

# Training Webinar – Output Viewer: ProModel and Process Simulator

July 29, 2021

Presenter: Bruce Gladwin, SVP Commercial Products

# Agenda

- Output Viewer Basics
  - Settings, Options, Files and Directories
- Default Summary Report & Tables
  - Getting more from the default report and summary tables
- Common Charts & Graphs
  - Column Charts, Bar Charts, Pie Charts, Histograms
- Time Series Reports
- Single vs. Multiple Replications
- Exporting Charts, Reports and Raw Data

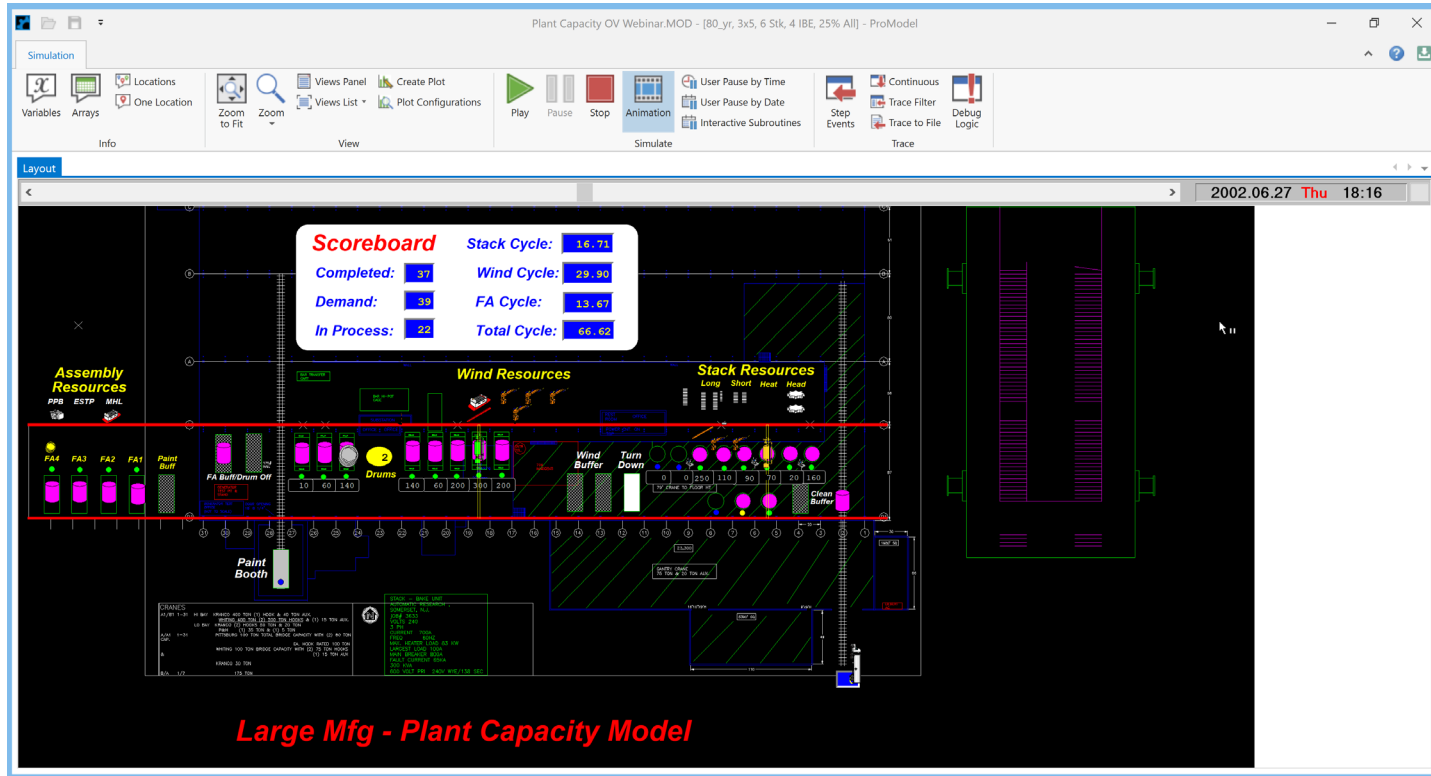
# Settings, Options, Files, Directories

- File types
  - .RDB = main database containing tables of summary data
  - .RDT = raw time series data for variables and queue contents
  - .PMOV = saved settings of Reports, Windows and Options
  - .SED = starting seed values for random # generator
- Directory settings
  - By default, Output Viewer files are stored in...
    - My Documents\ProModel\Output
    - My Documents\Process Simulator\<<your model directory>

# Example Models

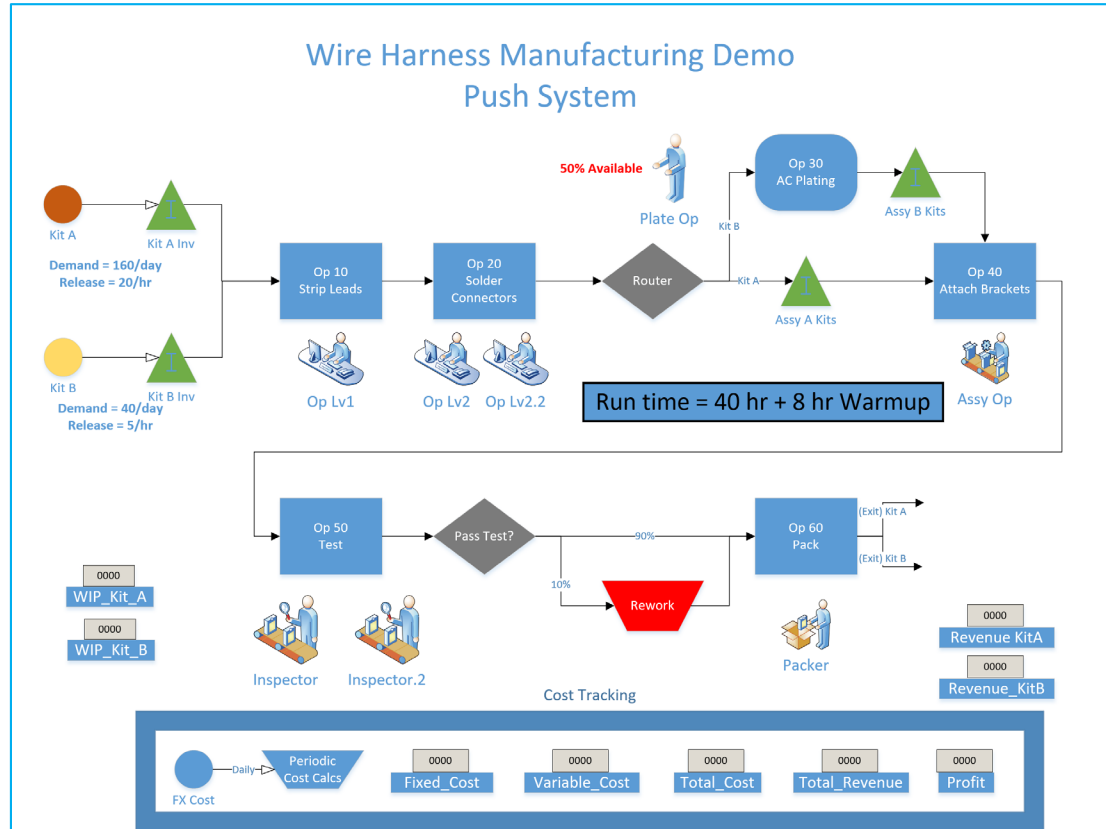
- ProModel Model: “Plant Capacity”
  - Typical, high-level, plantwide model used to predict Throughput, Cycle times, Location and Resource Utilization and On-time delivery
- Process Simulator Model: “Wire Harness Mfg”
  - Used in previous Costing webinar
- Reports cover a wide spectrum of the reports, charts, graphs available in Output Viewer for both products
- Both include multiple scenarios (data source files)

# ProModel - Plant Capacity Model



Large Mfg - Plant Capacity Model

# Process Simulator - Wire Harness Mfg

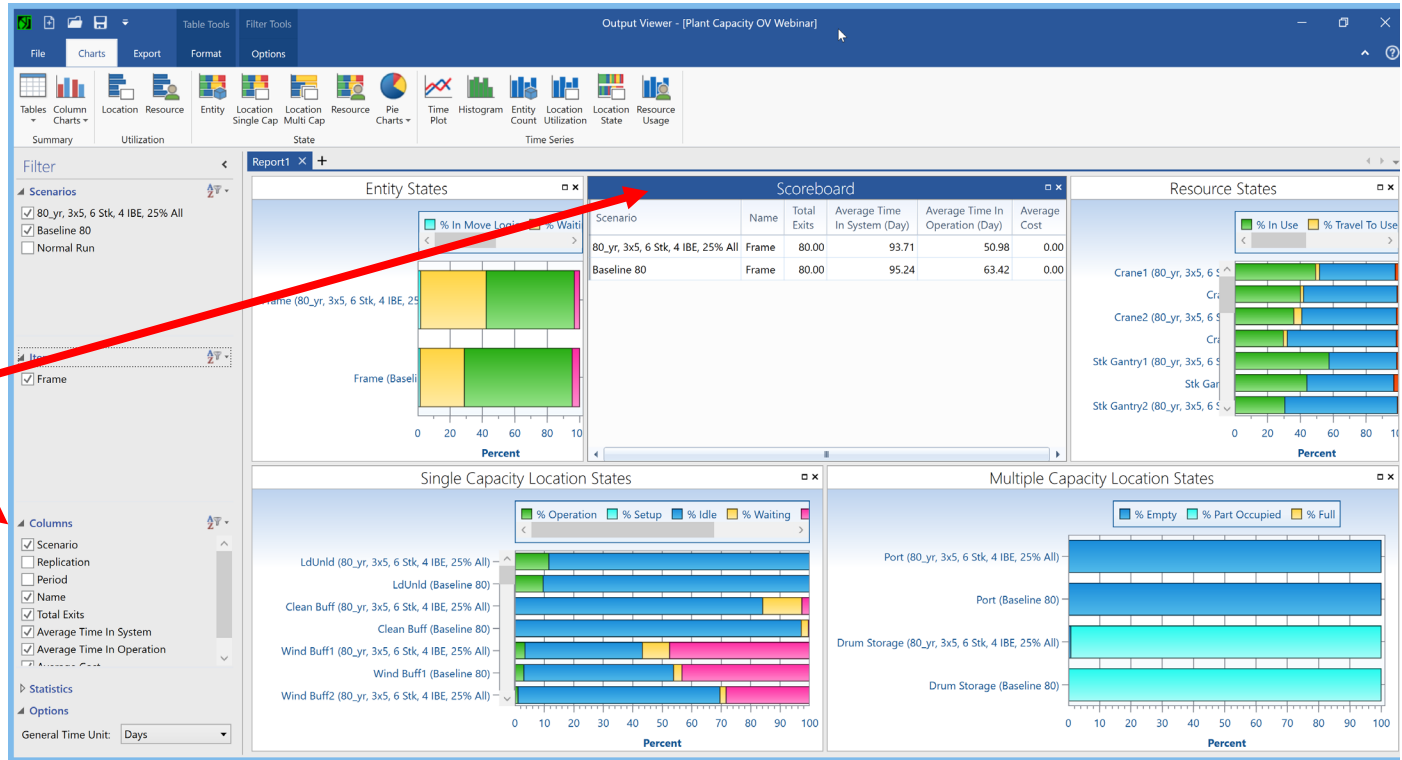


# Default Summary Report

- Created automatically for every new model. Can be removed from the “deck” by closing this report window and saving reports.
- Some differences exist between ProModel and Process Simulator, mainly Locations in ProModel vs. Activities in Process Simulator
- If this is the only report you use, learn to apply and save the available filters and options.

# Default Summary Report

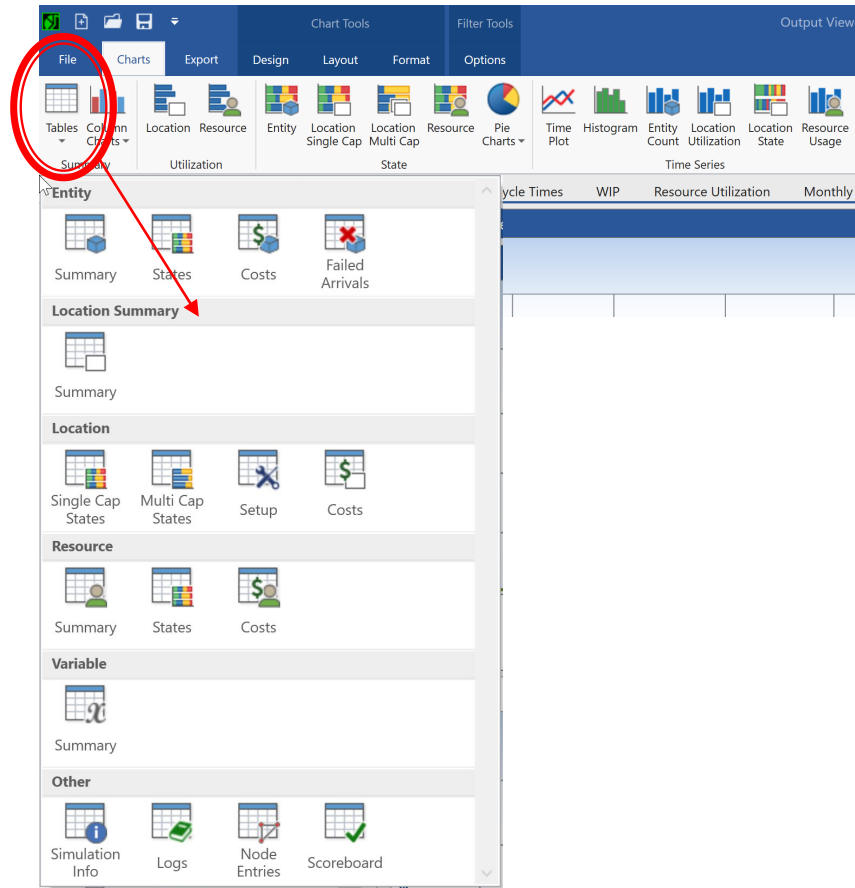
Filters apply to the active window in the report.





# Summary Tables

- ▶ Entity Summary
- ▶ Location Summaries
- ▶ Resource Summary
- ▶ Variable Summary
- ▶ Other Summaries



# Other Useful Summary Tables

Simulation Info		Activity Setup				Failed Arrivals				
Name	Push	Scenario	Name	Entity	Total Setups	Average Time Per Setup (Min)	Scenario	Name	Activity	Total Failed
Avg. Warmup Duration (Hr)	8	Push	Op 40 Attach Brackets	Kit A	40.00	0.50	Push	Kit A	Kit A Inv	0.00
Avg. Simulation Duration (Hr)	40	Push	Op 40 Attach Brackets	Kit B	40.00	0.50	Push	Kit B	Kit B Inv	0.00
m Sales Price of Kit A	15	Push	Op 40 Attach Brackets	FX Cost	0.00	0.00	Push	FX Cost	Periodic Cost Calcs	0.00
m Sales Price of Kit B	20									
m Daily Overhead Cost	500									
m Kit A Initial Cost	1									
m Kit B Initial Cost	2									
m Assembly Operator Hourly Cost	15									
m Inspector Hourly Cost	25									
m Operator Level1 Hourly Cost	15									
m Operator Level2 Hourly Cost	20									
m Packer Hourly Cost	15									
m Plating Operator Hourly Cost	20									
m Operation 30 AC Plating Hourly Cost	30									

Simulation Info: Includes Parameter settings for each Scenario

Activity Setup: Includes information regarding setups performed

Failed Arrivals: Information regarding Entities that did not arrive due to insufficient capacity at the arrival location/activity/buffer



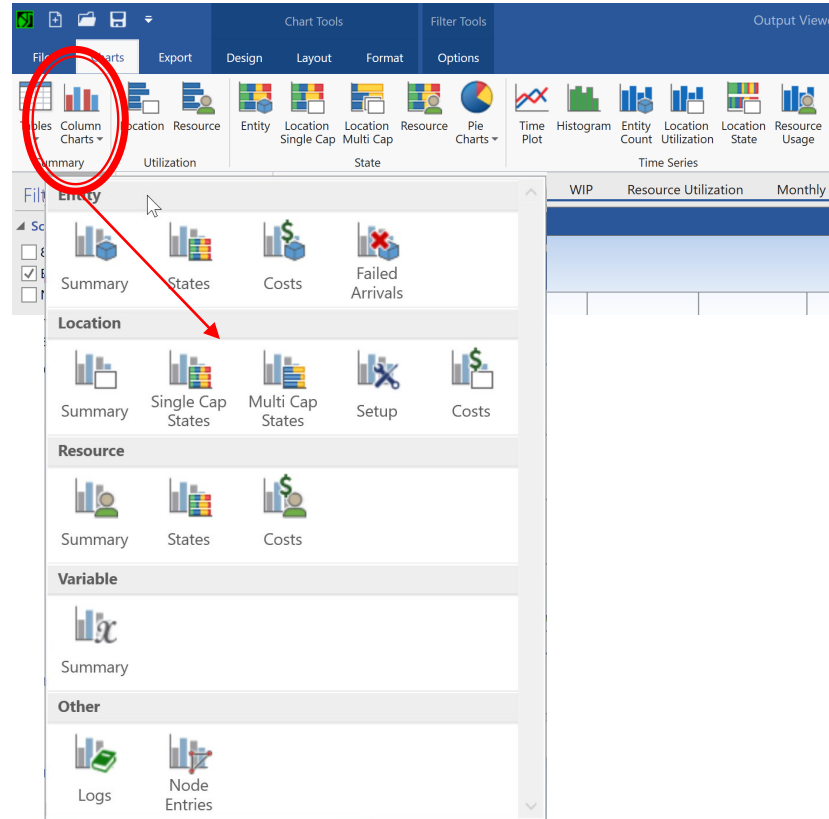
# Common Charts & Graphs



Column Charts, Bar Charts, Pie Charts, Histograms

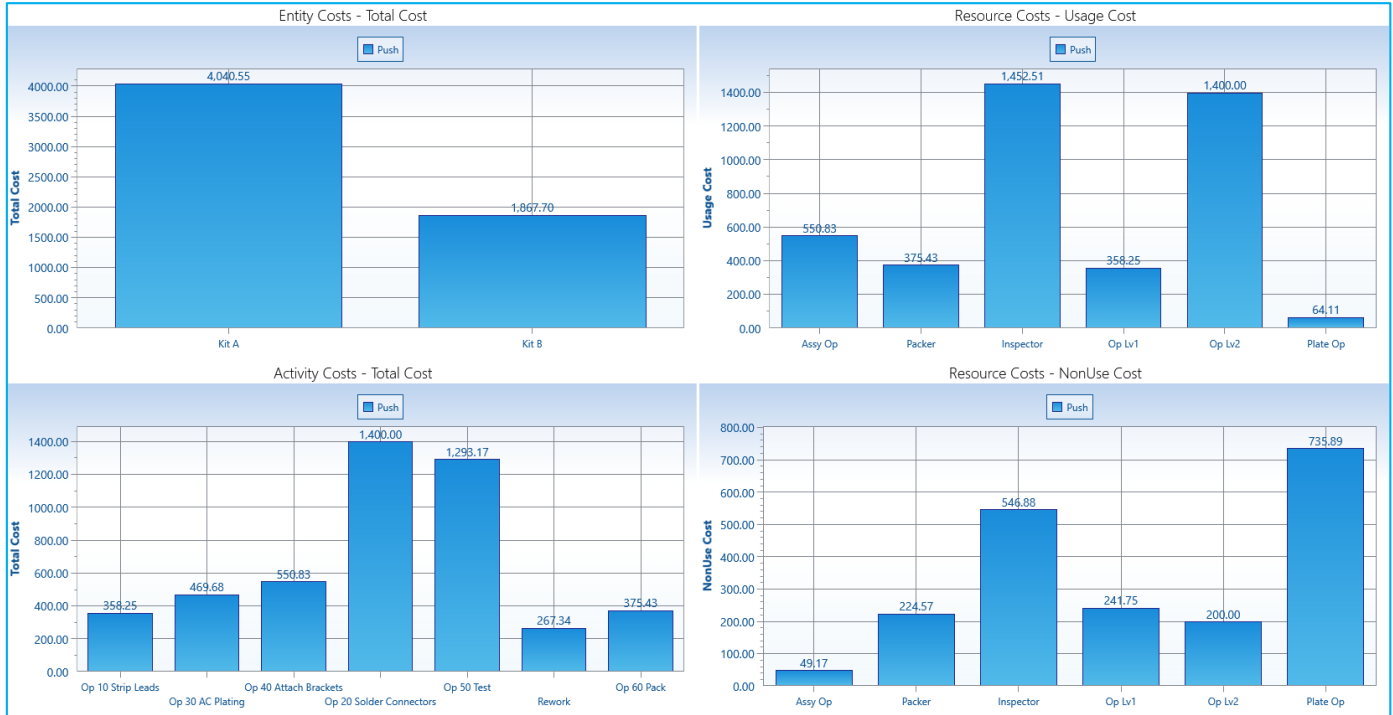
# Column Charts

Column charts allow you to create a vertical bar chart for any statistic in a Summary table.



# Column Charts Example

This example shows how a single statistic from a summary table can be compared for all rows in that table.



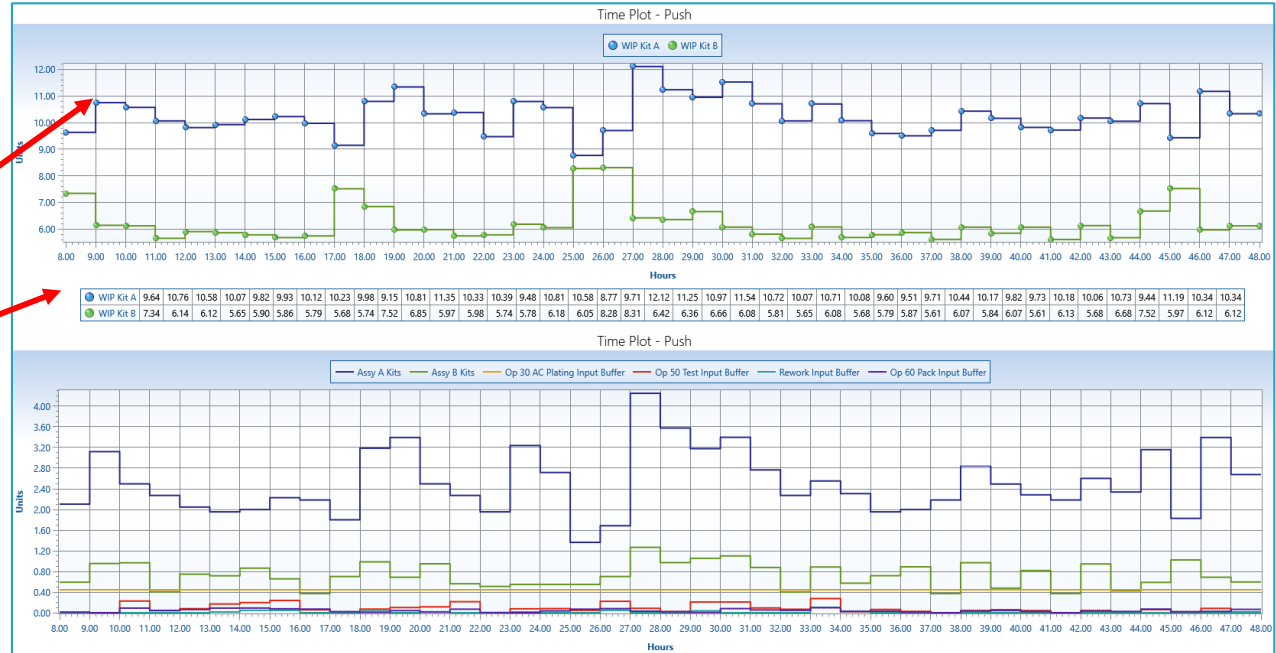


# Time Series Reports

- Variables and Multi-capacity location contents, Resource Usage, Location/Activity Utilization, Location/Activity States

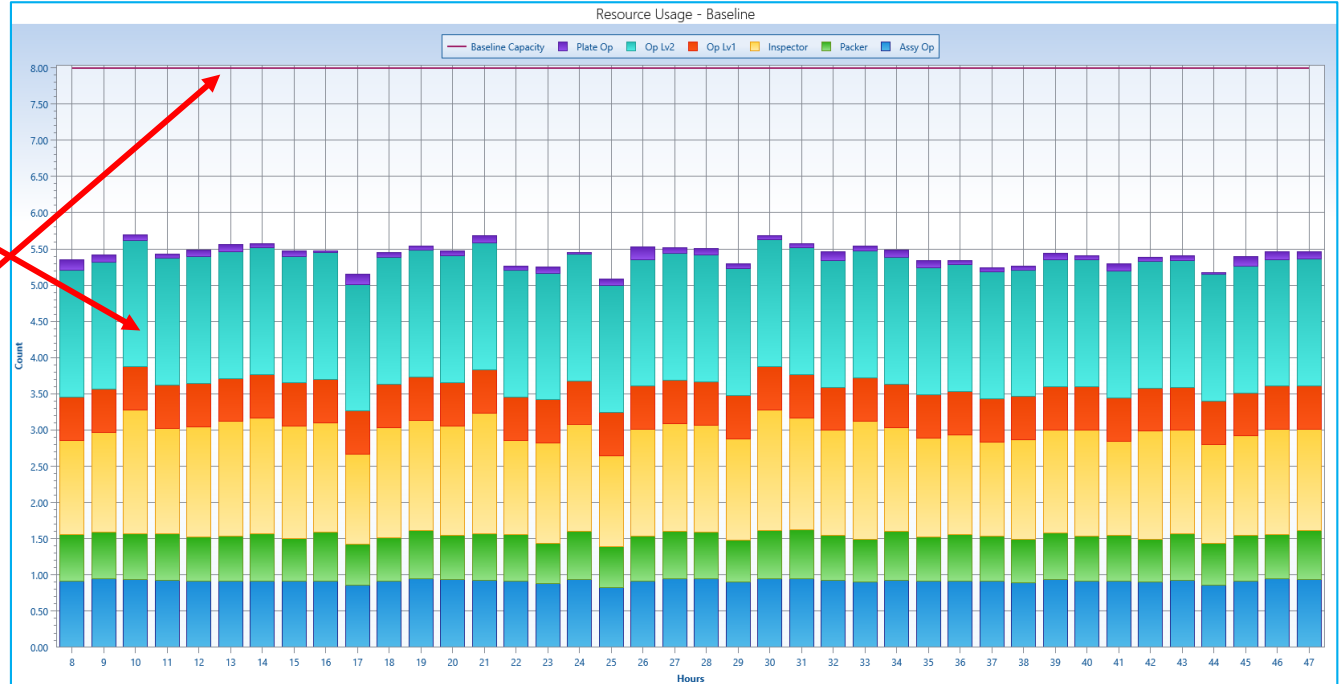
# Time Series - Variables

Layout ribbon provides many useful options such as data markers and data tables.



# Time Series - Resource Usage

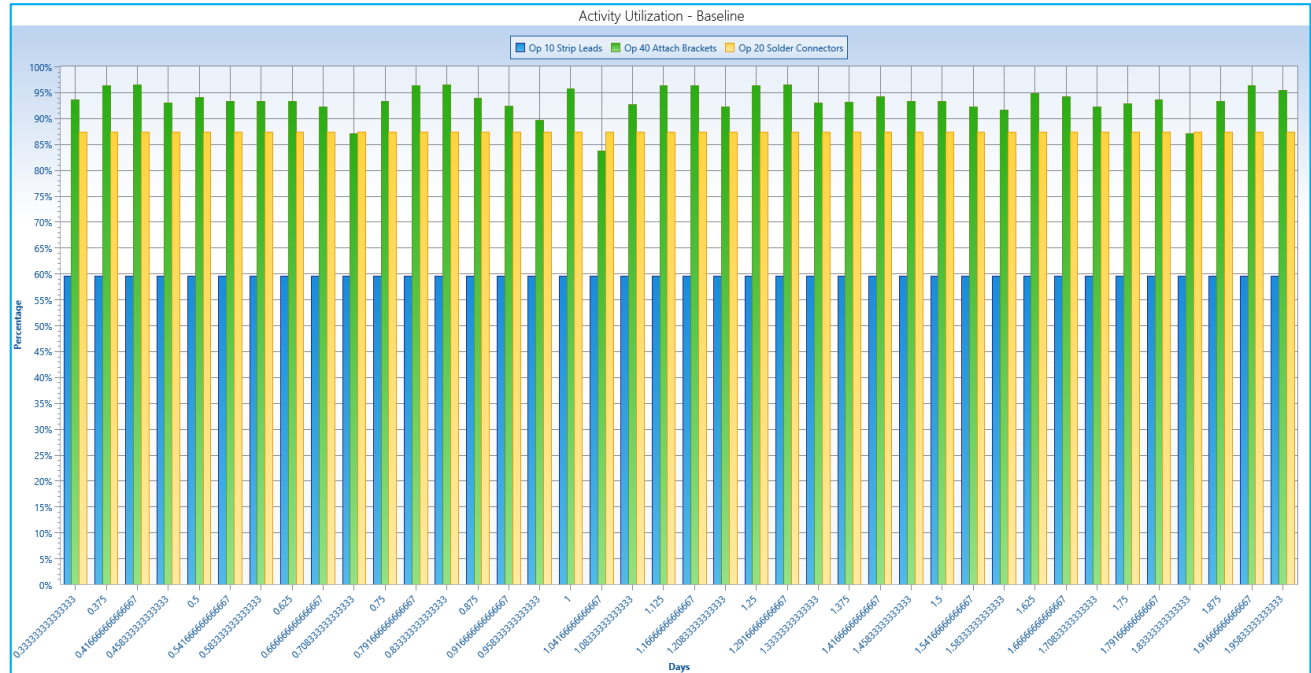
Resource Usage shows average # of resource units in use over Each period. Capacity line shows total available.





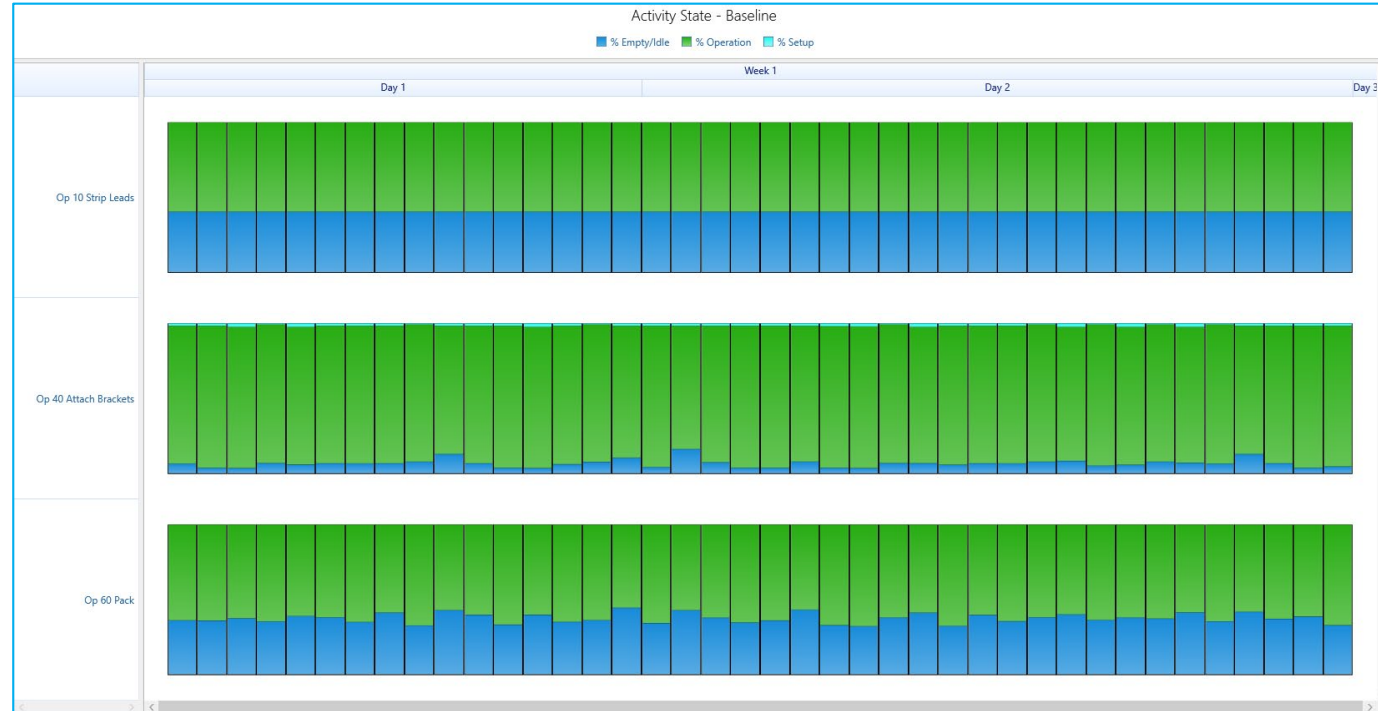
# Time Series - Location Utilization

This chart shows how utilization changes over the model run. This is important for finding “moving bottlenecks”.



# Time Series – Location/Activity States

This chart shows  
How the state of  
a location/activity  
Changes over time.





# Multiple Replication Analysis

- »» Table options
- Time series options

# Multi-Replication data with Tables

The filter on the left of the screen provides  
The ability to add columns and select statistics  
To be shown in the multi-rep table.

Filter

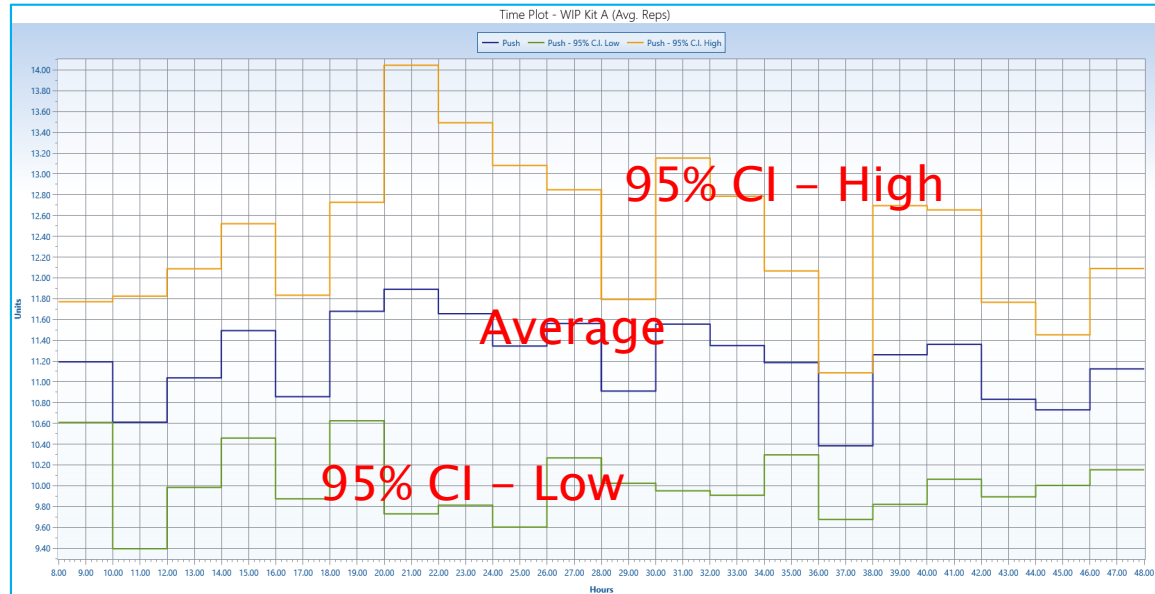
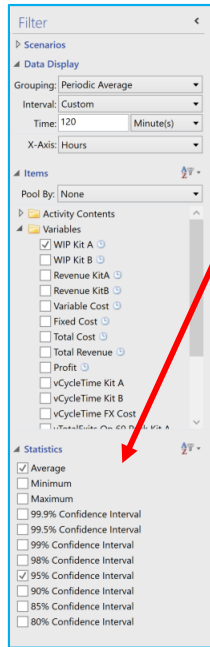
- Scenarios
- Items
- Columns
  - Scenario
  - Replication
  - Period
  - Name
  - Total Exits
  - Average Time In System
  - Average Time In Operation
  - Average Cost
- Statistics
  - Average
  - Minimum
  - Maximum
  - Standard Deviation
  - 99.9% Confidence Interval
  - 99.5% Confidence Interval
  - 99% Confidence Interval
  - 98% Confidence Interval
  - 95% Confidence Interval
  - 90% Confidence Interval
  - 85% Confidence Interval
  - 80% Confidence Interval

Scoreboard (Avg. Reps)

Scenario	Replication	Name	Total Exits	Average Time In System (Min)	Average Time In Operation (Min)	Average Cost	
Push	Avg	Kit A	799.30	33.61	12.22	5.05	
Push	95% C.I. Low	Kit A	797.11	31.78	12.19	5.03	
Push	95% C.I. High	Kit A	801.49	35.43	12.25	5.07	
Push	Avg	Kit B	200.00	82.92	35.14	9.37	
Push	95% C.I. Low	Kit B	200.00	78.57	34.98	9.32	
Push	95% C.I. High	Kit B	200.00	87.27	35.31	9.42	

# Multi-Replication Time Series Data

Filter on the left of the screen provides the ability to add columns and select statistics to be shown in the multi-rep table.



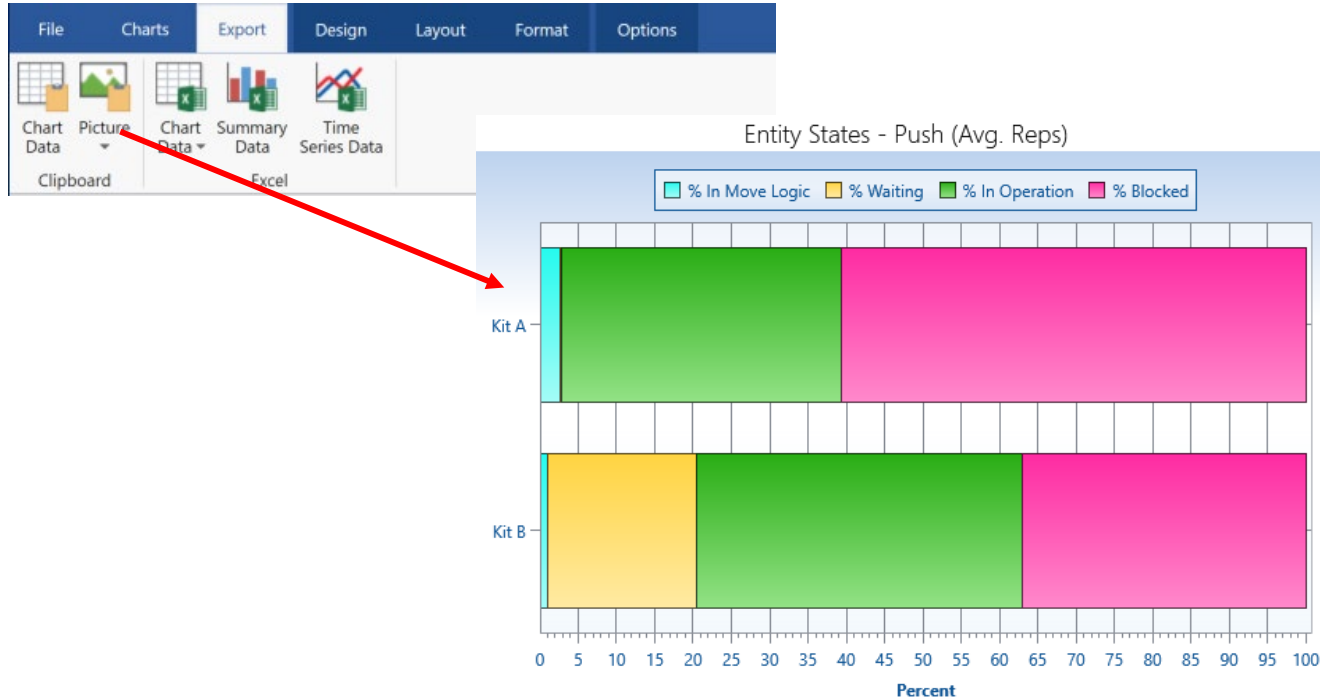


# Exporting to External Apps

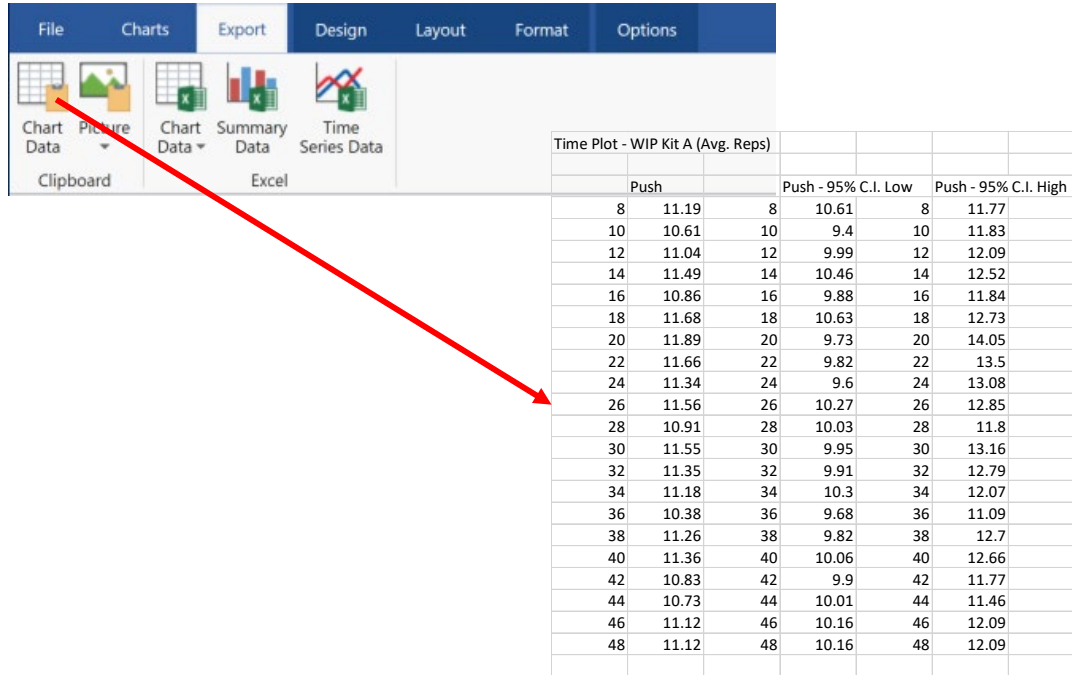


Pictures of Charts and Reports  
Table data and time series data

# Exporting Chart/Report Pictures



# Exporting Chart Data to the Clipboard



The screenshot shows the 'Export' menu with the following options: Chart Data, Picture Data, Summary Data, and Time Series Data. The 'Clipboard' option is highlighted with a red arrow pointing to a data table.

Time Plot - WIP Kit A (Avg. Reps)					
Push		Push - 95% C.I. Low		Push - 95% C.I. High	
8	11.19	8	10.61	8	11.77
10	10.61	10	9.4	10	11.83
12	11.04	12	9.99	12	12.09
14	11.49	14	10.46	14	12.52
16	10.86	16	9.88	16	11.84
18	11.68	18	10.63	18	12.73
20	11.89	20	9.73	20	14.05
22	11.66	22	9.82	22	13.5
24	11.34	24	9.6	24	13.08
26	11.56	26	10.27	26	12.85
28	10.91	28	10.03	28	11.8
30	11.55	30	9.95	30	13.16
32	11.35	32	9.91	32	12.79
34	11.18	34	10.3	34	12.07
36	10.38	36	9.68	36	11.09
38	11.26	38	9.82	38	12.7
40	11.36	40	10.06	40	12.66
42	10.83	42	9.9	42	11.77
44	10.73	44	10.01	44	11.46
46	11.12	46	10.16	46	12.09
48	11.12	48	10.16	48	12.09



# Exporting Chart Data to File

The image shows the ProModel software interface with the 'Export' menu open. A red arrow points from the 'Excel' option in the 'Export' menu to the 'Export To' dialog box. The dialog box shows the file path 'This PC > Documents > Process Simulator > Models > Demos > Costing' and a list of folders. The file name is 'Wire Harness Push 2019 w Cost.xlsx' and the save type is 'Excel Files (\*.xlsx)'. The 'Save' button is highlighted.

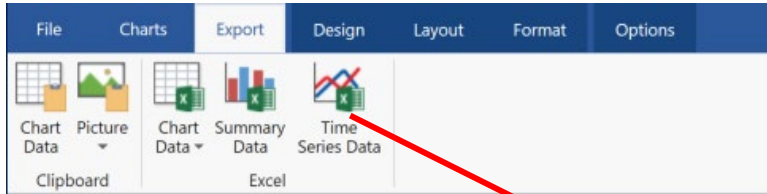
**Export Menu Options:**

- Clipboard
- Chart Data
- Picture Data
- Summary Data
- Time Series Data
- Excel

**Export To Dialog Box:**

- File name: Wire Harness Push 2019 w Cost.xlsx
- Save as type: Excel Files (\*.xlsx)
- Buttons: Save, Cancel

# Exporting Time Series Data to File



	A	B	C	D	E	F	G
1	Baseline (All Reps)						
2							
3	WIP_Kit_A (Rep. 1)						
4	Time (Min)	Value					
5	480	5					
6	480	6					
7	480	7					
8	480	8					
9	480	9					
10	480	10					
11	480	11					
12	480	12					
13	480	13					
14	480	14					
15	480	15					
16	481.618	14					
17	483.092	13					
18	484.532	12					
19	486.441	11					
20	488.629	10					
21	492.588	9					
22	494.575	8					
23	496.808	7					
24	498.604	6					
25	500.893	5					
26	502.813	4					
27	510	5					
28	510	6					
29							



Thank you for attending this  
webinar. We hope it was helpful.



Presenter: Bruce Gladwin  
SVP Commercial Products  
[bgladwin@promodel.com](mailto:bgladwin@promodel.com)  
801-223-4639