshot shows the ROV Project Economics Analysis Tool interface. The main window displays the 'Portfolio Optimization' tab with a 'Compare Models...' button highlighted in red. A 'Compare Model Settings' dialog is open on the left, showing a list of models with 'Noneconomic Variables (Weighted Average of Customs)' selected. A 'Compare Model Results' dialog is open in the foreground, displaying a decision matrix with 10 options and 5 models.

Index	1	2	3	4	5	Count
Model	Model 1	Model 2	Model 3	Model 4	Model 5	
Objective Function	55.6	59.3	55.6	33.06	38.9	
Optimized Constraint 1	7	7	7	7	7	
Optimized Constraint 2	2.5889e+006	2.4131e+006	2.5889e+006	2.5853e+006	2.4131e+006	
Option 1	1	0	1	1	0	3
Option 2	0	0	0	0	0	0
Option 3	1	1	1	1	1	5
Option 4	1	1	1	0	1	4
Option 5	1	1	1	1	1	5
Option 6	0	1	0	1	1	3
Option 7	0	0	0	0	0	0
Option 8	1	1	1	1	1	5
Option 9	1	1	1	1	1	5
Option 10	1	1	1	1	1	5

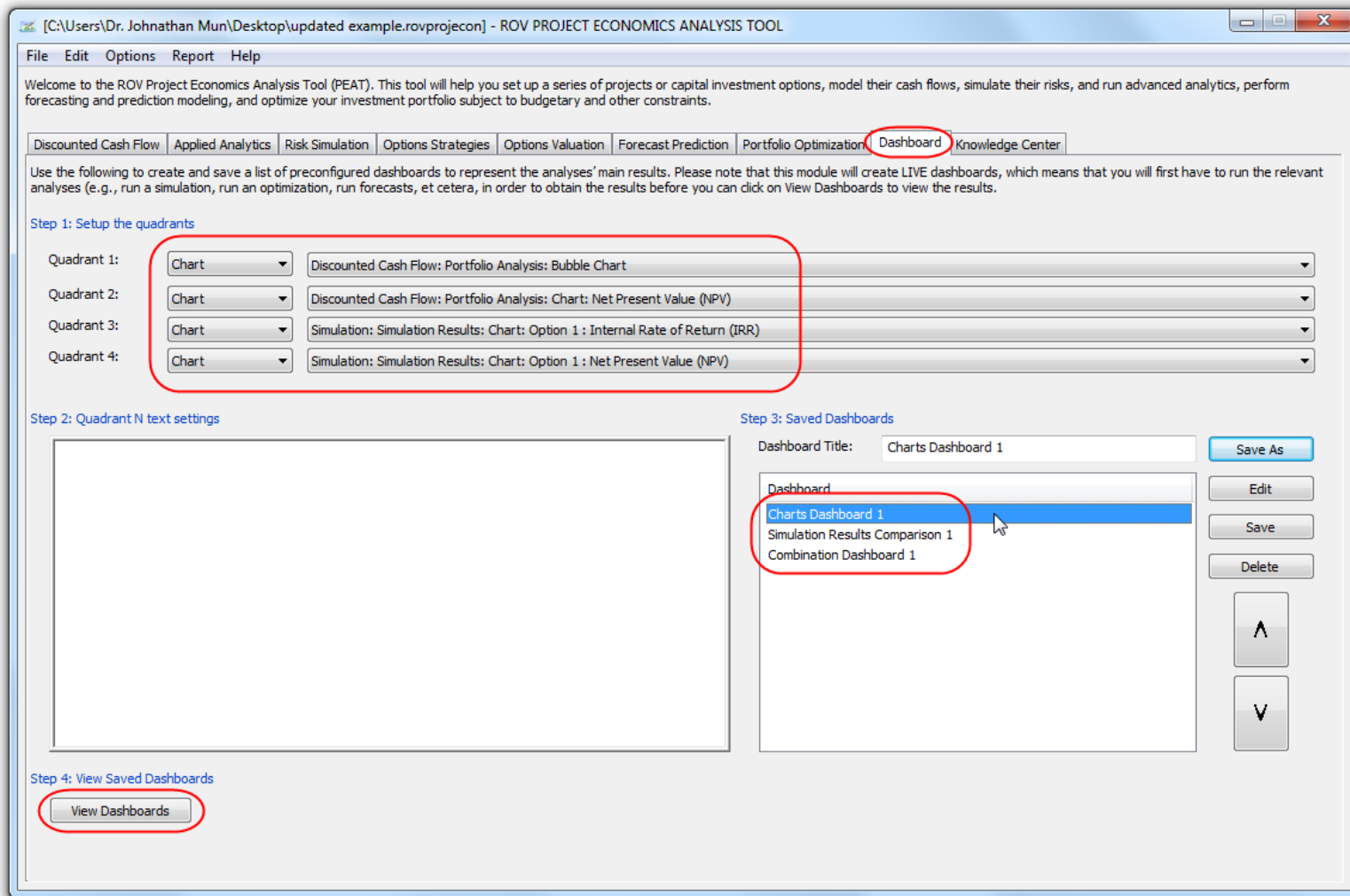
All selected models will run and you can see the results “sliced-and-diced” in various points of view, and the results will be returned as an optimized matrix of decisions...

Go to “Portfolio Optimization | Advanced Custom Optimization”



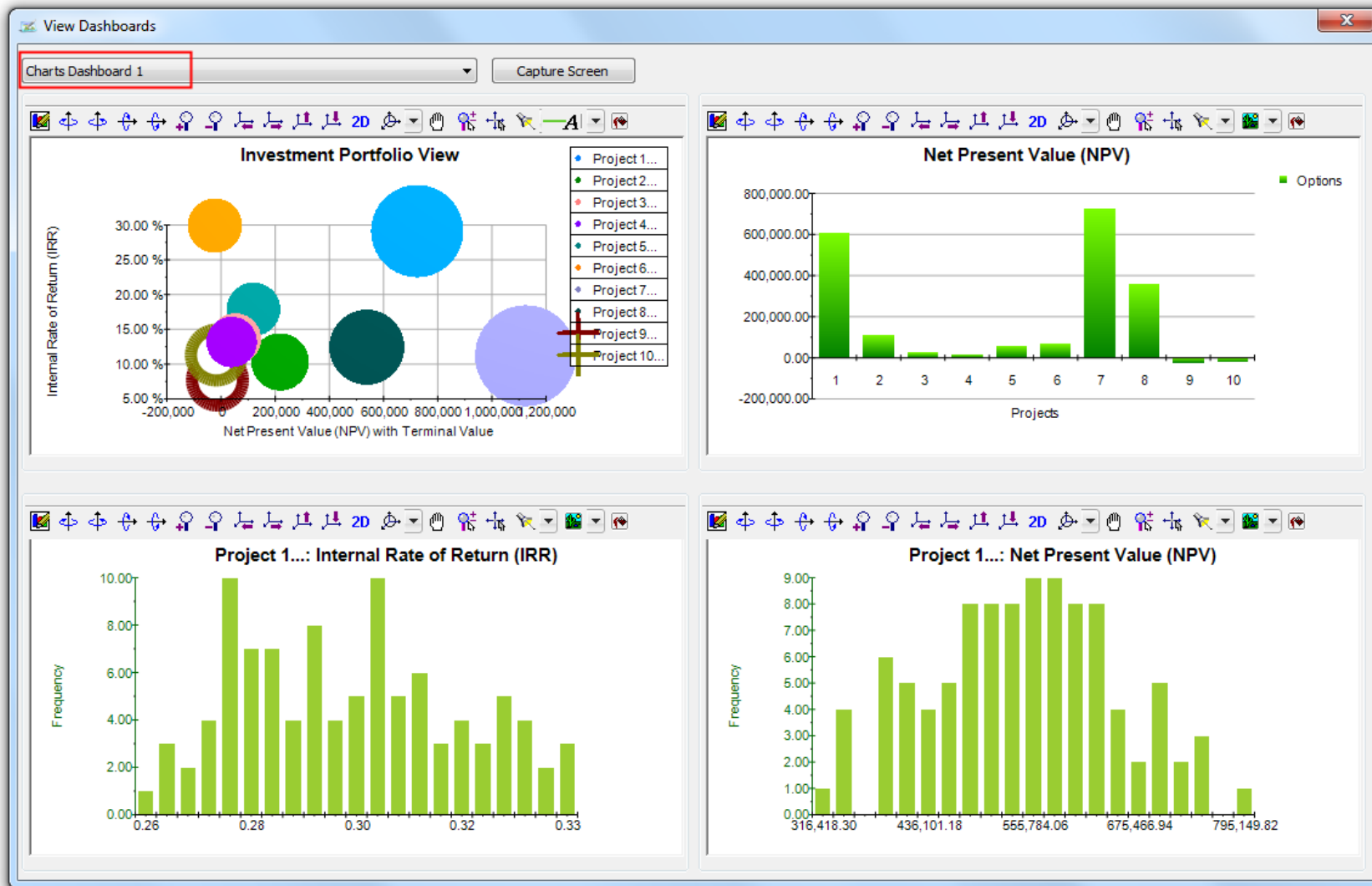
You can “create, save, and run your own optimization models” in this tab or run some previously saved example models. You have to first set up the model’s Decision Variables using the Variables Management tool, then set the Objective and Constraints. You can set variable constraints with a range to run an investment efficient frontier analysis.

Go to “Dashboard” to review the settings and click “View Dashboards” when done



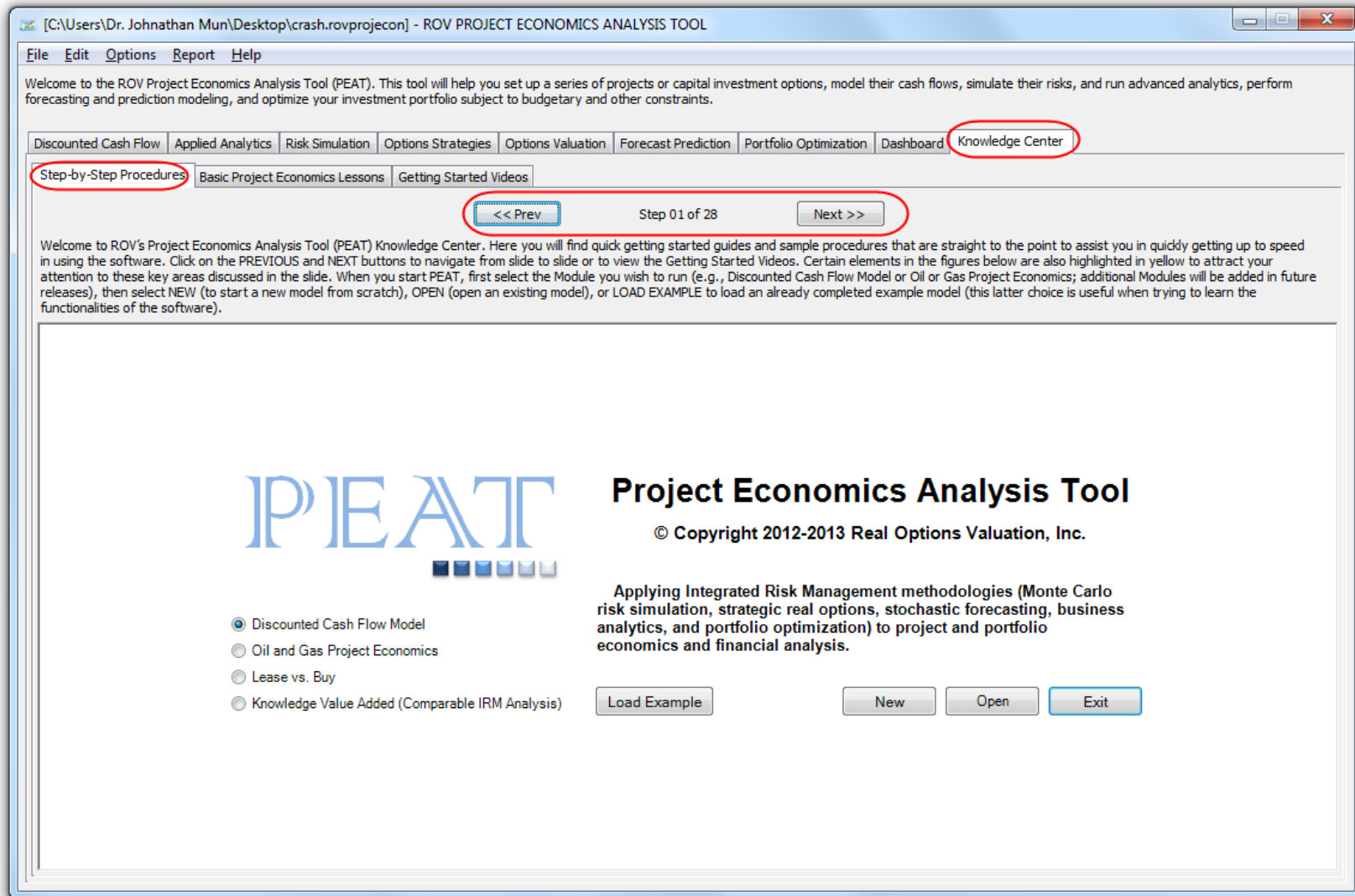
You can create and save multiple management dashboards here. Each dashboard can have four quadrants with any combinations of charts, results data grid, forecast or optimization results, or custom text. Please be aware that you must first run at least one RISK SIMULATION, OPTIMIZATION, and FORECAST model each before the dashboard will show any data/results. If you do not run anything, there will be no results to show!

In the “View Dashboards” mode, select any one of the saved dashboards from the droplist



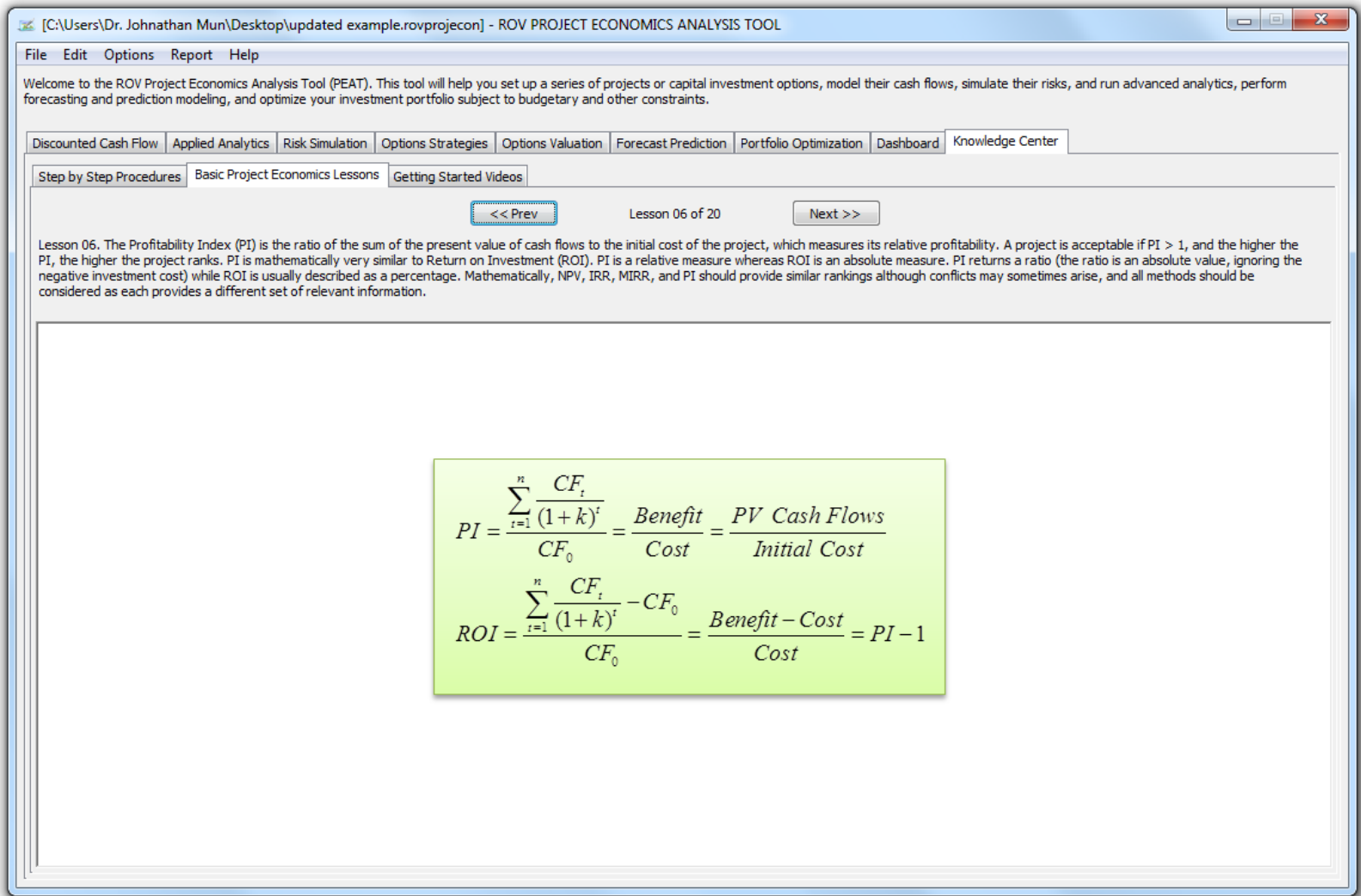
You can retrieve any of the saved dashboards and these dashboards will be populated only if the appropriate models have been run...

Go to “Knowledge Center | Step-by-Step Procedures” and step through the training material



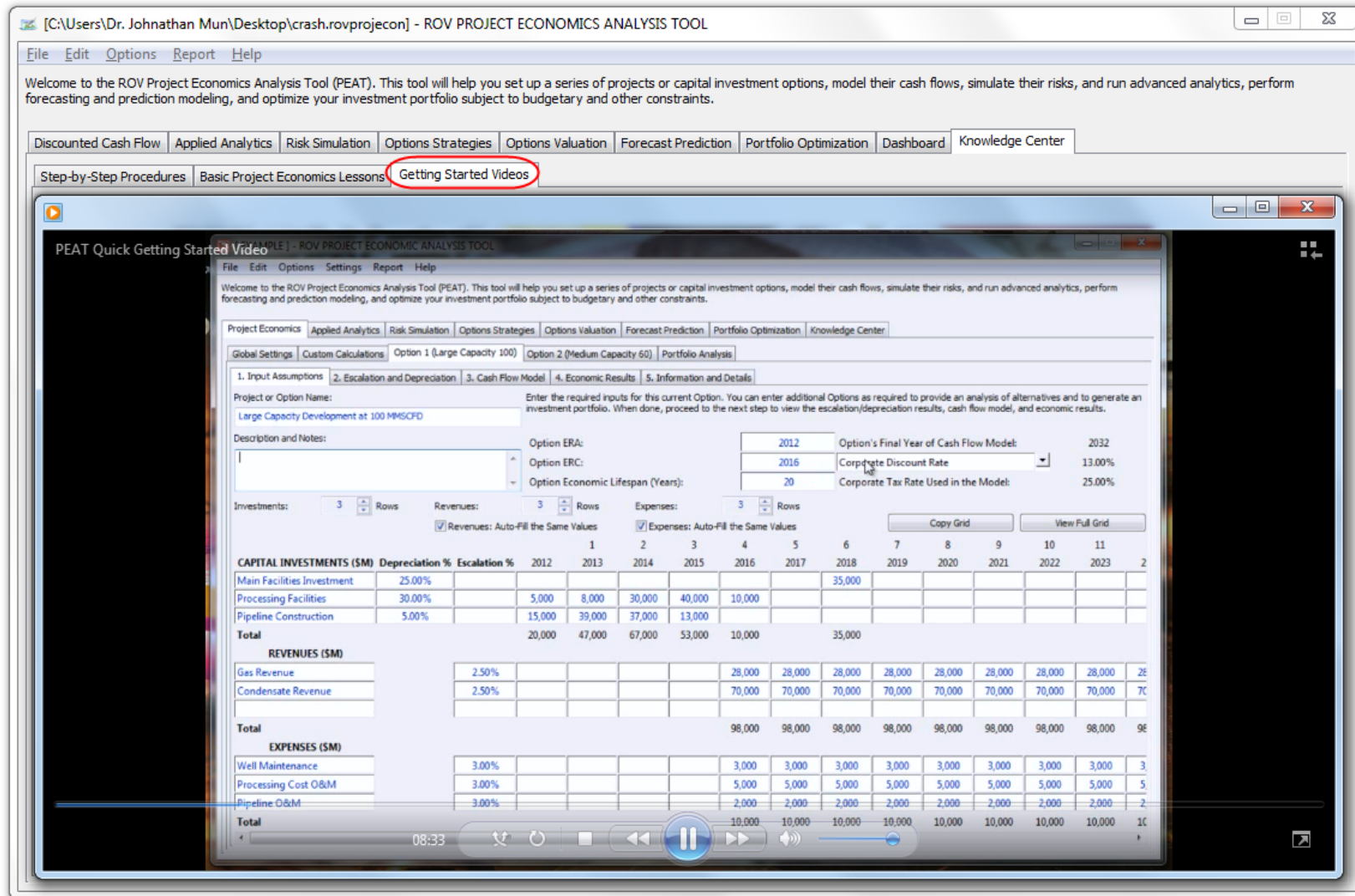
You can also learn the basics of PEAT through the knowledge center’s procedures illustrations. Step back and forth from slide to slide while reviewing the text. You can create your own custom training materials for your staff and company’s personnel, if you wish, by following some simple instructions in the user manual.

Go to “Knowledge Center | Basic Project Economics Lessons”



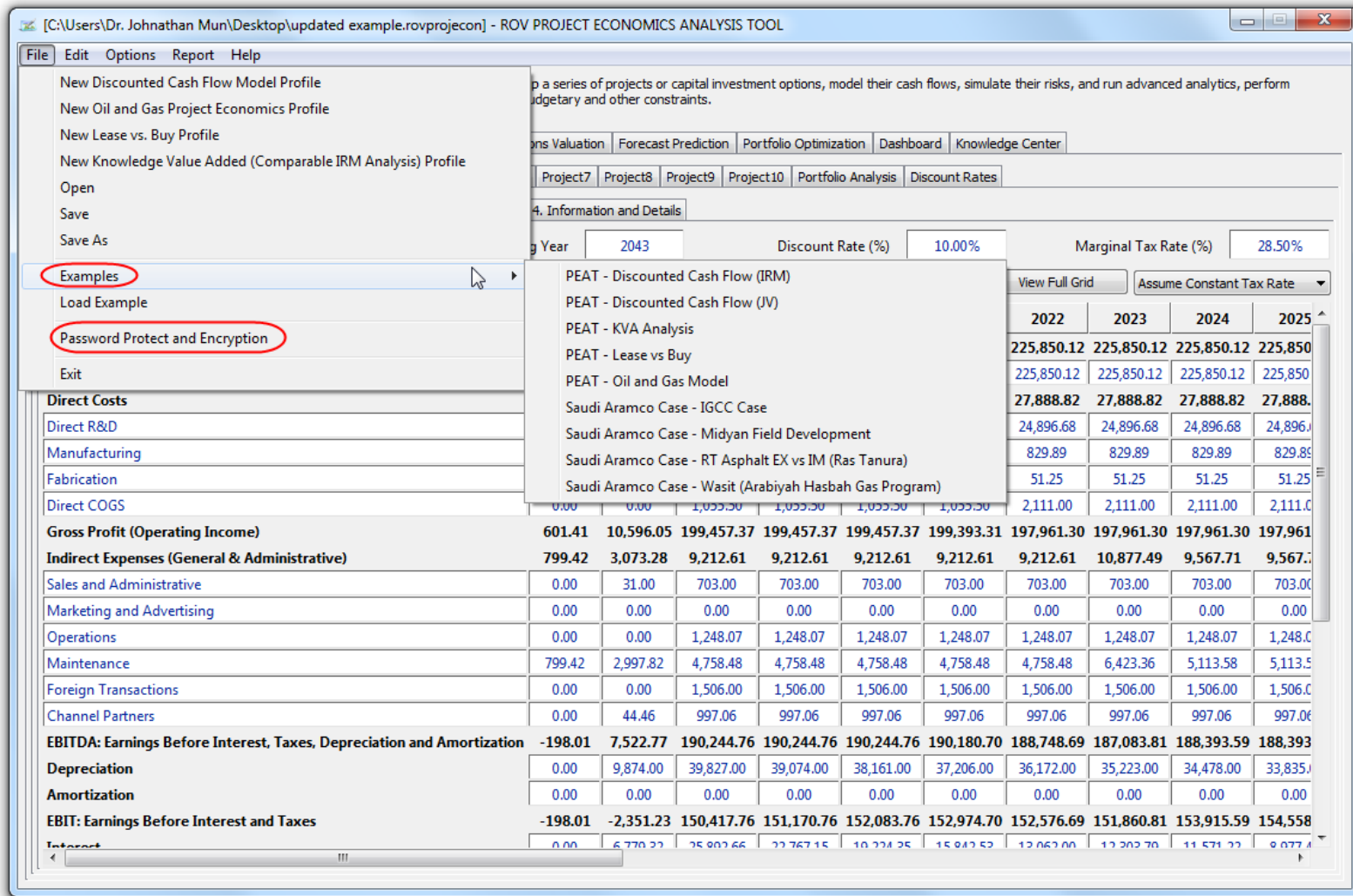
You can also learn the basics of the project economics and financial analytics that PEAT uses through the knowledge center’s basic project economics lessons. Step back and forth as usual. You can also create your own custom training materials for your staff and company’s personnel for this subtab.

Go to “Knowledge Center | Getting Started Videos” and click on the video icon to start watching



Some basic videos are also available as part of the PEAT tool to get you up to speed quickly on using the software application. Again, you can create and embed your own corporate training videos if required.

Click on the menus and explore...



Do not forget to click on some of the menus to explore additional settings that are available such as performing data and model encryption, load example files, start new or open existing models, change international settings (foreign languages and decimal settings), as well as add/delete/rename/duplicate/rearrange Projects and Options.

Click on the “Report | Report Settings” menu

After completing and running your models (i.e., having completed and run any or all of the appropriate tabs: project economics, advanced analytics, risk simulations, forecasting, real options, and optimization), you can generate a report in Excel. A quick hint here is that once you click “Run Report” please make sure to be “hands-off” the computer until the report is complete.

The screenshot shows the 'Report' dialog box in Excel, which is used to configure the report settings. The dialog box has a 'Select All' checkbox at the top, followed by several sections of options:

- 1. Project Economics:** All Options, Portfolio Analysis
- 2. Applied Analytics:** Static Tornado, Scenario Output Table
- 3. Risk Simulation:** Simulation Results, Overlay Results, Analysis of Alternatives, Dynamic Sensitivity
- 4. Options Strategies:** Current Strategy Tree
- 5. Options Valuation:** Inputs Assumptions, Sensitivity, Tornado, Scenario
- 6. Portfolio Optimization:** Current Model Only (selected), All Saved Models

At the bottom of the dialog box are 'Run Report' and 'Cancel' buttons.

The background shows an Excel spreadsheet with the following data table:

	Output Downside	Output Upside	Effective Range	Input Downside	Input Upside	Base Case Value
Option 1 : Net Present Value (NPV)	Base Value: 608,388.29					
Revenues	471,501.67	745,274.91	273,773.24	5,419,480.60	6,623,809.62	6,021,645.11
DCF Discount Rate (%)	694,674.44	533,487.06	161,187.38	9.00%	11.00%	10.00%
DCF Marginal Tax Rate (%)	642,603.76	574,172.81	68,430.95	25.65%	31.35%	28.50%
DCF CAPITAL INVESTMENTS	633,388.29	583,388.29	50,000.00	225,000.00	275,000.00	250,000.00
DCF Depreciation	629,216.89	587,559.68	41,657.22	726,039.90	887,382.10	806,711.00
Direct Costs	625,471.55	591,305.02	34,166.54	700,308.60	855,932.74	778,120.67
DCF Interest	615,236.53	601,540.04	13,696.49	140,594.88	171,838.18	156,216.53
Indirect Expenses	614,675.96	602,100.61	12,575.34	249,962.98	305,510.31	277,736.65
DCF Change in Net Working Capital	608,388.29	608,388.29	0	0	0	0
CFR Accounts Receivables	608,388.29	608,388.29	0	3,614.40	4,417.60	4,016.00

The report window on the right shows a bar chart for 'Option 1 : Net Present Value (NPV)' with values ranging from 450,000.00 to 750,000.00. The chart displays the base case value and the range of values for various inputs.