THE CRYSTAL BALL FORECAST CHART

Once you have run a simulation with Oracle's Crystal Ball, you can view several charts to help you visualize, understand, and communicate the simulation results. This Spotlight uses Crystal Ball and a simple spreadsheet (shown below) to demonstrate how you use a forecast chart.
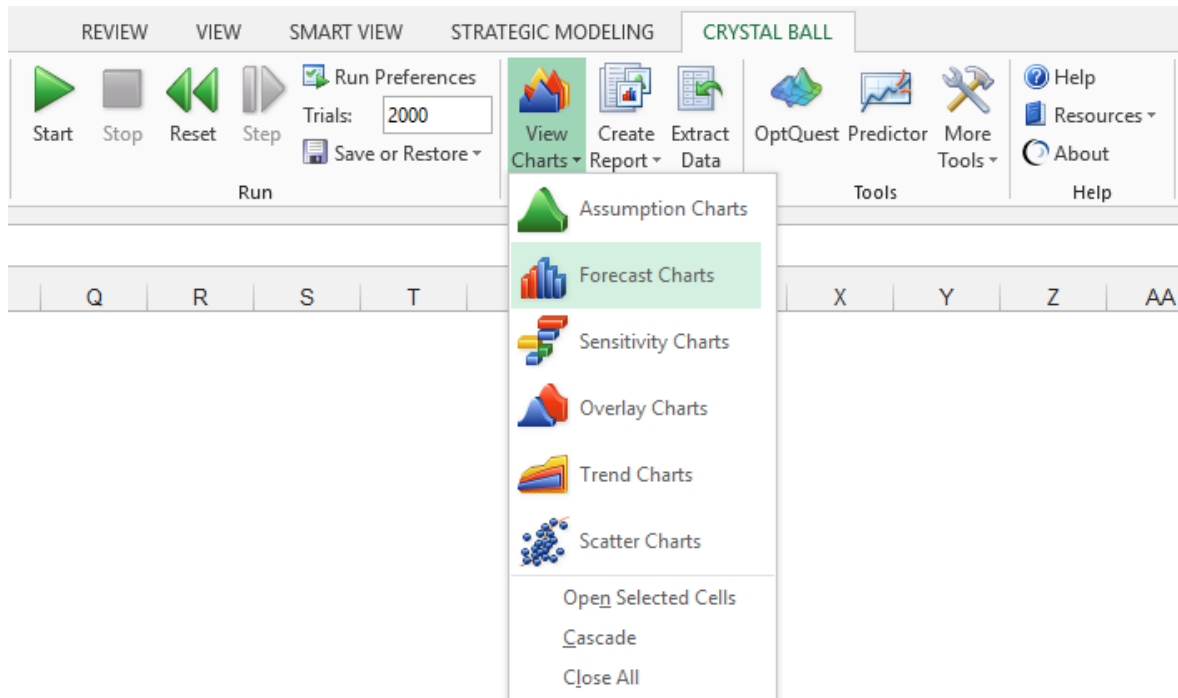

This discounted cash flow (DCF) spreadsheet model contains formulas and projections for a five year period. Prior to simulation, you used average values to calculate a deterministic (non-probabilistic) net present value (NPV) of $502,080. Your goal is to examine the probable NPV forecast over the five year period, so you run Crystal Ball for 2000 trials and begin to analyze the results.

OPENING THE FORECAST CHART

In the Define Forecast dialog, you can set whether or not to show each forecast window during or after a simulation. If you deselect this option, then you will need to open the forecast chart or charts using the Crystal Ball ribbon command below:

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The Forecast Chart, continued

You can also select the Forecast Charts option from the Analyze menu of the control panel. Both ways will open the Forecast Charts dialog, from which you can choose to view some or all of your simulation forecasts. We will look at the NPV forecast.

The Forecast Chart, continued

THE FREQUENCY CHART VIEW

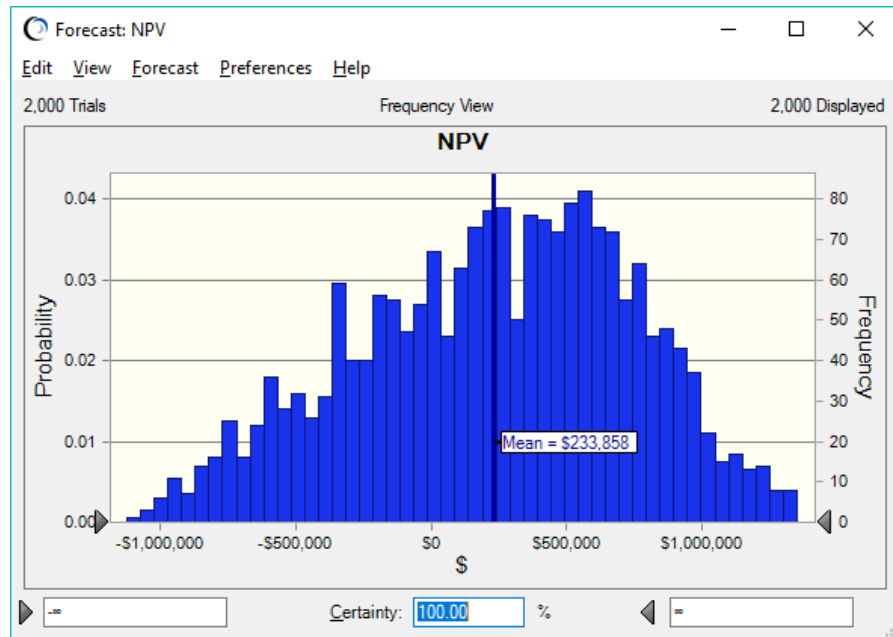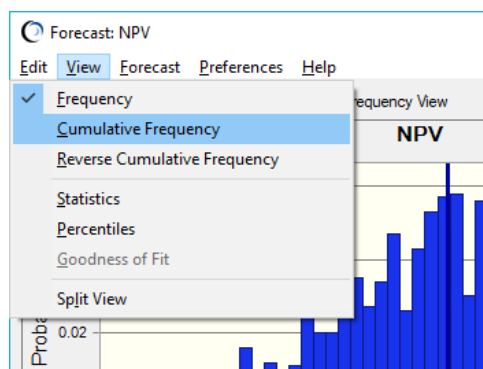The frequency view is a simple histogram of the values generated during the 2000 iterations.

The forecast chart groups the output values into a set number of intervals (or bins) so that they can be easily read. The bottom axis shows the range of output values. The highest value on the frequency scale on the right side of the chart (80) is the frequency for the group interval that contains the greatest number of forecast values—that is, the mode of the frequency distribution. The scale on the left side of the chart shows the probability of any particular interval, the greatest being .04 or 4%.

Note that, at the top of the chart, both the number of trials run and the trials displayed are shown. By default, Crystal Ball does not display extreme outliers so as not to skew the chart for the sake of readability. While these extreme values may not be shown on the chart, they are included in all statistical calculations. You can change the view settings to show these outliers using the Chart Axis option in the Preferences menu at the top of the forecast chart.
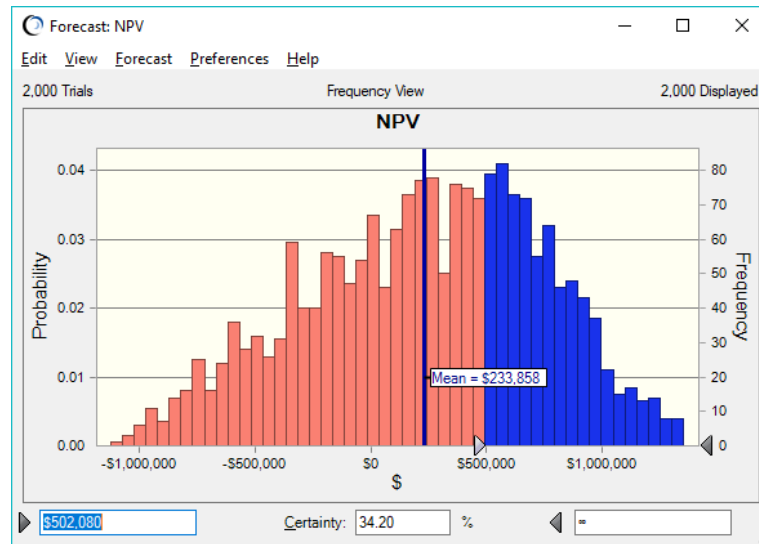
You can also choose to view the same data as cumulative (S-curve) or reverse cumulative charts through the View menu.
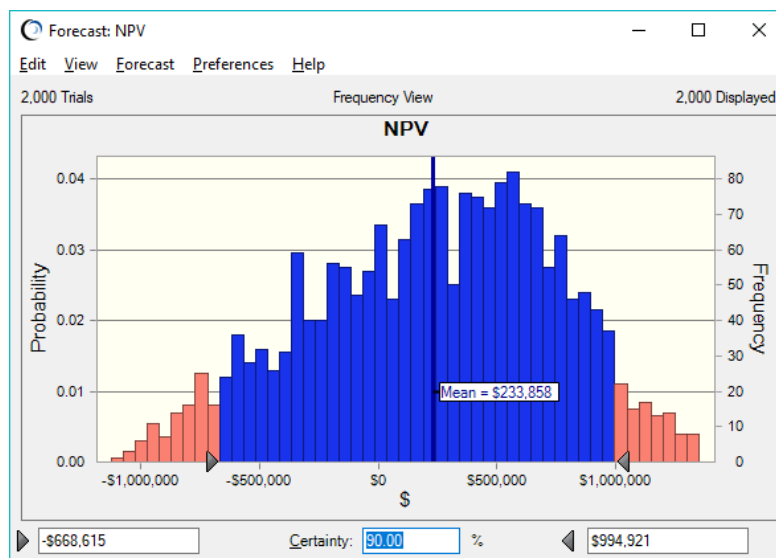

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The Forecast Chart, continued

DETERMINING THE CERTAINTY OF A RESULT

The interactive forecast chart lets you view the forecast data in many revealing ways. The simplest way is to enter a value in either of the lower left or right input boxes. To see the certainty of achieving your estimated $502,080 base case, enter that value in the lower left box and press the Enter key.

The chart moves the left certainty grabber (the triangle at the base of the graphic view) to the value and tells you that you achieved that goal in 34.20% of the trials. You can run the same analysis on any outcome you want to view. You can also move the certainty grabbers manually by clicking on them and sliding them horizontally.
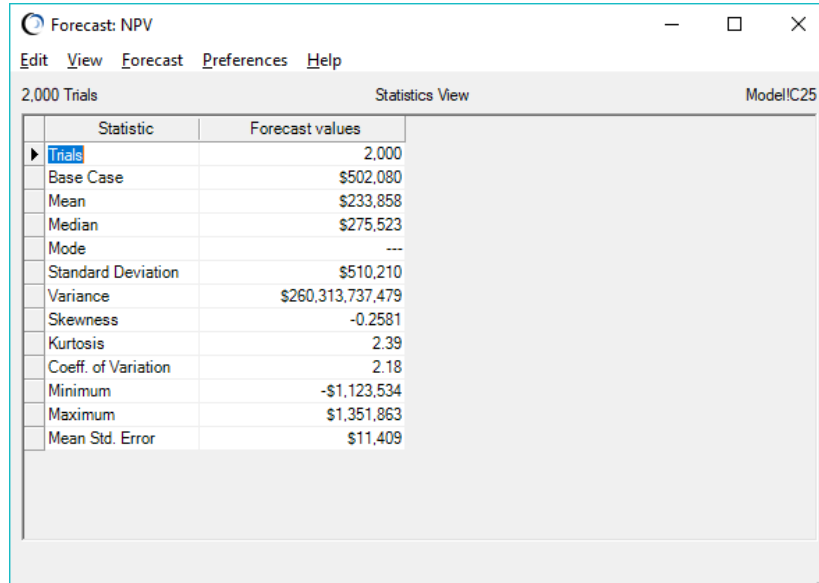
You could also look at a certainty range around the median by entering a percentage value in the Certainty field (make sure to unanchor any grabbers first by clicking on them to turn them dark gray). The view below shows 90% of the values around the median (or 50%-percentile), which fall between ($668,615) and $994,921.

The Forecast Chart, continued
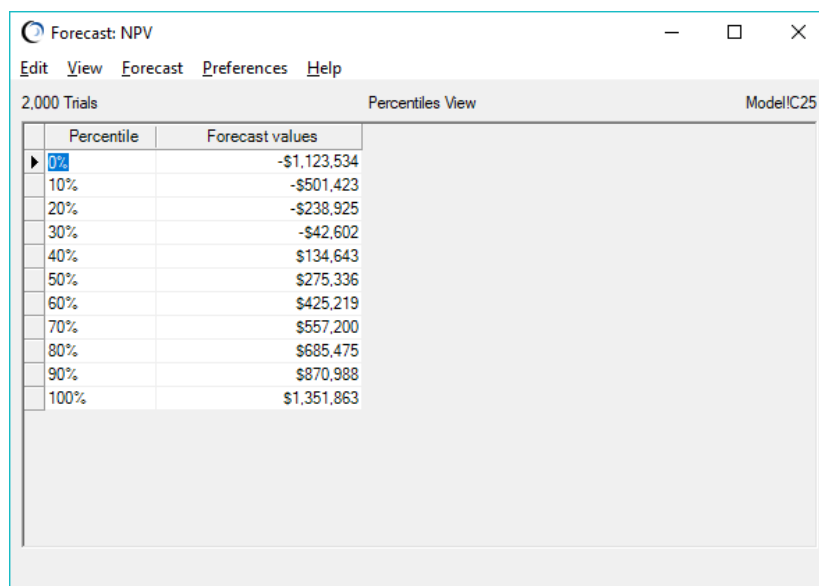
THE STATISTICS AND PERCENTILE VIEWS

You can display a full set of descriptive statistics for a simulation in the forecast window by selecting View > Statistics or pressing ctrl-spacebar once. These statistics (shown below) are calculated by Crystal Ball and not by Excel.

Statistic	Forecast values
Trials	2,000
Base Case	$502,080
Mean	$233,858
Median	$275,523
Mode	---
Standard Deviation	$510,210
Variance	$260,313,737,479
Skewness	-0.2581
Kurtosis	2.39
Coeff. of Variation	2.18
Minimum	-$1,123,534
Maximum	$1,351,863
Mean Std. Error	$11,409

Forecast: NPV — 2,000 Trials — Statistics View — Model!C25

You can display percentile information in 10% increments in the forecast chart by selecting the View > Percentiles or pressing ctrl-spacebar a second time. A percentile is the percent chance, or probability, of a forecast value being less than or equal to the value that corresponds to the percentile.

For example, the table below tells you that the 90th percentile for the NPV corresponds to $870,988, meaning that there is a 90% chance of a forecast value being equal to or less than this value.

Percentile	Forecast values
0%	-$1,123,534
10%	-$501,423
20%	-$238,925
30%	-$42,602
40%	$134,643
50%	$275,336
60%	$425,219
70%	$557,200
80%	$685,475
90%	$870,988
100%	$1,351,863

Forecast: NPV — 2,000 Trials — Percentiles View — Model!C25

The Forecast Chart, continued

For more information or to contact us, browse to
http://www.oracle.com/technetwork/middleware/crystalball/overview/index.html.