Introduction to PowerWorld Simulator: Interface and Common Tools

I3: Model Explorer and Case Information Displays

PowerWorld Corporation

2001 South First Street
Champaign, Illinois 61820
+1 (217) 384.6330

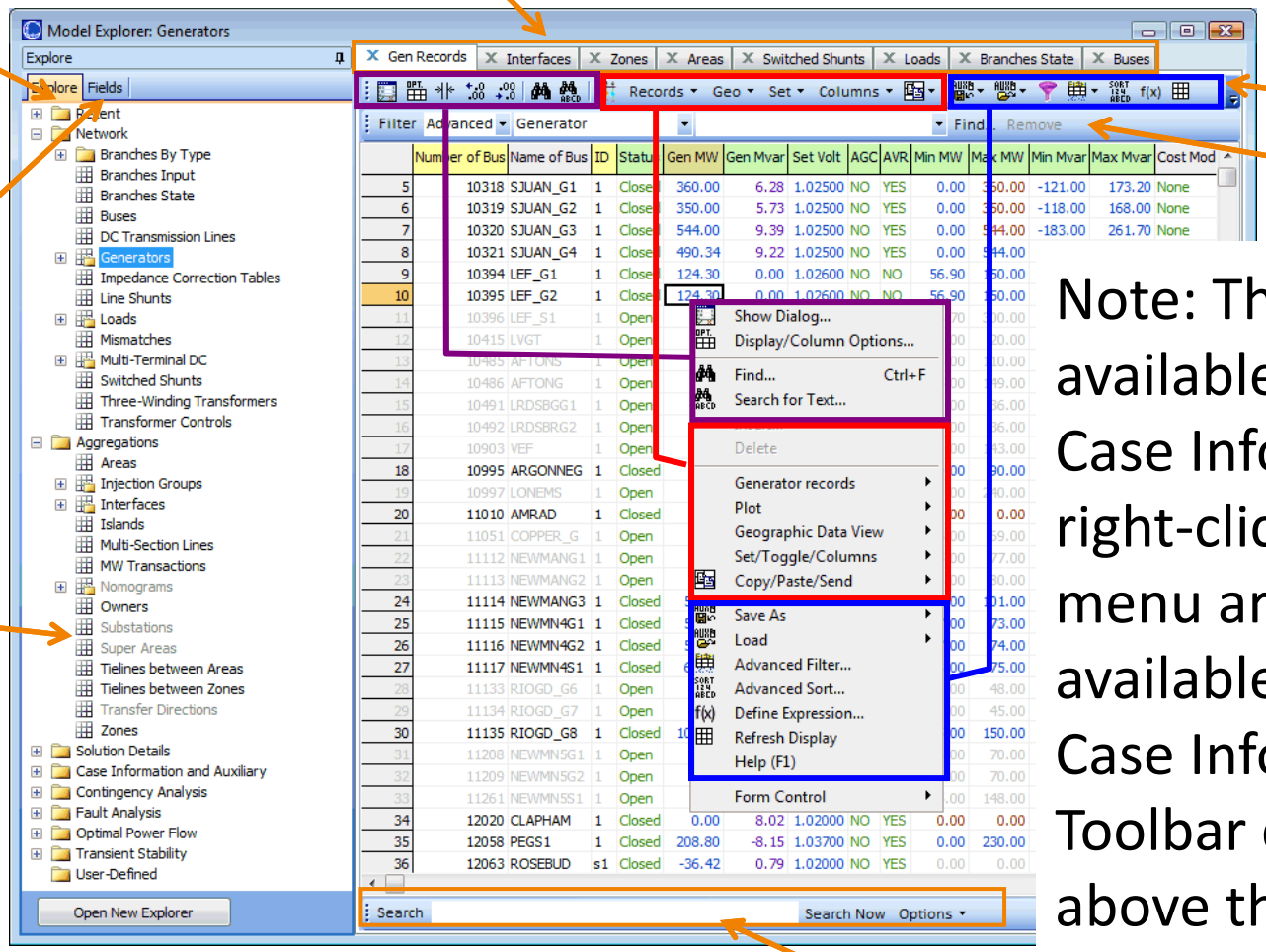
support@powerworld.com
http://www.powerworld.com

Model Explorer

- Encapsulates most Case Information Displays
- Provides means of navigating through almost all of the data in the model
- Available from a few places
  - Case Information Ribbon Tab
  - Tools Ribbon Tab
  - Quick Access Toolbar

© 2015 PowerWorld Corporation

Model Explorer

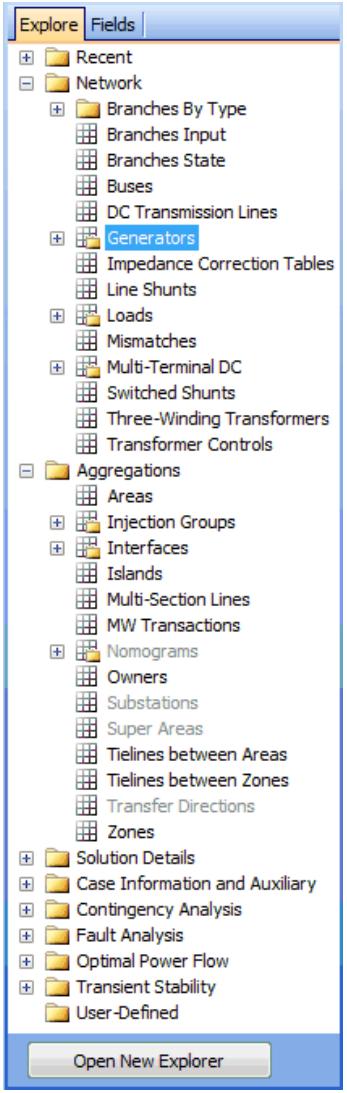


Note: The options available on the Case Information right-click local menu are also available on the Case Information Toolbar directly above the display

© 2015 PowerWorld Corporation

Model Explorer: Explore Pane

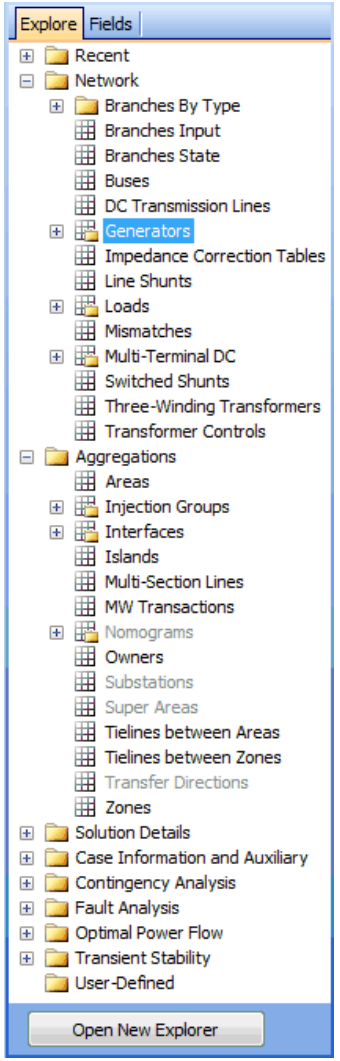
- Explore Pane: The Explore Pane contains a hierarchical list of most of the objects contained in the power system model
  - Ten Primary Folders, with only Network and Aggregations folder expanded by Default
    - Network Folder
      - physical devices
    - Aggregations Folder
      - groupings of physical objects



 © 2015 PowerWorld Corporation

Model Explorer: Explore Pane Tips

- Grayed out entries indicate that objects of that type are not presently defined in model
- To open a new separate Model Explorer Window
  - Hold down the CTRL key and then left-click on an entry in the Explore Pane
  - Or just click the button **Open New Explorer**



 © 2015 PowerWorld Corporation

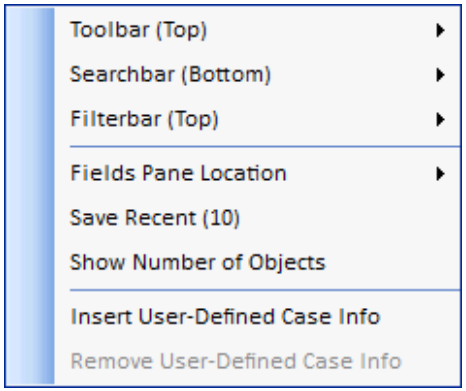
Model Explorer

- Fields Pane
  - Provides access to all the potential fields available to show on the active case information display
  - Similar to the Display/Column Options
- Recent Tabs
  - List of the most recently viewed case information displays
  - Easier to manage than multiple windows
  - Kind of like “tabbed browsing”

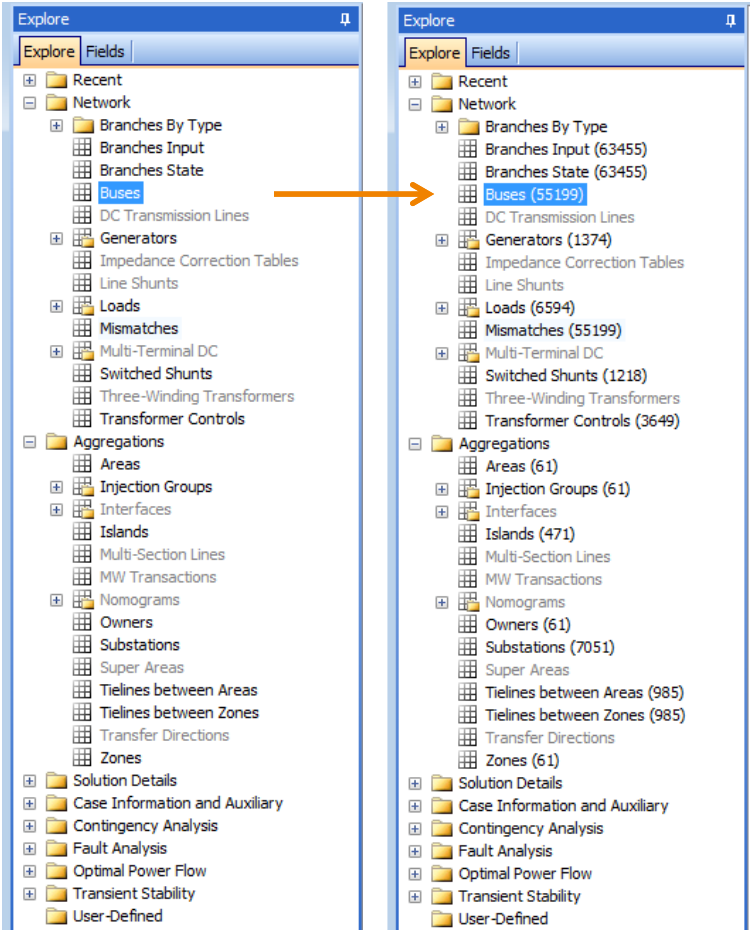
 © 2015 PowerWorld Corporation

Model Explorer Options

- To access options, right-click on
  - Explore Pane
  - Fields Pane
  - Recent Tabs
  - Toolbar
  - Searchbar
  - Filterbar
- Options available
  - Specify location of Toolbar, Searchbar, and Filterbar
  - Specify location of the Fields Pane
  - Specify the number of Recent Tabs to maintain
  - Show Number of Objects
  - Insert User-Defined Case Information displays (discussed later)

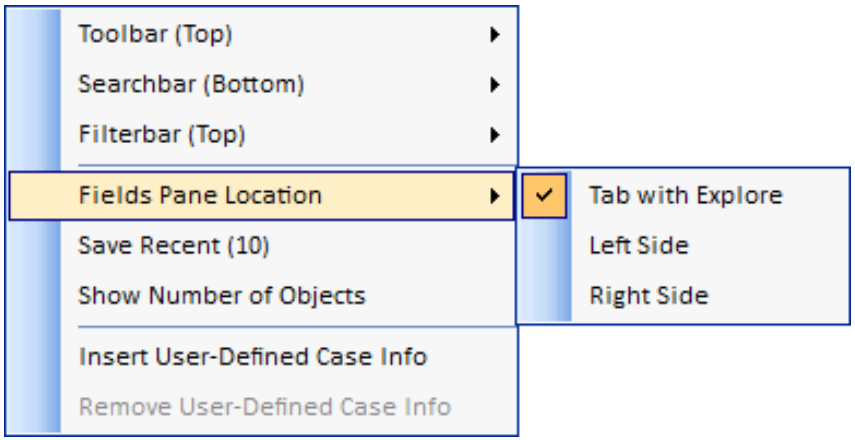


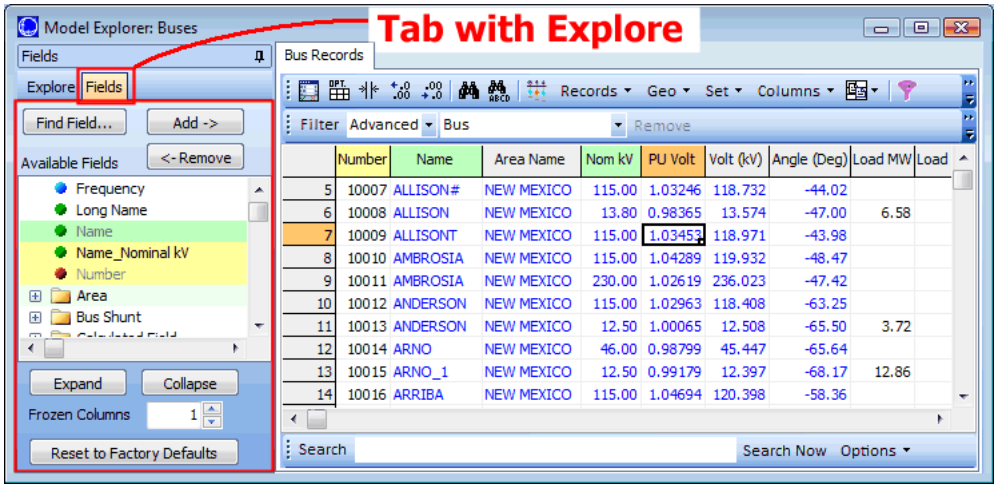
Show Number of Objects

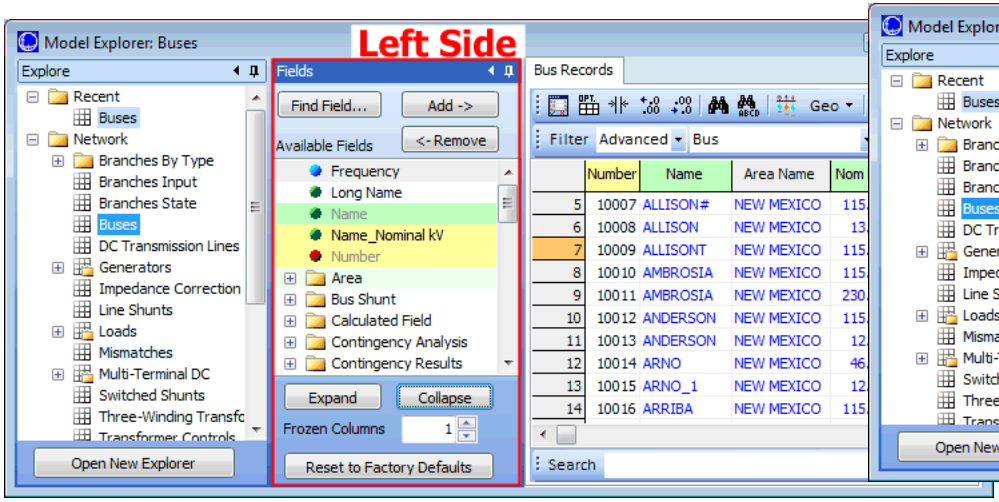


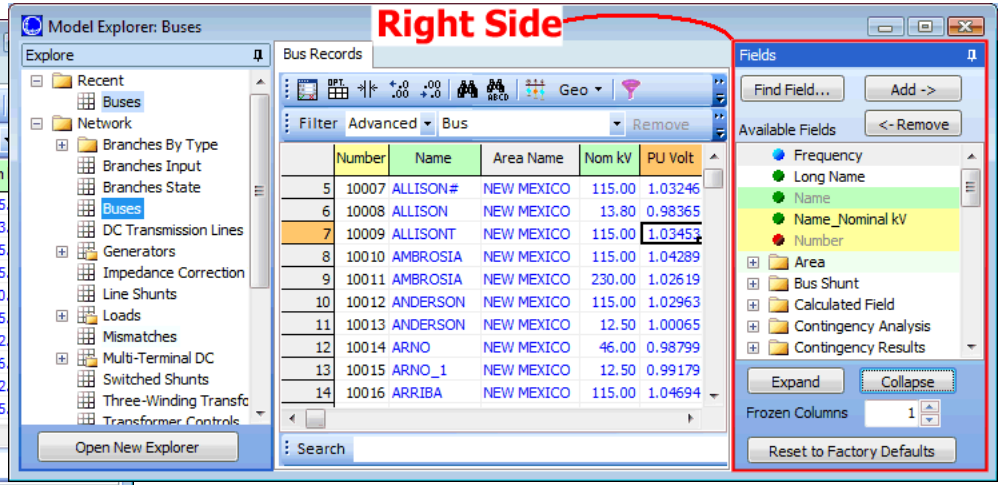
 © 2015 PowerWorld Corporation

Fields Pane Location





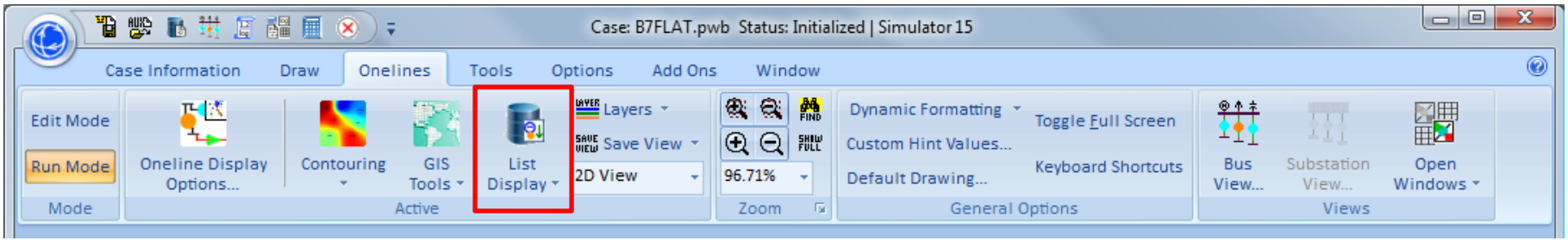




 © 2015 PowerWorld Corporation

Display Explorer

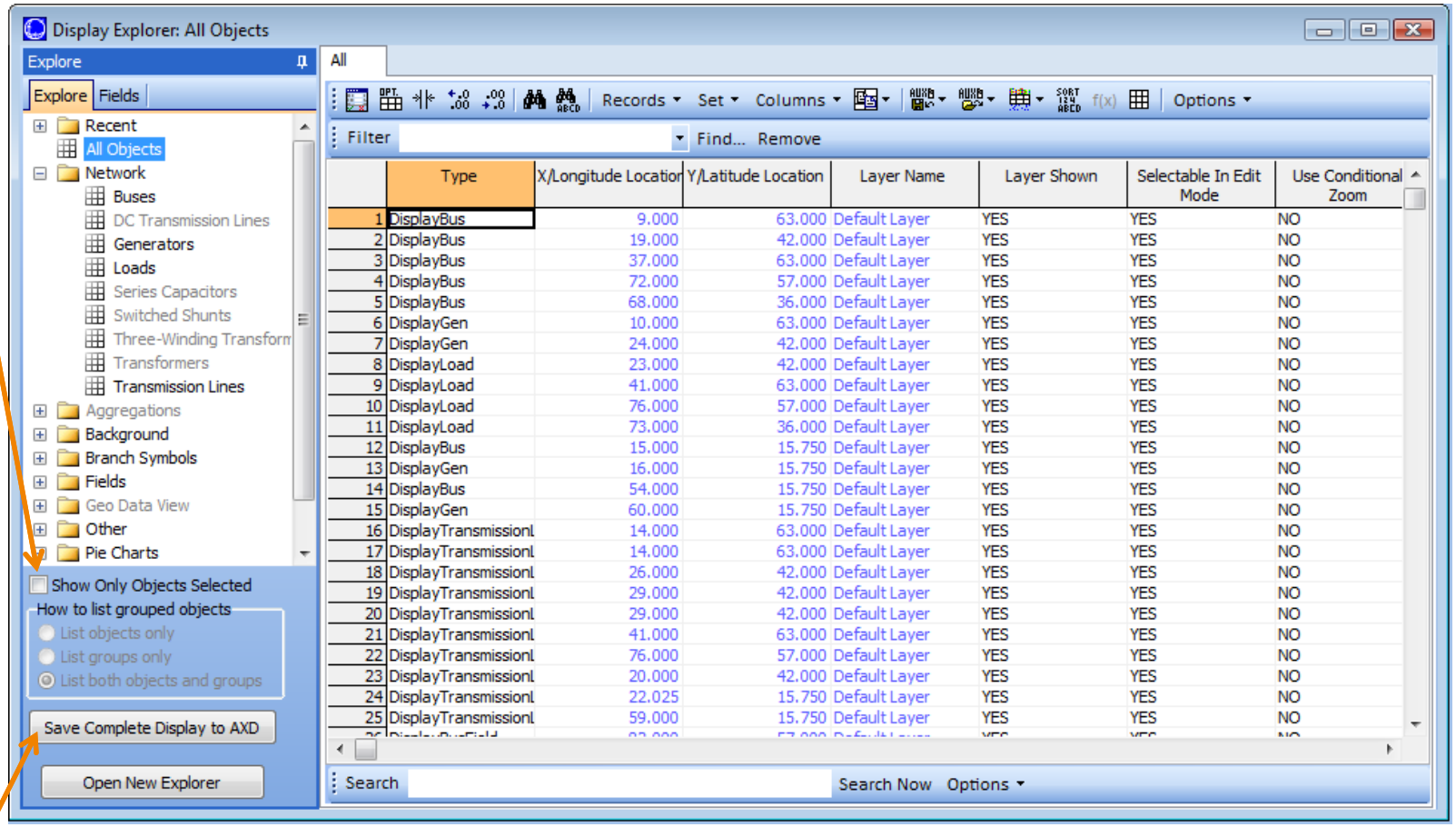
- Very similar to the Model Explorer
- Contains case information displays for one-line display objects
- Provides means of navigating through data contained on a one-line in tabular form
- Available from the **Onelines** ribbon tab → **Active** ribbon group → **List Display** menu → **All Display Objects** option



 © 2015 PowerWorld Corporation

Display Explorer

List only selected oneline objects Same structure as Model Explorer



Save oneline to display auxiliary file

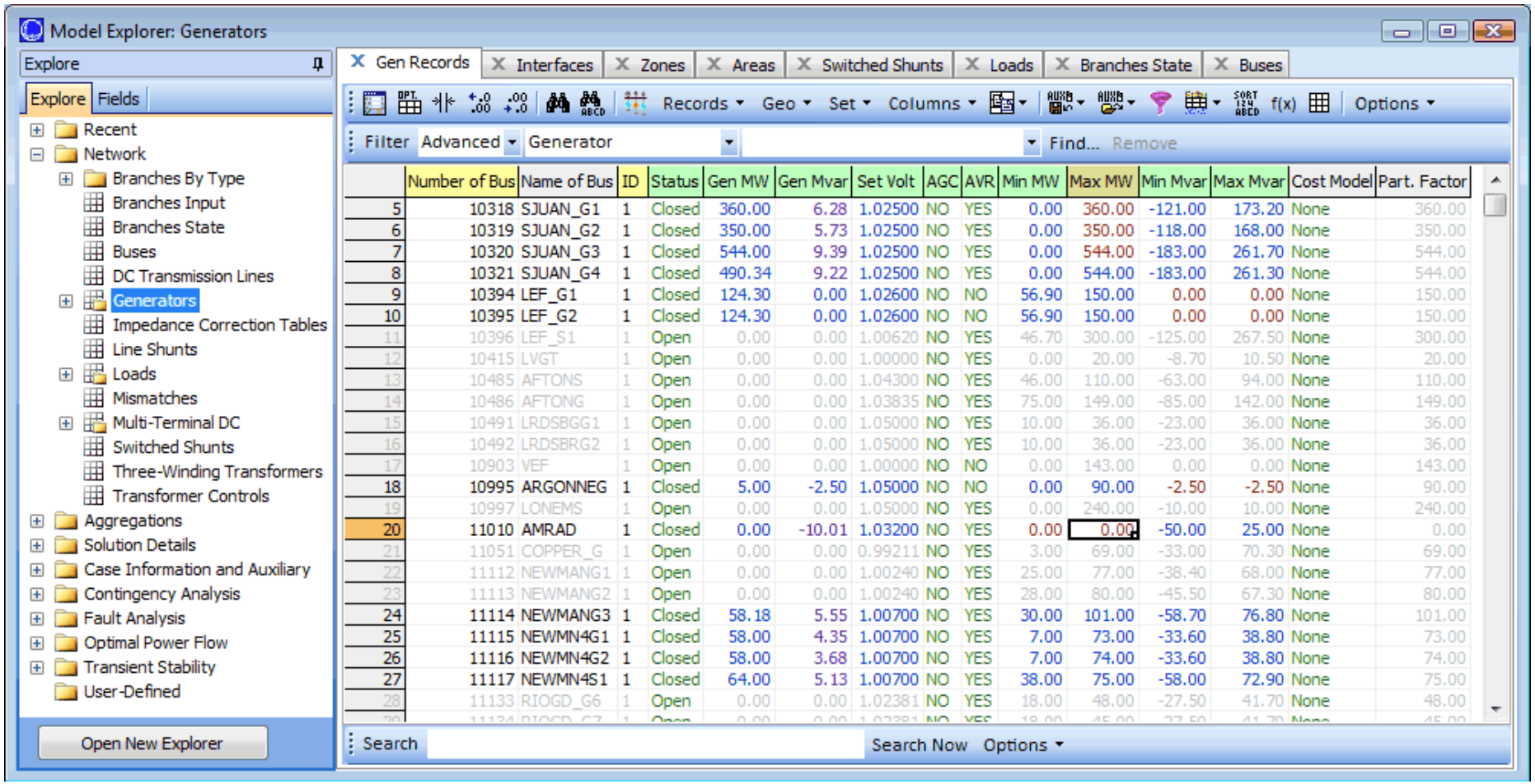
 © 2015 PowerWorld Corporation

Case Information Displays

- Case Information Displays show the power system model data and results in tabular format
- Case information displays show information about
  - buses
  - generators
  - lines/transformers
  - loads
  - areas, zones
  - and everything else

© 2015 PowerWorld Corporation

Model Explorer:
Generator Case Information Display



	Number of Bus	Name of Bus	ID	Status	Gen MW	Gen Mvar	Set Volt	AGC	AVR	Min MW	Max MW	Min Mvar	Max Mvar	Cost Model	Part. Factor
5	10318	SJUAN_G1	1	Closed	360.00	6.28	1.02500	NO	YES	0.00	360.00	-121.00	173.20	None	360.00
6	10319	SJUAN_G2	1	Closed	350.00	5.73	1.02500	NO	YES	0.00	350.00	-118.00	168.00	None	350.00
7	10320	SJUAN_G3	1	Closed	544.00	9.39	1.02500	NO	YES	0.00	544.00	-183.00	261.70	None	544.00
8	10321	SJUAN_G4	1	Closed	490.34	9.22	1.02500	NO	YES	0.00	544.00	-183.00	261.30	None	544.00
9	10394	LEF_G1	1	Closed	124.30	0.00	1.02600	NO	NO	56.90	150.00	0.00	0.00	None	150.00
10	10395	LEF_G2	1	Closed	124.30	0.00	1.02600	NO	NO	56.90	150.00	0.00	0.00	None	150.00
11	10396	LEF_S1	1	Open	0.00	0.00	1.00620	NO	YES	46.70	300.00	-125.00	267.50	None	300.00
12	10415	LVGT	1	Open	0.00	0.00	1.00000	NO	YES	0.00	20.00	-8.70	10.50	None	20.00
13	10485	AFTONS	1	Open	0.00	0.00	1.04300	NO	YES	46.00	110.00	-63.00	94.00	None	110.00
14	10486	AFTONG	1	Open	0.00	0.00	1.03835	NO	YES	75.00	149.00	-85.00	142.00	None	149.00
15	10491	LRDSBGG1	1	Open	0.00	0.00	1.05000	NO	YES	10.00	36.00	-23.00	36.00	None	36.00
16	10492	LRDSBRG2	1	Open	0.00	0.00	1.05000	NO	YES	10.00	36.00	-23.00	36.00	None	36.00
17	10903	VEF	1	Open	0.00	0.00	1.00000	NO	NO	0.00	143.00	0.00	0.00	None	143.00
18	10995	ARGONNEG	1	Closed	5.00	-2.50	1.05000	NO	NO	0.00	90.00	-2.50	-2.50	None	90.00
19	10997	LONEMS	1	Open	0.00	0.00	1.05000	NO	YES	0.00	240.00	-10.00	10.00	None	240.00
20	11010	AMRAD	1	Closed	0.00	-10.01	1.03200	NO	YES	0.00	0.00	-50.00	25.00	None	0.00
21	11051	COPPER_G	1	Open	0.00	0.00	0.99211	NO	YES	3.00	69.00	-33.00	70.30	None	69.00
22	11112	NEWMANG1	1	Open	0.00	0.00	1.00240	NO	YES	25.00	77.00	-38.40	68.00	None	77.00
23	11113	NEWMANG2	1	Open	0.00	0.00	1.00240	NO	YES	28.00	80.00	-45.50	67.30	None	80.00
24	11114	NEWMANG3	1	Closed	58.18	5.55	1.00700	NO	YES	30.00	101.00	-58.70	76.80	None	101.00
25	11115	NEWMN4G1	1	Closed	58.00	4.35	1.00700	NO	YES	7.00	73.00	-33.60	38.80	None	73.00
26	11116	NEWMN4G2	1	Closed	58.00	3.68	1.00700	NO	YES	7.00	74.00	-33.60	38.80	None	74.00
27	11117	NEWMN4S1	1	Closed	64.00	5.13	1.00700	NO	YES	38.00	75.00	-58.00	72.90	None	75.00
28	11133	RIOGD_G6	1	Open	0.00	0.00	1.02381	NO	YES	18.00	48.00	-27.50	41.70	None	48.00

 © 2015 PowerWorld Corporation

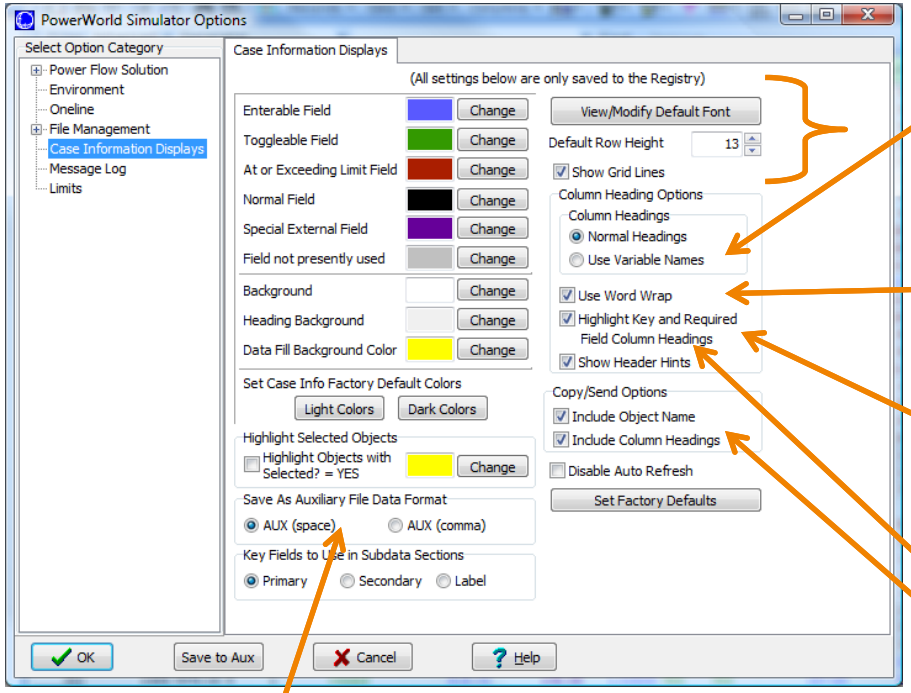
Case Information Displays

- Most case information displays can be opened from the Model Explorer
  - Case info displays also are integrated into many Simulator dialogs
- Case Information Features
  - Find, Search For Text
  - Sorting
  - Filtering
  - Copy/Paste to/from a spreadsheet
  - Column Contouring
  - Column Metrics
  - etc.
  - User-Defined Case Info Displays
- Custom Case Info Display
  - Show different fields, change colors
  - Create entire custom workbooks showing specific information

© 2015 PowerWorld Corporation

Case Information Displays Options

- From the **Options** ribbon tab select **Simulator Options**…
- Go to **Case Information Displays** page



Use *Normal Headings* or *Variable Names*

See "Auxiliary File Data Sections" for description of Variable Names

Default Font and Row Height for all case info displays

Word Wrap long column headings

Highlight the column headings of object key fields (yellow) and required fields for new records (green). (This is ALWAYS done in version 19.)

Hints explain field when mouse floats over column heading

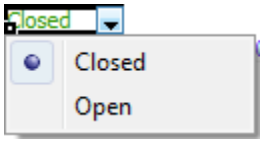
Options when using the Copy and Send local menu options

When saving an AUX file DATA Section, this delimiter is used (Can only do this via script command in version 19.)

 © 2015 PowerWorld Corporation

Color Schemes

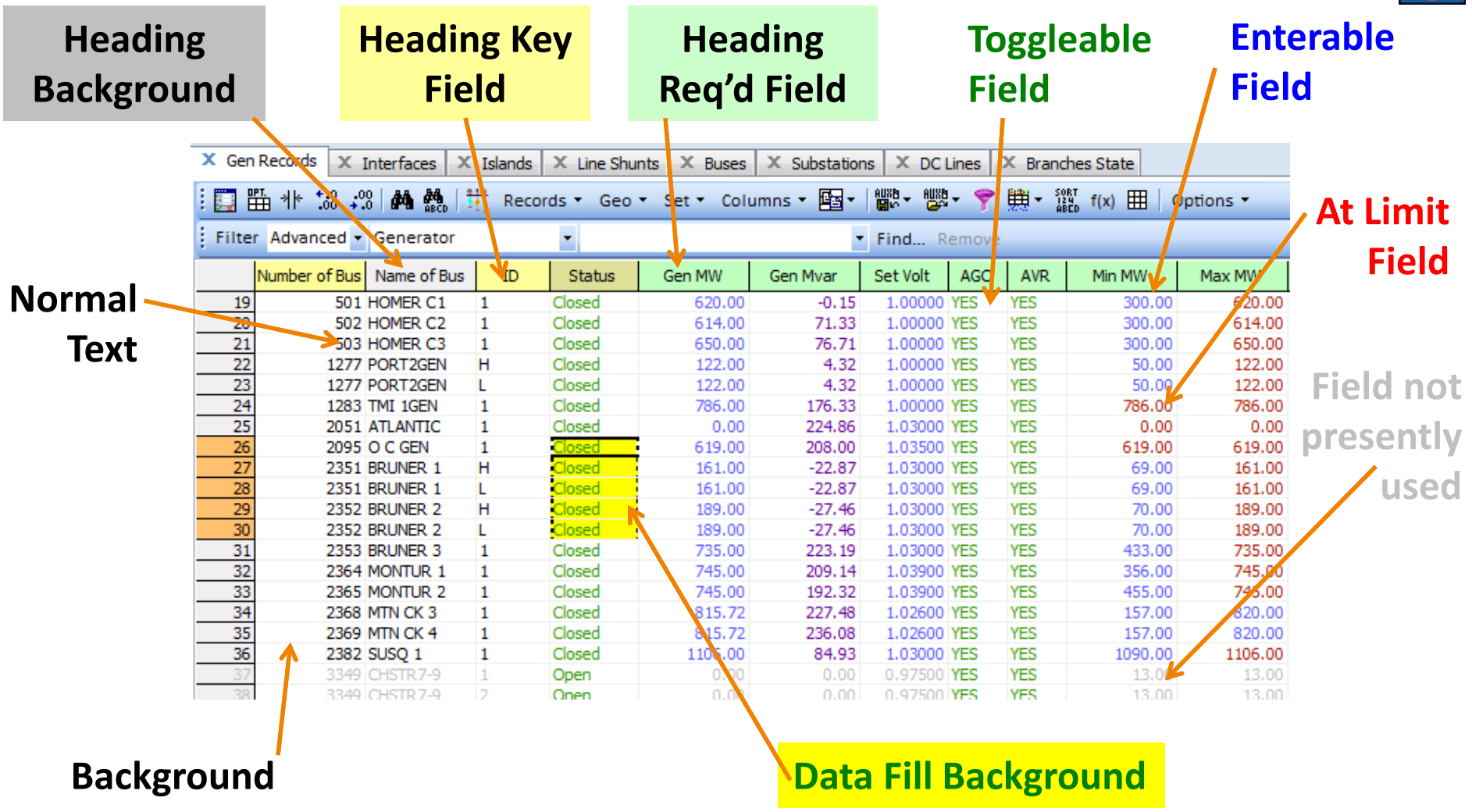
- Field Colors
  - Enterable Field
    - Fields that you can edit directly on the case info display
  - Toggleable Field
    - Double-click to change the value, or click the button to view and select from the available toggle choices



  - Special External Field
    - Fields that cannot be entered inside Simulator, but can via Paste from Excel or AUX file read
  - Field not presently used: data is not applicable, e.g. when a generator is open and all the fields appear gray
  - Normal and At or Exceeding Limit are self-explanatory
- Background Colors
  - Background and Heading Background are self-explanatory
  - Data Fill Background: when filling in data to be the same as other data

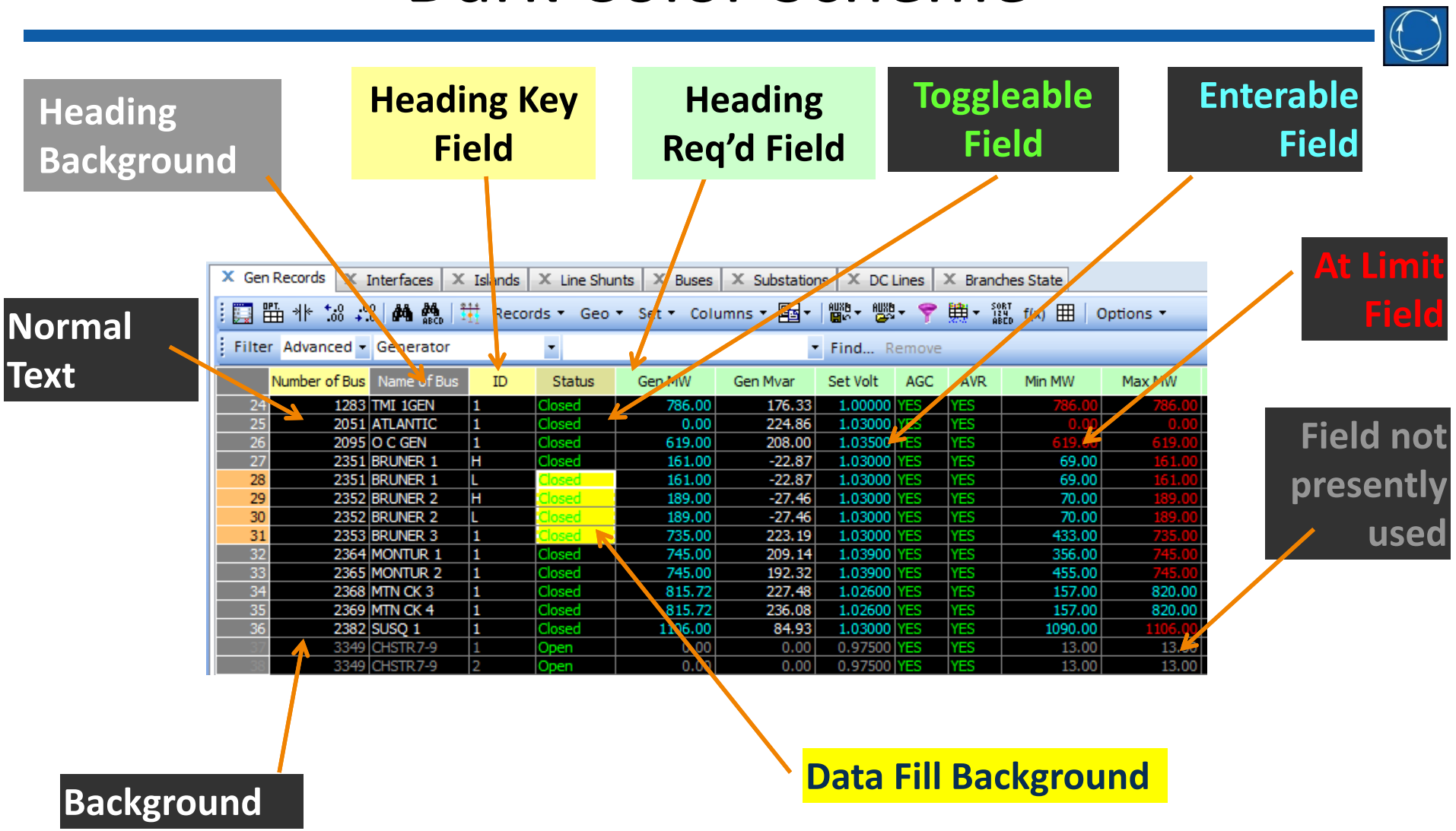
 © 2015 PowerWorld Corporation

Default Case Information
Light Color Scheme



 © 2015 PowerWorld Corporation

Default Case Information Dark Color Scheme

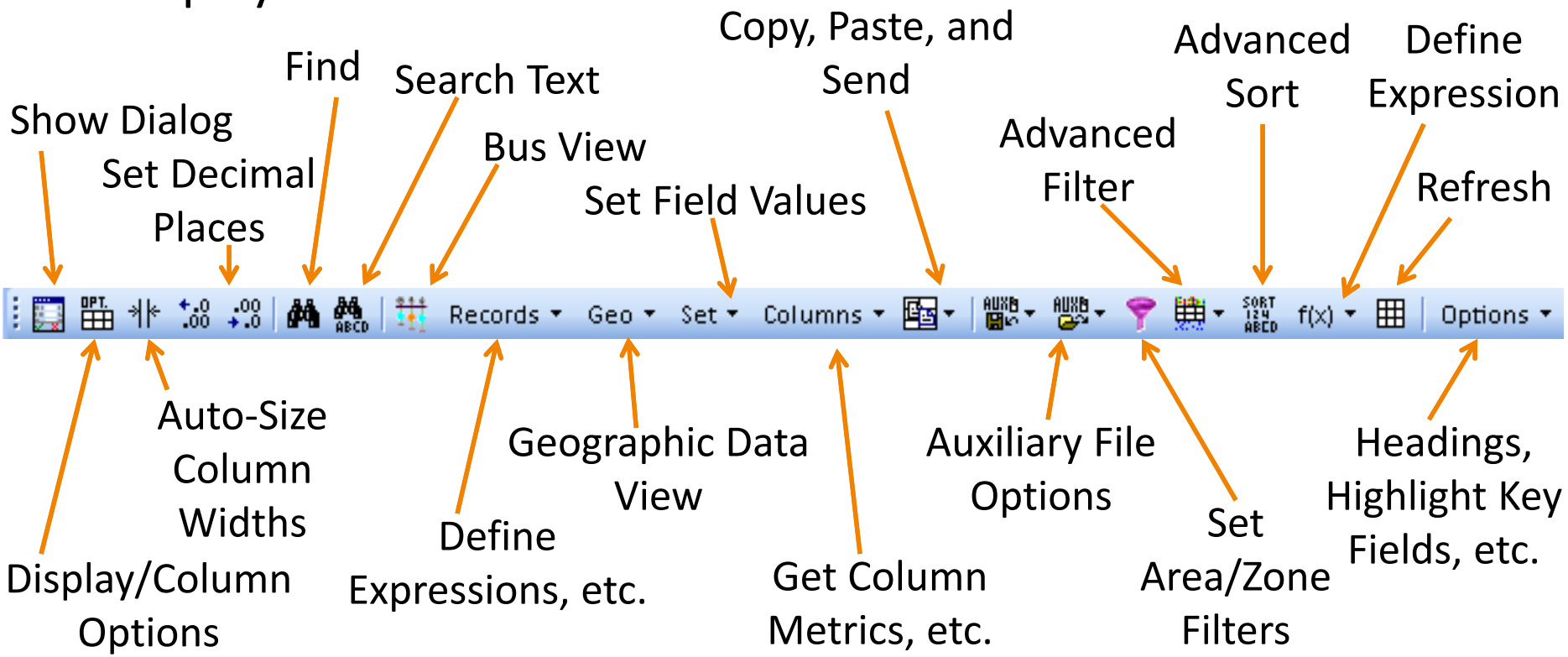


	Number of Bus	Name of Bus	ID	Status	Gen MW	Gen Mvar	Set Volt	AGC	AVR	Min MW	Max MW
24	1283	TMI 1GEN	1	Closed	786.00	176.33	1.00000	YES	YES	786.00	786.00
25	2051	ATLANTIC	1	Closed	0.00	224.86	1.03000	YES	YES	0.00	0.00
26	2095	O C GEN	1	Closed	619.00	208.00	1.03500	YES	YES	619.00	619.00
27	2351	BRUNER 1	H	Closed	161.00	-22.87	1.03000	YES	YES	69.00	161.00
28	2351	BRUNER 1	L	Closed	161.00	-22.87	1.03000	YES	YES	69.00	161.00
29	2352	BRUNER 2	H	Closed	189.00	-27.46	1.03000	YES	YES	70.00	189.00
30	2352	BRUNER 2	L	Closed	189.00	-27.46	1.03000	YES	YES	70.00	189.00
31	2353	BRUNER 3	1	Closed	735.00	223.19	1.03000	YES	YES	433.00	735.00
32	2364	MONTUR 1	1	Closed	745.00	209.14	1.03900	YES	YES	356.00	745.00
33	2365	MONTUR 2	1	Closed	745.00	192.32	1.03900	YES	YES	455.00	745.00
34	2368	MTN CK 3	1	Closed	815.72	227.48	1.02600	YES	YES	157.00	820.00
35	2369	MTN CK 4	1	Closed	815.72	236.08	1.02600	YES	YES	157.00	820.00
36	2382	SUSQ 1	1	Closed	1106.00	84.93	1.03000	YES	YES	1090.00	1106.00
37	3349	CHSTR7-9	1	Open	0.00	0.00	0.97500	YES	YES	13.00	13.00
38	3349	CHSTR7-9	2	Open	0.00	0.00	0.97500	YES	YES	13.00	13.00

© 2015 PowerWorld Corporation

Case Information Toolbar

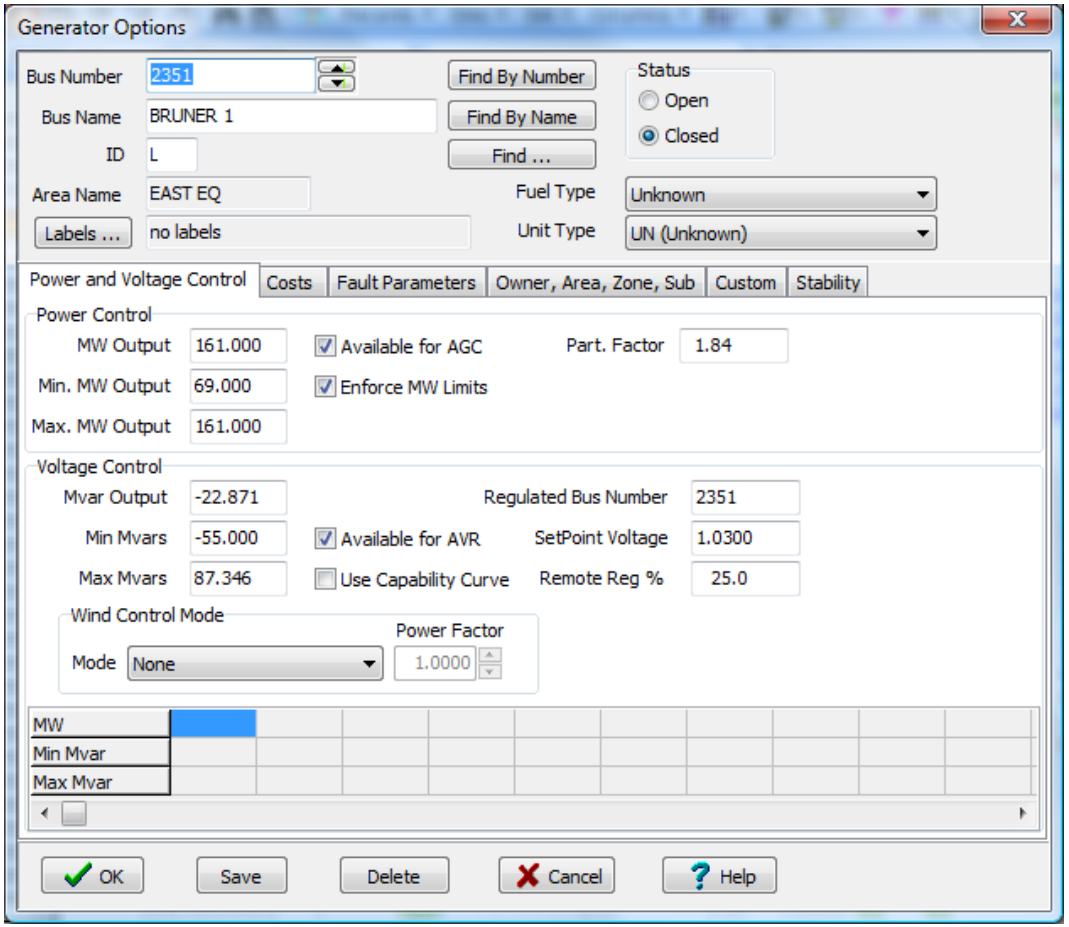
- Many common Case Information Display actions are available from the Case Information Toolbar
- By default, this toolbar is visible with all case information displays



© 2015 PowerWorld Corporation

Show Dialog

- Bring up any object's dialog by choosing **Show Dialog**
- Example:
  - Generator



 © 2015 PowerWorld Corporation

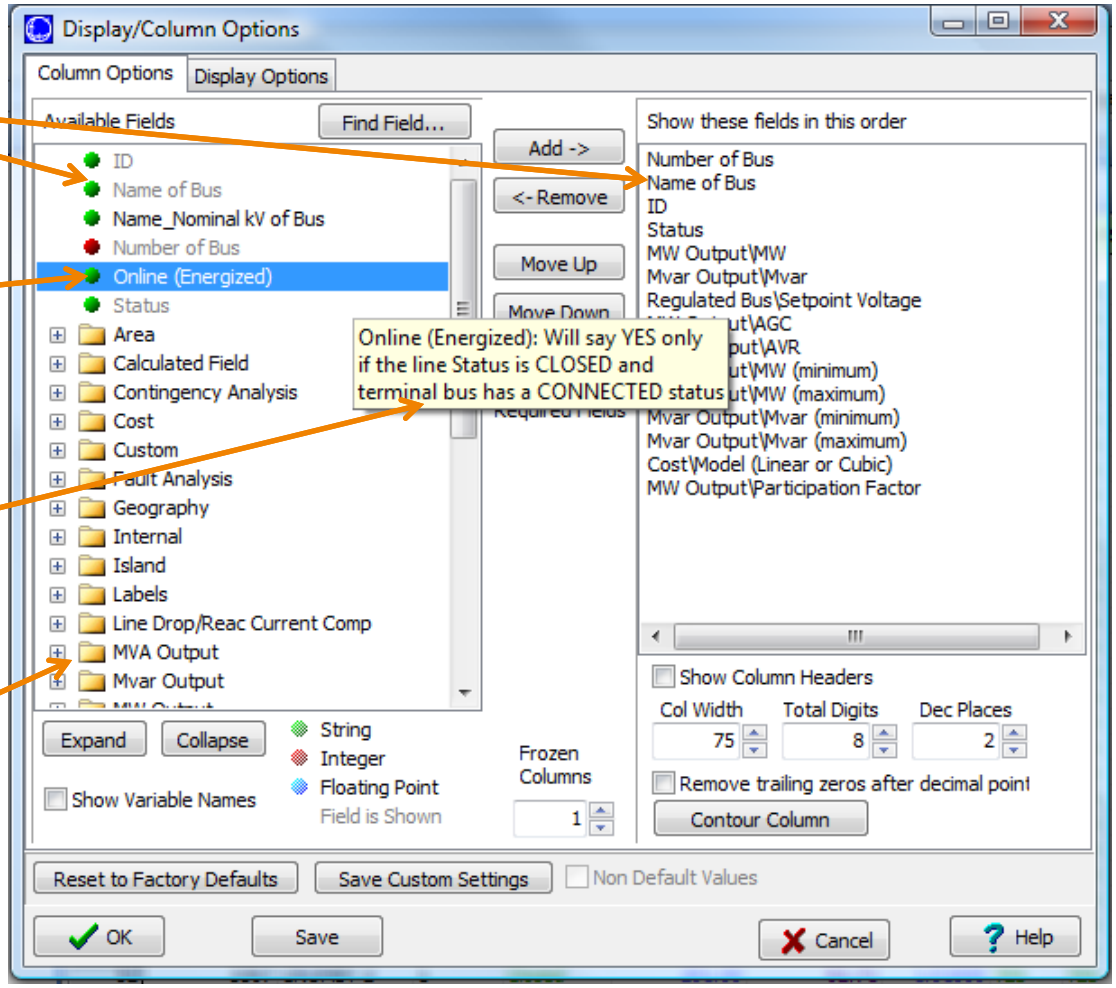
Display/Column Options
Column Options

Gray text means the field is already shown

Colored Dots represent the field type

Hints automatically appear giving a description of the field

Fields organized by folder



 © 2015 PowerWorld Corporation

Display/Column Options
Column Options

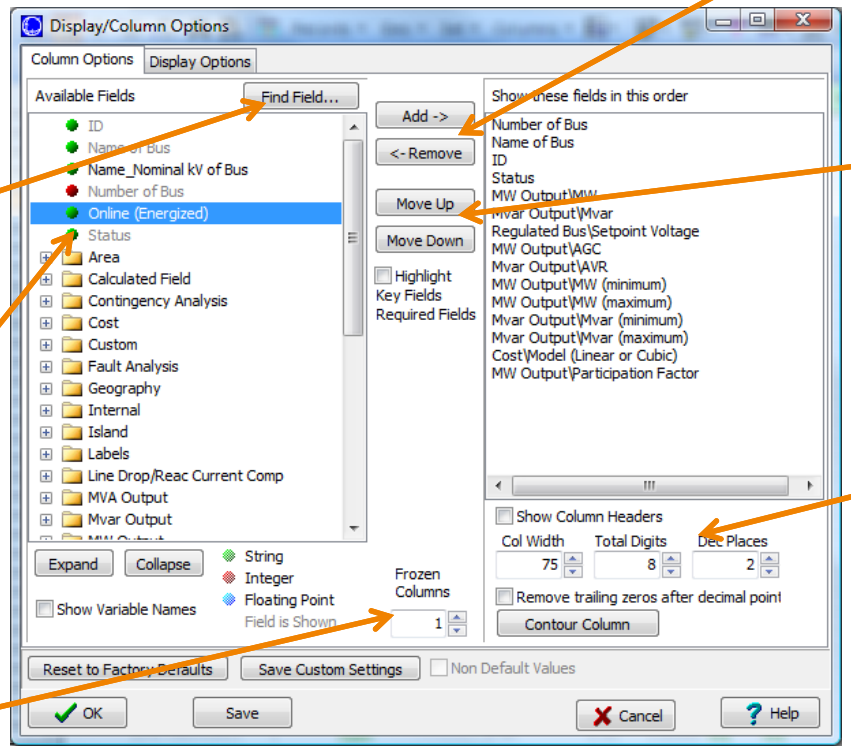
- Choose fields from the **Available Fields** list. Then left-click and drag into the **Show these fields in this order** list

Also can click the **Add →** or **←Remove** Buttons to modify the fields shown

Use a wildcard find for a particular field

Fields grayed out if already in display

Number of frozen columns

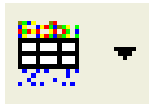


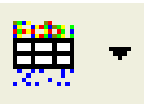
Click **Move Up** and **Move Down** to change the order of the columns

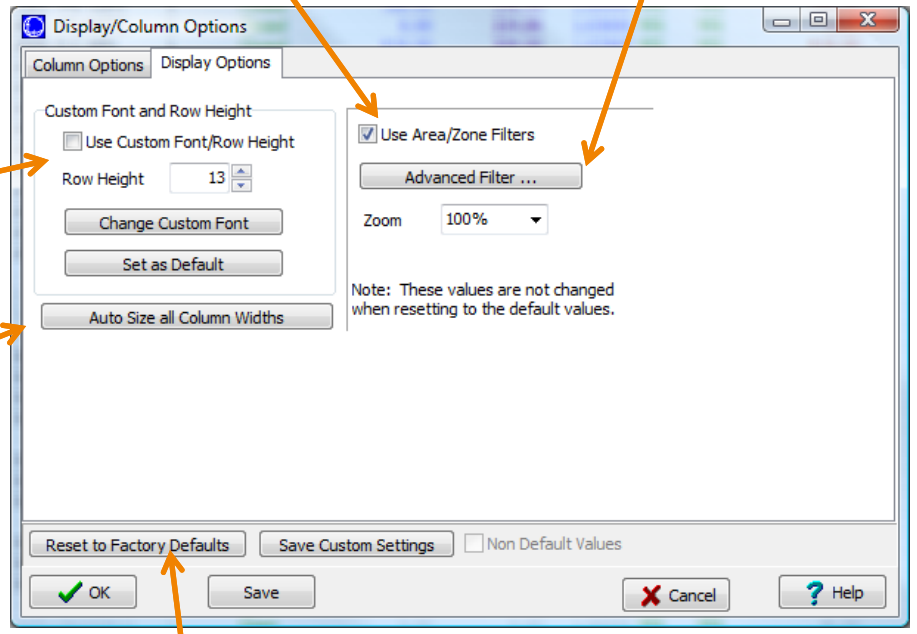
Change attributes of the display columns. Also, use toolbar buttons

 © 2015 PowerWorld Corporation

Display/Column Options
Display Options

Will disable the area/zone filtering for a single case info display. Also available via a toolbar button 

Define a custom filter
Also available via a toolbar button 



Change custom fonts and row heights

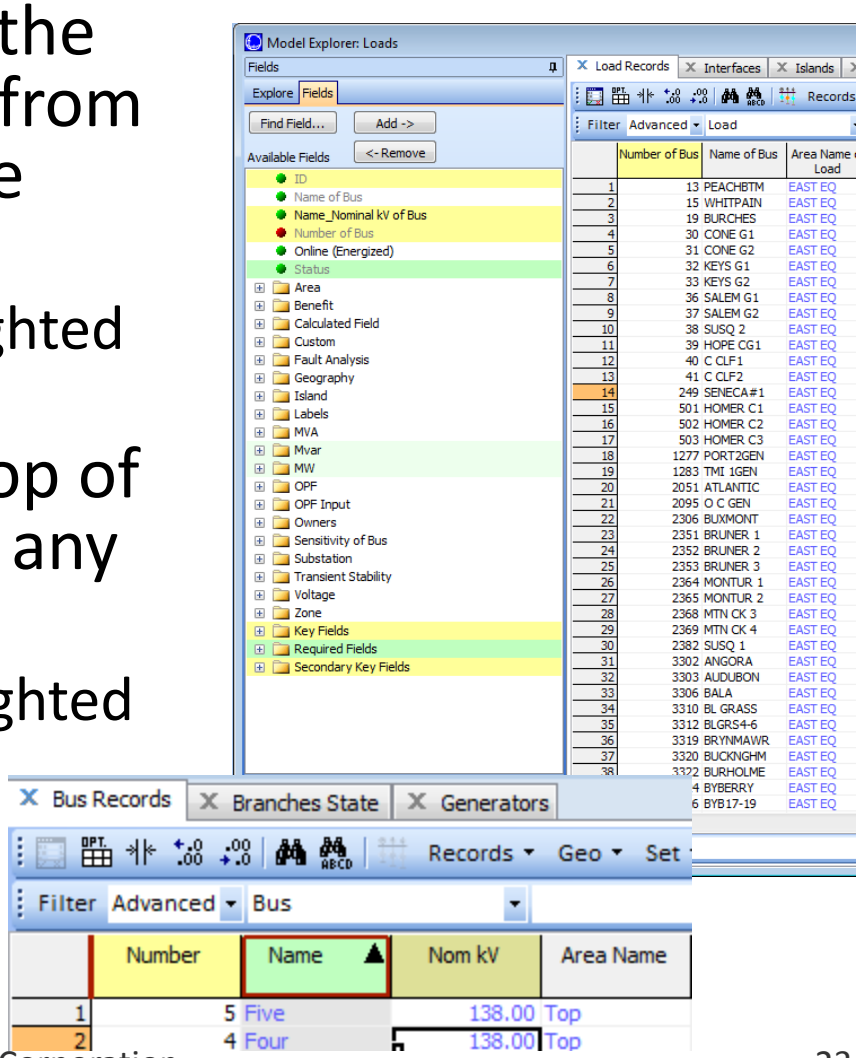
Auto resize all column widths. Also available via a toolbar button

Reset all values to default

 © 2015 PowerWorld Corporation

Alternative Display/Column Options
Model Explorer: Fields Pane

- Fields Pane: Directly modify the columns shown by dragging from the Fields Pane onto the case information display
  - Location of new field is highlighted by a **red** line
- Also, CTRL Left-Click at the top of columns to reorder them on any case information display
  - Column being moved is highlighted by **red** box
  - Location being moved to is highlighted by a **red** line



© 2015 PowerWorld Corporation

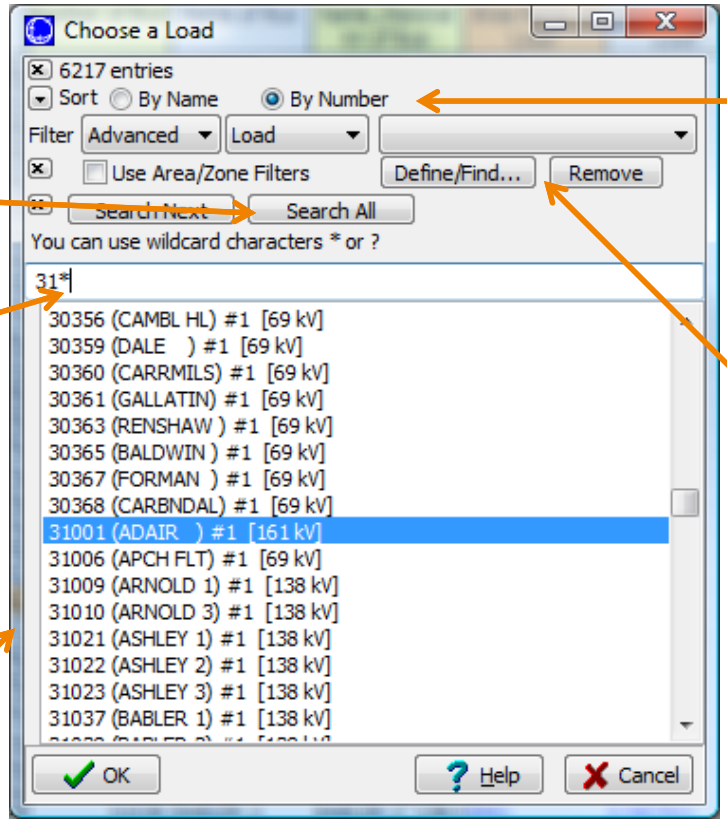
Find…

- Use wildcard searches to find an object

Brings up a dialog list of all objects that meet the wildcard string

Wildcard string. Use:
* - several unknown characters
? - a single unknown character

A list of all the objects



Sort List by name or number

Filter the List

© 2015 PowerWorld Corporation

Example Wildcard Searches

- On both the Find and Search for Text Dialogs, you can use wildcard searching
  - * several unknown characters
  - ? a single unknown character
- * Examples
  - *pw* would find “abcpw123”, “pw123”, and “abcpw”
  - pw* would only find “pw123”
  - *pw would only find “abcpw”
- ? Examples
  - ?pw* would find “apw123” and “apw”
  - ?pw* would NOT find “abcpw123”

 © 2015 PowerWorld Corporation

Search for Text…

- Search through the text shown on the case information display for a particular string
- Feature can also be accessed directly on the Search Toolbar at the bottom of the Model Explorer

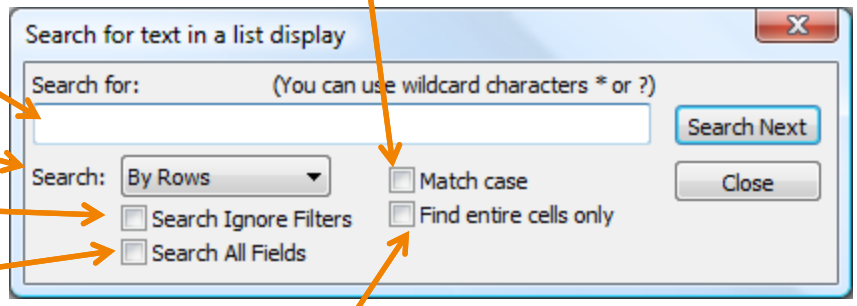
Enter Search String

Search by columns or rows

Search records filtered out

Search fields not displayed

Match upper/lower case letters



Only search if entire cell matches

 © 2015 PowerWorld Corporation

Search for Text Options

- Search Ignore Filters
  - Choose this option to search through all records of the object type shown on the case information display regardless of the present filtering applied
  - If the text is found outside of the presently shown objects, then you will be prompted to remove filtering
- Search All Fields
  - Choose this option to search through all fields of the object type shown on the case information display regardless of the presently shown fields
  - If the text is found in a field not presently shown, then you will be prompted to show the column

 © 2015 PowerWorld Corporation

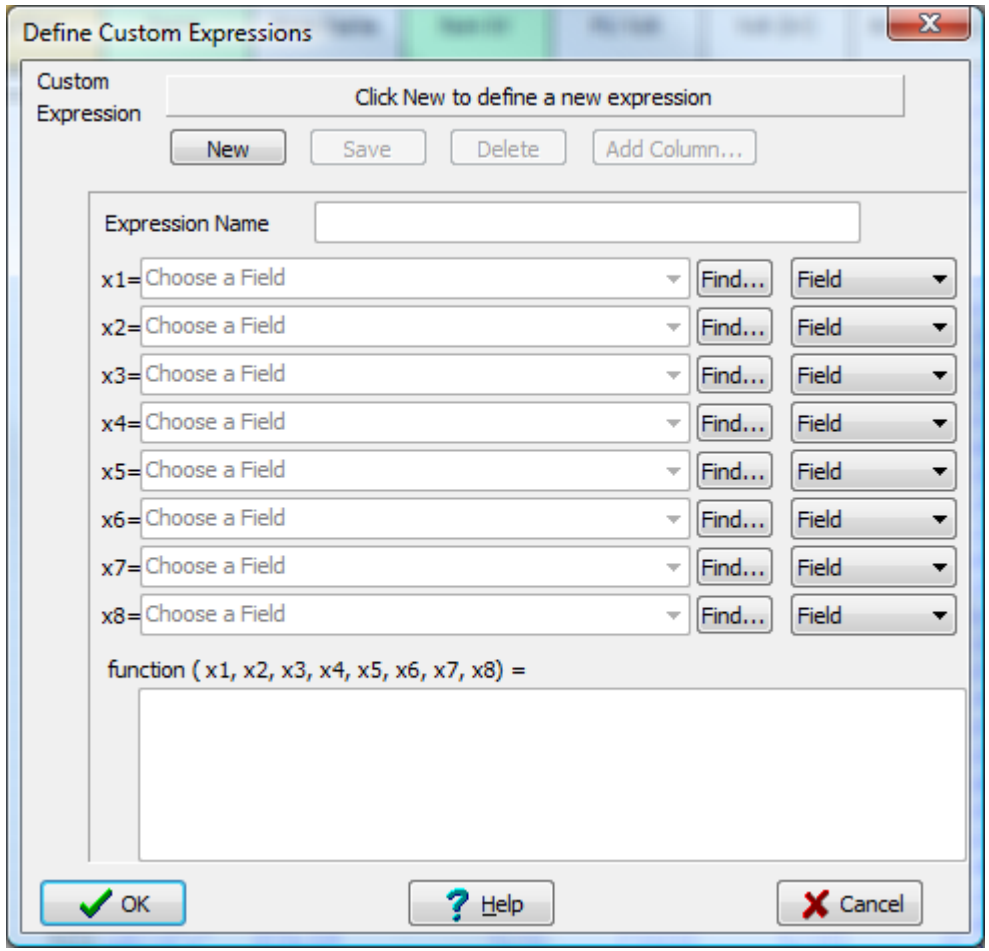
Records Menu

- Contains a list of actions related to the specific kinds of records displayed in the case information display
- Common choices available here
  - **Insert** and **Delete**: to insert and delete objects
  - **Bus View** and **Substation View**
  - **Area/Zone/Owner Filters**
  - **Pan to Object on Oneline** – choose to pan to a display object that represents the active row
- Typical other choices
  - Special choices for each particular record type
  - Automatically creating objects from the selection

 © 2015 PowerWorld Corporation

Define Expression

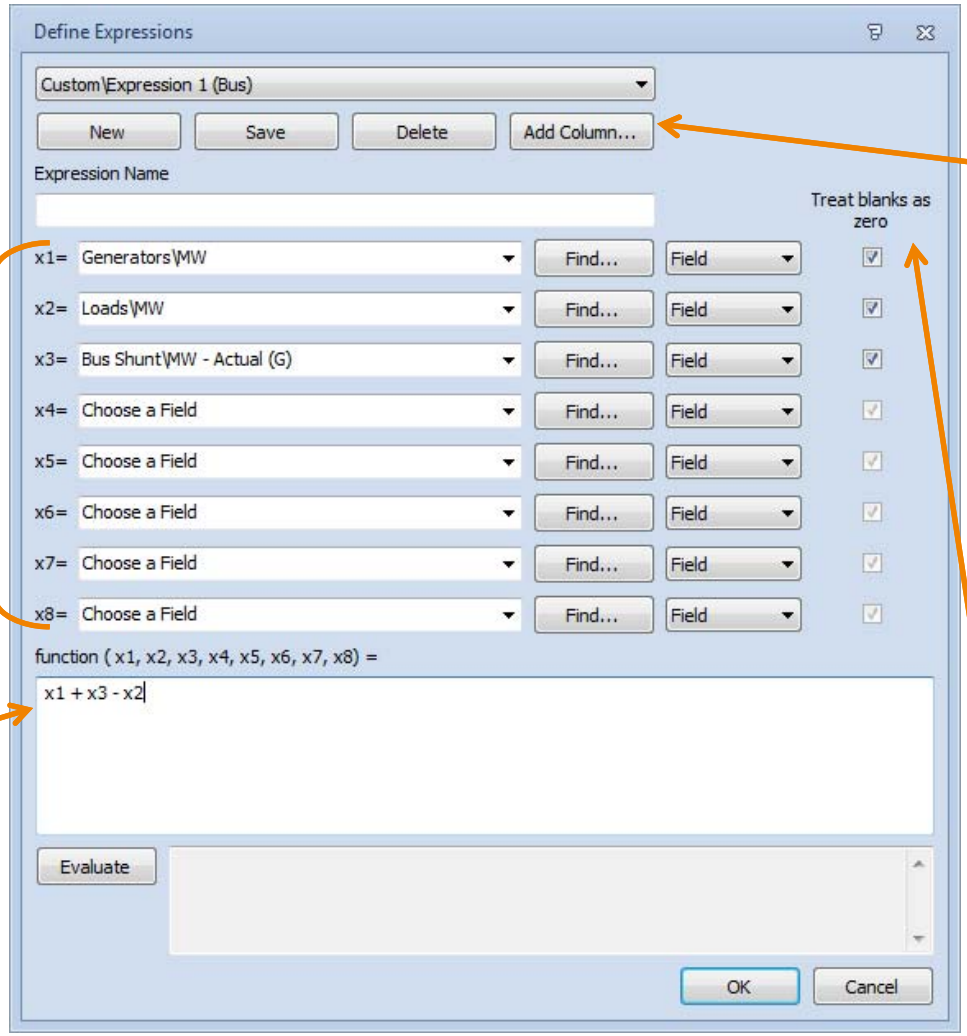
- To open the Custom Expression Dialog, select the **f(x)** toolbar menu and choose **Define Expression**…
- Then click **New** to make a new expression



 © 2015 PowerWorld Corporation

f(x)

Creating an Expression



Specify the fields used in the expression

Write the expression as a function of x1, x2, …

Choose Add Column… as a quick way to add the column to the Case Info Display

Should blank entries be ignored or included

 © 2015 PowerWorld Corporation

Operators Available in Expressions

- Details available in Help files

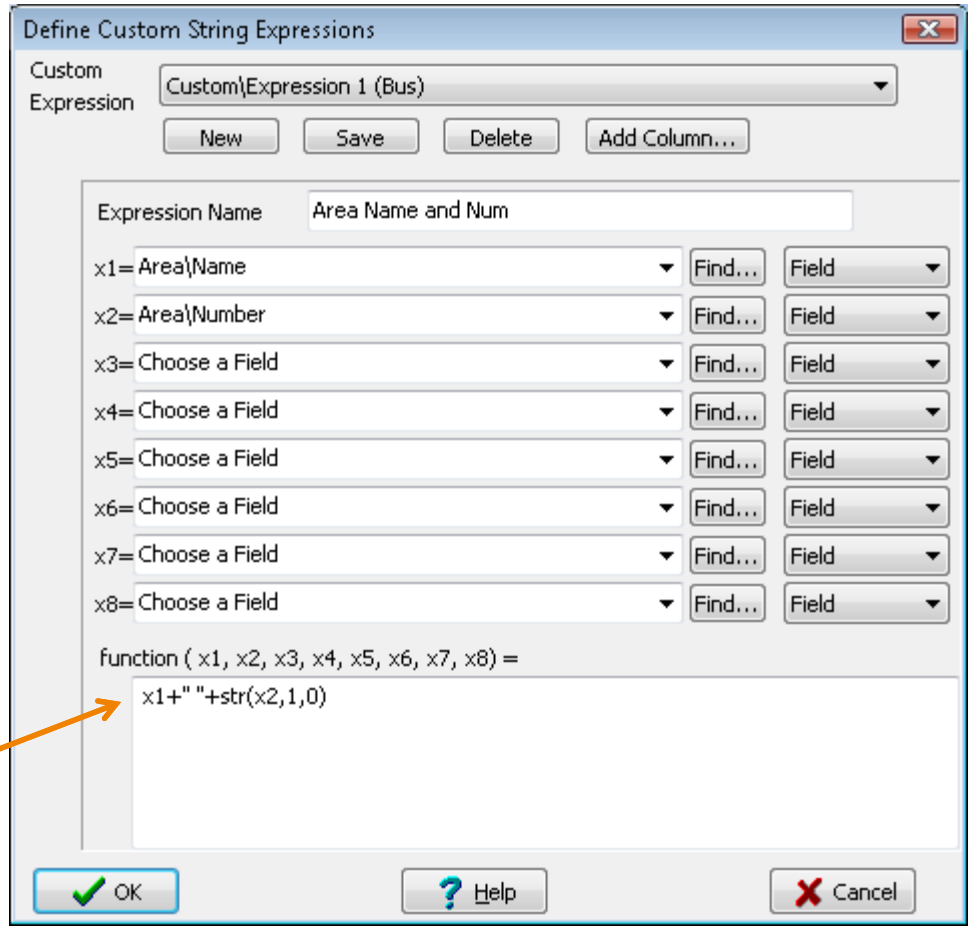
( )	>=	COS	CSCH	LOG
!	<=	TAN	ASINH	LOG2
%	<>	ASIN	ACOSH	LOG10
^	NOT	ACOS	ATANH	CEIL
*	AND	ATAN	ACOTH	RND
/	OR	SEC	ASECH	INT
\	XOR	CSC	ACSCH	SGN
MOD	EQV	COT	ABS	SQR
+	IMP	SINH	EXP	
-	IIF	COSH	EXP2	
>	MIN	TANH	EXP10	
<	MAX	COTH		
==	SIN	SECH		

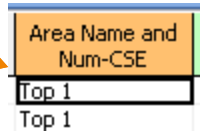
 © 2015 PowerWorld Corporation

f(x)

Define String Expression

- Select the **f(x)** toolbar menu, choose **Define String Expression**…, and click **New**
- Can concatenate strings with the **+** operator
- Convert numeric fields to strings with **Str** function
- Example: Area Name and Number





 © 2015 PowerWorld Corporation

Geo Menu

- Geo Menu provides access to options related to the automatic creation of Geographic Data Views
  - There must be latitude/longitude information populated in either the bus records or the substation records for this to work
  - This will be discussed more in the Advanced Visualization Section later in the training

 © 2015 PowerWorld Corporation

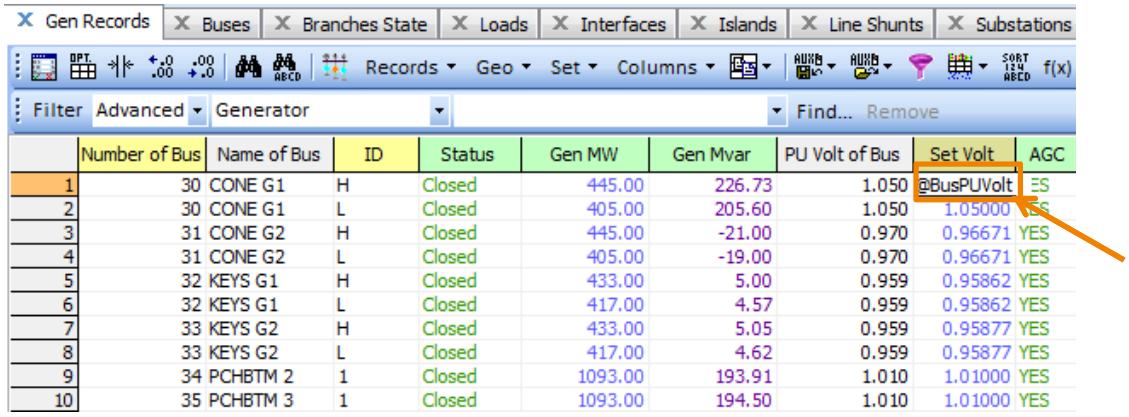
Set Menu

- Set Menu contains options for changing values in the presently selected column
  - **Toggle All YES**, **NO**, **Closed**, **Open**, etc.
  - **Set All Values to**…
    - Set all values in the active column to a particular value. A dialog will appear allowing you to specify the value to which to set the values.
  - **Set All Values to Field**…
    - Set all values in the active column to the values in another column
      - For example, you may change the voltage set-point of a generator to be equal to the terminal voltage of the generator. A dialog will appear asking you to choose the field.
- Actions only apply to objects presently being shown on the display – *Filtering is important*

 © 2015 PowerWorld Corporation

Set Values to Field… Another Way
Enter Data from Another Field

- When typing, prepend the @ symbol to copy data from another field
- Fields must be identified with Variable Names (See Auxiliary File Format: DATA Section topic for description of Variable Names)
- Example: Type **@BusPUVolt** into the generator setpoint voltage and it will change the setpoint to the terminal voltage.
- This also works in auxiliary files or when pasting from Excel
  - Note: When entering in Excel, you may need to add a single quote (') before the @ symbol



	Number of Bus	Name of Bus	ID	Status	Gen MW	Gen Mvar	PU Volt of Bus	Set Volt	AGC
1	30	CONE G1	H	Closed	445.00	226.73	1.050	@BusPUVolt	ES
2	30	CONE G1	L	Closed	405.00	205.60	1.050	1.05000	ES
3	31	CONE G2	H	Closed	445.00	-21.00	0.970	0.96671	YES
4	31	CONE G2	L	Closed	405.00	-19.00	0.970	0.96671	YES
5	32	KEYS G1	H	Closed	433.00	5.00	0.959	0.95862	YES
6	32	KEYS G1	L	Closed	417.00	4.57	0.959	0.95862	YES
7	33	KEYS G2	H	Closed	433.00	5.05	0.959	0.95877	YES
8	33	KEYS G2	L	Closed	417.00	4.62	0.959	0.95877	YES
9	34	PCHBTM 2	1	Closed	1093.00	193.91	1.010	1.01000	YES
10	35	PCHBTM 3	1	Closed	1093.00	194.50	1.010	1.01000	YES

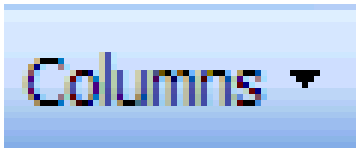
Value will be set to 1.05 on enter

 © 2015 PowerWorld Corporation

Set Values to Model Expression or Field

- Set value to Model Expression
  - Use special symbol & followed by the name of the Model Expression
  - Example: **&MyExpression**
- Set value to Model Field
  - Use special symbol & followed by object identifier, variable name, and formatting
    - `&Objecttype 'key fields' variablename:location:digits:decimals`
    - Example: **&BUS 1 BusPUVolt**
- This also works in auxiliary files or when pasting from Excel
  - Note: When entering in Excel, you may need to add a single quote (') before the & symbol

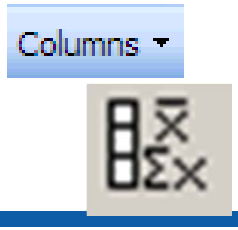
 © 2015 PowerWorld Corporation



Columns Menu

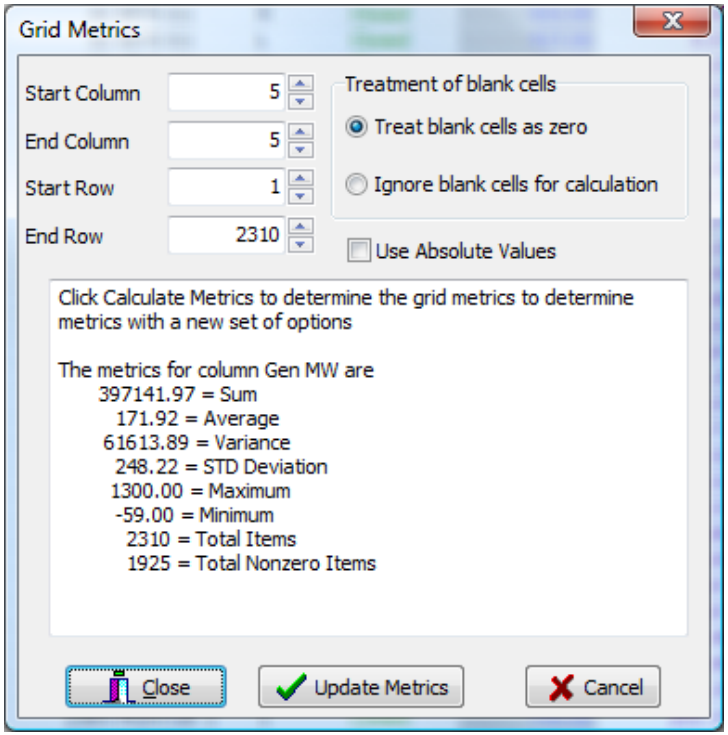
- Several options generally available
  - **Select Columns** and **Select Rows**
  - **Get Column Metrics**
    - Get statistical information about the data shown
  - **Contour Columns**
    - Color the background of the cells in the column
  - **Plot Columns**
    - Show a plot of the data in the columns

 © 2015 PowerWorld Corporation

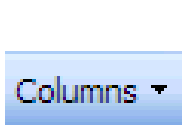


Get Column Metrics

- Available under the **Columns** toolbar menu
- Choose to get the statistical information about the column you click (only for those values that are presently displayed)
  - Sum
  - Average
  - Variance
  - Standard Deviation
  - Maximum
  - Minimum
  - Total Items
  - Total Non-Zero Items



 © 2015 PowerWorld Corporation



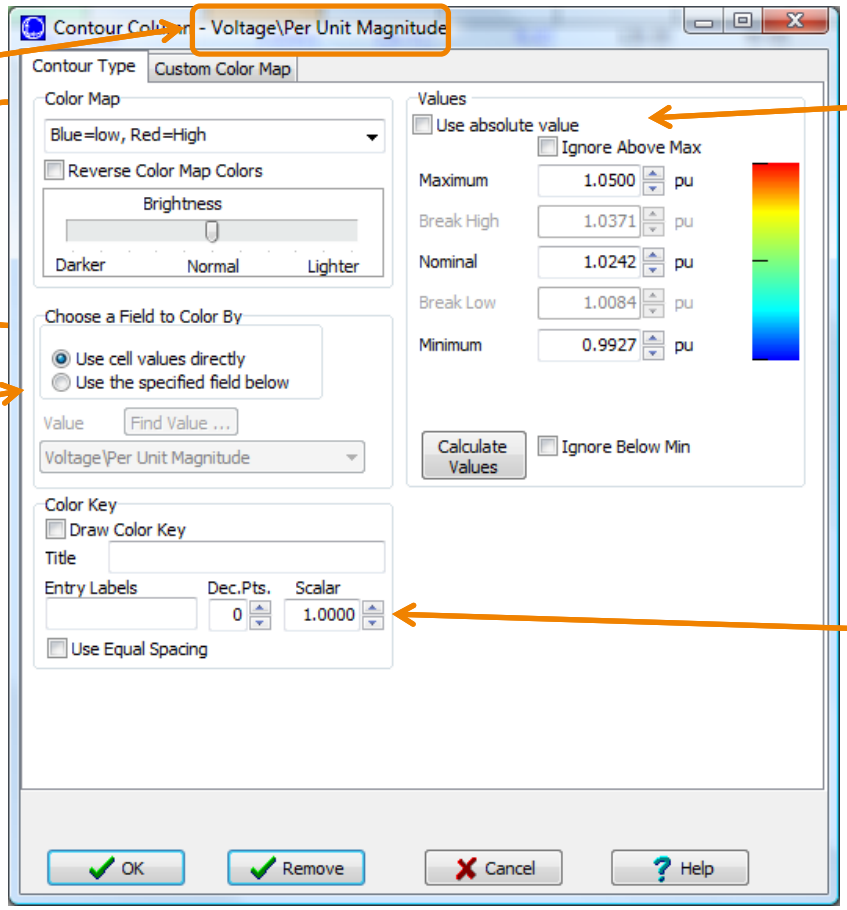
Contour Column

- To open the Contour Column Dialog, select the **Columns** toolbar menu and choose **Contour Column…**

Column being contoured

Choose your color map

Choose the fields to use for the contouring (normally the same as the column being contoured)



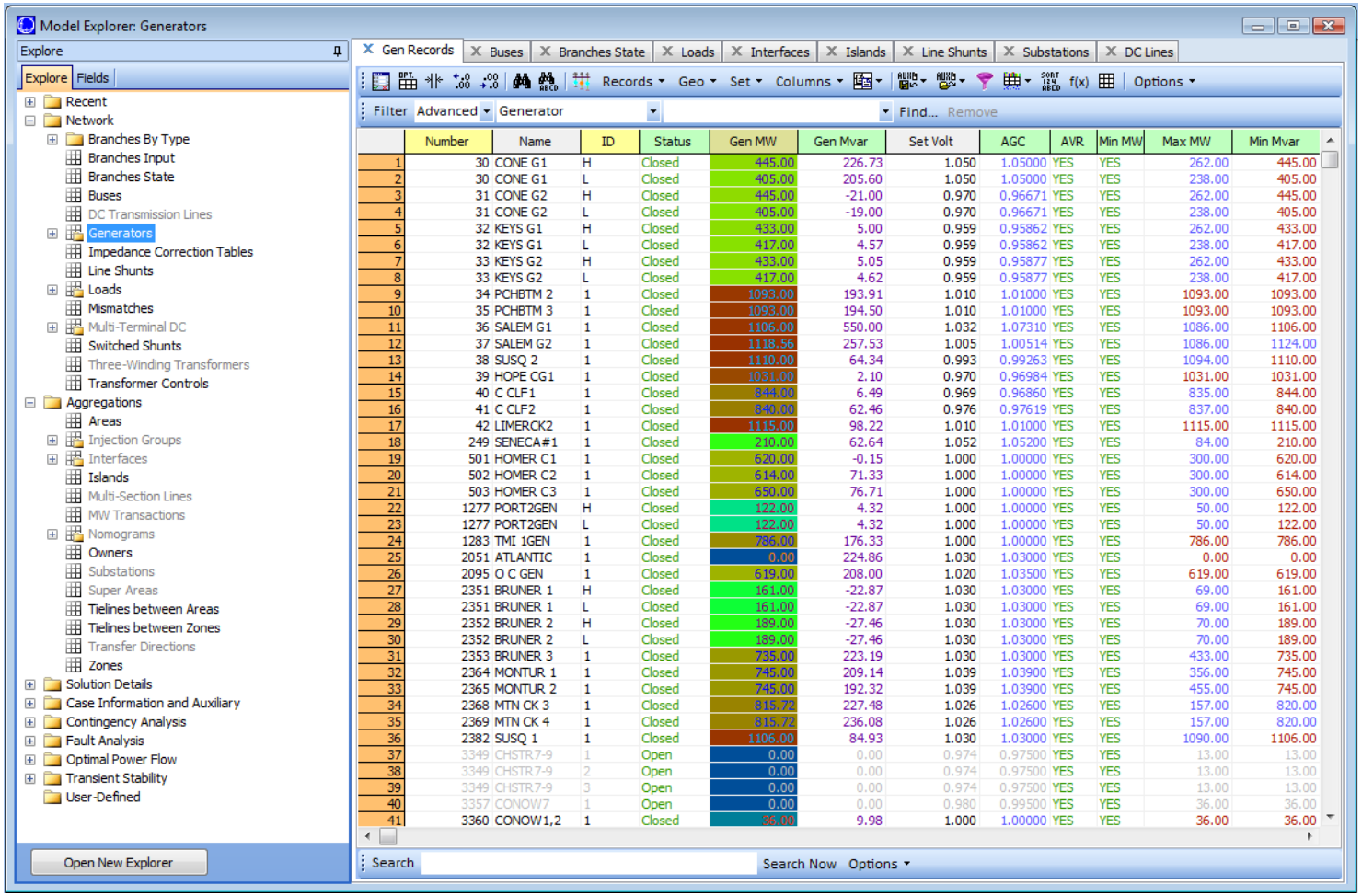
Choose how the values map to colors

Options regarding the Color Key

 © 2015 PowerWorld Corporation

Columns

Example Display with Contoured Columns



	Number	Name	ID	Status	Gen MW	Gen Mvar	Set Volt	AGC	AVR	Min MW	Max MW	Min Mvar
1	30	CONE G1	H	Closed	445.00	226.73	1.050	1.05000	YES	YES	262.00	445.00
2	30	CONE G1	L	Closed	405.00	205.60	1.050	1.05000	YES	YES	238.00	405.00
3	31	CONE G2	H	Closed	445.00	-21.00	0.970	0.96671	YES	YES	262.00	445.00
4	31	CONE G2	L	Closed	405.00	-19.00	0.970	0.96671	YES	YES	238.00	405.00
5	32	KEYS G1	H	Closed	433.00	5.00	0.959	0.95862	YES	YES	262.00	433.00
6	32	KEYS G1	L	Closed	417.00	4.57	0.959	0.95862	YES	YES	238.00	417.00
7	33	KEYS G2	H	Closed	433.00	5.05	0.959	0.95877	YES	YES	262.00	433.00
8	33	KEYS G2	L	Closed	417.00	4.62	0.959	0.95877	YES	YES	238.00	417.00
9	34	PCHBTM 2	1	Closed	1093.00	193.91	1.010	1.01000	YES	YES	1093.00	1093.00
10	35	PCHBTM 3	1	Closed	1093.00	194.50	1.010	1.01000	YES	YES	1093.00	1093.00
11	36	SALEM G1	1	Closed	1106.00	550.00	1.032	1.07310	YES	YES	1086.00	1106.00
12	37	SALEM G2	1	Closed	1118.56	257.53	1.005	1.00514	YES	YES	1086.00	1124.00
13	38	SUSQ 2	1	Closed	1110.00	64.34	0.993	0.99263	YES	YES	1094.00	1110.00
14	39	HOPE CG1	1	Closed	1031.00	2.10	0.970	0.96984	YES	YES	1031.00	1031.00
15	40	C CLF1	1	Closed	844.00	6.49	0.969	0.96860	YES	YES	835.00	844.00
16	41	C CLF2	1	Closed	840.00	62.46	0.976	0.97619	YES	YES	837.00	840.00
17	42	LIMERCK2	1	Closed	1115.00	98.22	1.010	1.01000	YES	YES	1115.00	1115.00
18	249	SENECA#1	1	Closed	210.00	62.64	1.052	1.05200	YES	YES	84.00	210.00
19	501	HOMER C1	1	Closed	620.00	-0.15	1.000	1.00000	YES	YES	300.00	620.00
20	502	HOMER C2	1	Closed	614.00	71.33	1.000	1.00000	YES	YES	300.00	614.00
21	503	HOMER C3	1	Closed	650.00	76.71	1.000	1.00000	YES	YES	300.00	650.00
22	1277	PORT2GEN	H	Closed	122.00	4.32	1.000	1.00000	YES	YES	50.00	122.00
23	1277	PORT2GEN	L	Closed	122.00	4.32	1.000	1.00000	YES	YES	50.00	122.00
24	1283	TMI 1GEN	1	Closed	786.00	176.33	1.000	1.00000	YES	YES	786.00	786.00
25	2051	ATLANTIC	1	Closed	0.00	224.86	1.030	1.03000	YES	YES	0.00	0.00
26	2095	O C GEN	1	Closed	619.00	208.00	1.020	1.03500	YES	YES	619.00	619.00
27	2351	BRUNER 1	H	Closed	161.00	-22.87	1.030	1.03000	YES	YES	69.00	161.00
28	2351	BRUNER 1	L	Closed	161.00	-22.87	1.030	1.03000	YES	YES	69.00	161.00
29	2352	BRUNER 2	H	Closed	189.00	-27.46	1.030	1.03000	YES	YES	70.00	189.00
30	2352	BRUNER 2	L	Closed	189.00	-27.46	1.030	1.03000	YES	YES	70.00	189.00
31	2353	BRUNER 3	1	Closed	735.00	223.19	1.030	1.03000	YES	YES	433.00	735.00
32	2364	MONTUR 1	1	Closed	745.00	209.14	1.039	1.03900	YES	YES	356.00	745.00
33	2365	MONTUR 2	1	Closed	745.00	192.32	1.039	1.03900	YES	YES	455.00	745.00
34	2368	MTN CK 3	1	Closed	815.72	227.48	1.026	1.02600	YES	YES	157.00	820.00
35	2369	MTN CK 4	1	Closed	815.72	236.08	1.026	1.02600	YES	YES	157.00	820.00
36	2382	SUSQ 1	1	Closed	1106.00	84.93	1.030	1.03000	YES	YES	1090.00	1106.00
37	3349	CHSTR7-9	1	Open	0.00	0.00	0.974	0.97500	YES	YES	13.00	13.00
38	3349	CHSTR7-9	2	Open	0.00	0.00	0.974	0.97500	YES	YES	13.00	13.00
39	3349	CHSTR7-9	3	Open	0.00	0.00	0.974	0.97500	YES	YES	13.00	13.00
40	3357	CONOW7	1	Open	0.00	0.00	0.980	0.99500	YES	YES	36.00	36.00
41	3360	CONOW1,2	1	Closed	36.00	9.98	1.000	1.00000	YES	YES	36.00	36.00

© 2015 PowerWorld Corporation

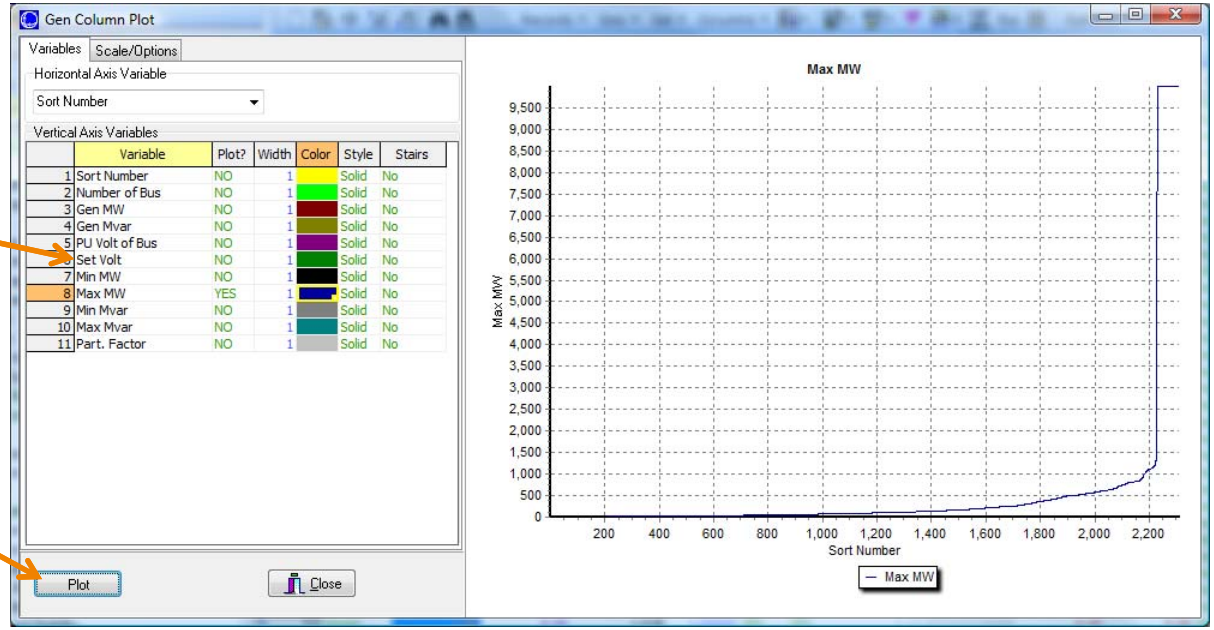
Columns

Plot Columns

- Choose the Plot Columns option to allow yourself to plot any column that is presently shown on the case information display
- An example using generator Maximum MW outputs is shown below

Set options

Click **Plot** to update plots



 © 2015 PowerWorld Corporation

Area/Zone/Owner Filtering

- Area/Zone/Owner Filtering is a GLOBAL setting
  - They apply to **all** case information displays
- Use Area/Zone/Owner Filtering to limit what is shown in Case Information Displays to only those elements whose:
  - Area is set to be shown

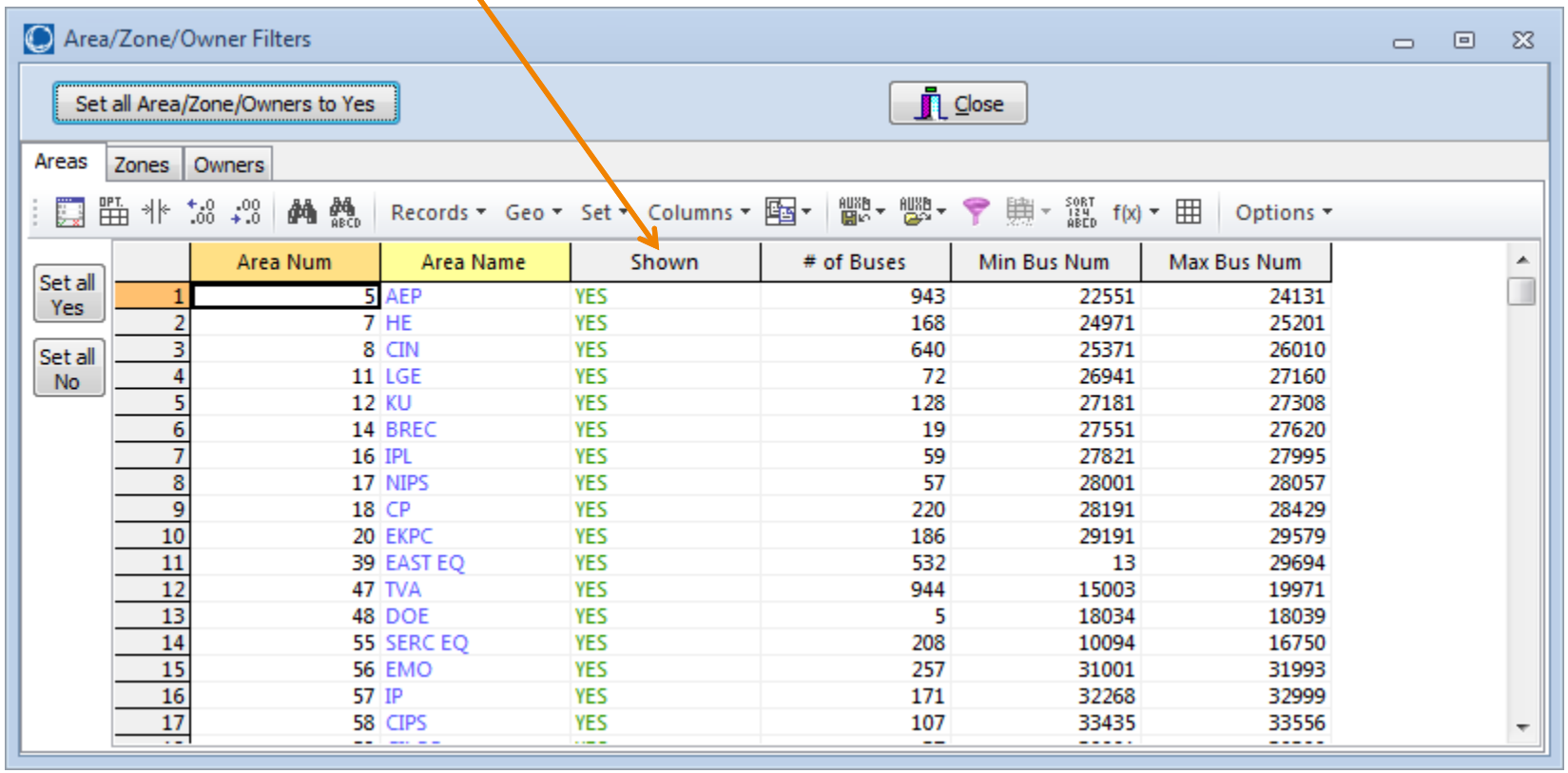
    AND
  - Zone is set to be shown

    AND
  - Owner is set to be shown

 © 2015 PowerWorld Corporation

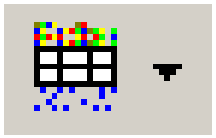
Area/Zone/Owner Filters

Toggle the Shown field



	Area Num	Area Name	Shown	# of Buses	Min Bus Num	Max Bus Num
1	5	AEP	YES	943	22551	24131
2	7	HE	YES	168	24971	25201
3	8	CIN	YES	640	25371	26010
4	11	LGE	YES	72	26941	27160
5	12	KU	YES	128	27181	27308
6	14	BREC	YES	19	27551	27620
7	16	IPL	YES	59	27821	27995
8	17	NIPS	YES	57	28001	28057
9	18	CP	YES	220	28191	28429
10	20	EKPC	YES	186	29191	29579
11	39	EAST EQ	YES	532	13	29694
12	47	TVA	YES	944	15003	19971
13	48	DOE	YES	5	18034	18039
14	55	SERC EQ	YES	208	10094	16750
15	56	EMO	YES	257	31001	31993
16	57	IP	YES	171	32268	32999
17	58	CIPS	YES	107	33435	33556

 © 2015 PowerWorld Corporation



Advanced Filtering

- Click on the **Advanced Filter** toolbar button and choose **Advanced Filter…**
- When you open this dialog, the default is to see filters that have been defined for the type of object you are trying to filter (e.g. Bus, Generator, Interface, etc.)
- When choosing the field to filter against, use the **Find…** button
  - Many locations in Simulator have a drop-down list of fields to choose from
  - Lists can have 100s of entries and are difficult to navigate
  - Use the **Find…** button to make it easier

 © 2015 PowerWorld Corporation

Advanced Filter Dialog

Filter By will be discussed shortly (Advanced or Device)

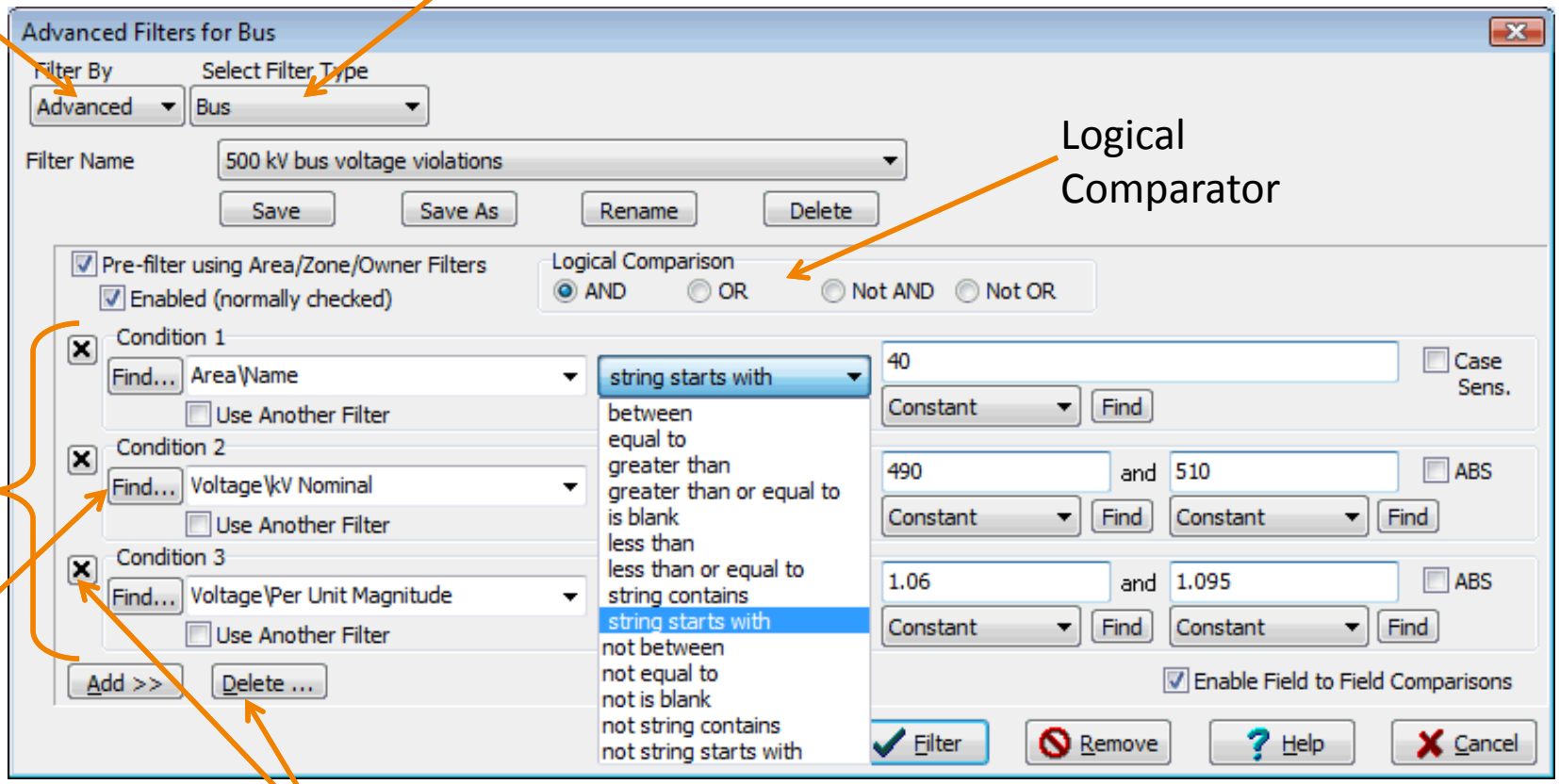
Type of object being filtered

Logical Comparator

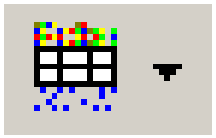
Conditions

Use the **Find…** buttons

Click to delete a condition



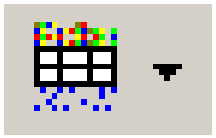
 © 2015 PowerWorld Corporation



Advanced Filtering

- Some objects allow the use of filters defined for related objects
  - Change **Select Filter Type** to select/define filters for related objects
  - Example: Use bus filter for nominal voltages greater than 138 kV to filter generators
- No Maximum Amount of Conditions
  - Choose the field, then the comparator, then the values to compare the field to
  - Fields are the same as those available for Case Info
- You can optionally “pre-filter” using the Area/Zone/Owner Filters

 © 2015 PowerWorld Corporation



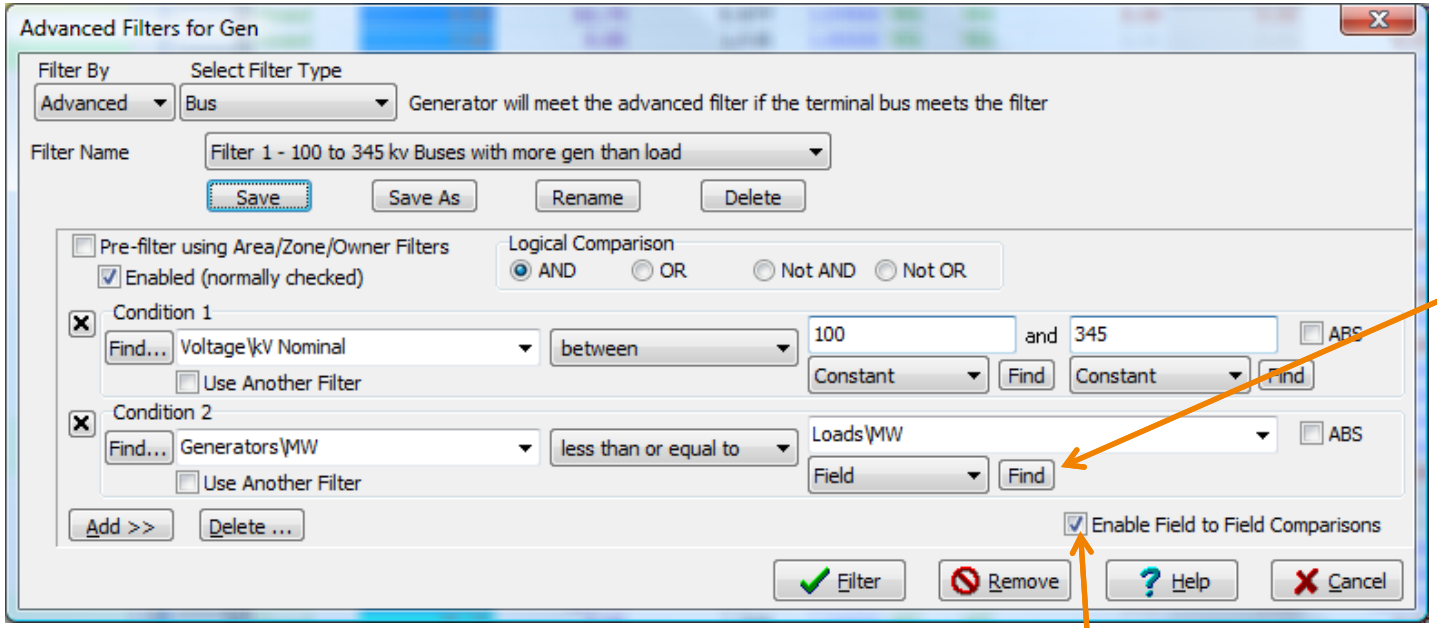
Advanced Filter

- Logical Comparison specifies the filter logic.
  - Comparison applies across ALL conditions
    - AND – filter is met if ALL conditions are met
    - OR – filter is met if ANY condition is met
    - NOT AND – filter is NOT met if and only if ALL conditions are met
    - NOT OR – filter is NOT met if and only if ANY condition is met
- Other advanced options
  - Absolute value (ABS) compare for numeric conditions
  - Case Sensitive compare for string conditions
  - Field-to-field comparisons
  - Using another filter as a filter condition
- An Advanced Filter Toolbar is also available for quickly selecting and applying filters

 © 2015 PowerWorld Corporation

Field-To-Field Comparisons

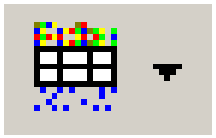
- Users have the option to include Field-To-Field comparisons



Click the **Find** Button to choose another field to compare to instead of a constant value.

Check the box for **Enable Field to Field Comparisons**

 © 2015 PowerWorld Corporation



Using a Filter as a Condition
X *AND* (Y *OR* Z)

- As described, filters are very flexible, however you cannot create the comparison
  - X *and* (Y *or* Z)
- In order to do this you must first create a filter that represents "Y or Z"
- Then create a second filter which uses this filter as a condition
  - Check the box **Use Another Filter** under the list of fields for the condition
  - This changes the dialog to have choices of meets filter or not meets filter

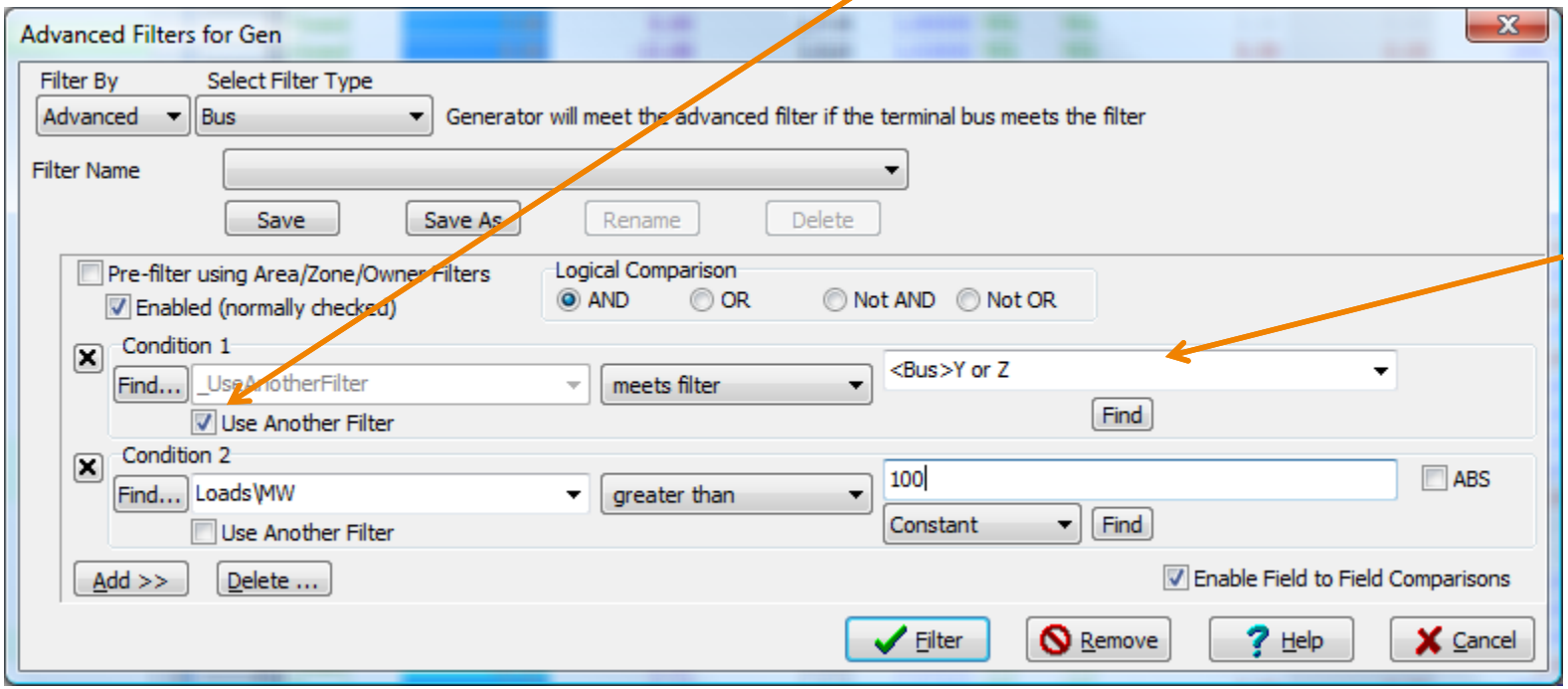
Result = X *and* (Y *or* Z)

B = (Y *or* Z)
Result = X *and* B

 © 2015 PowerWorld Corporation

Using a Filter as a Condition
X AND (Y OR Z)

Check Box
Use Another Filter



Specify the name of the other filter

- Note: you must be careful to avoid circular references

 © 2015 PowerWorld Corporation

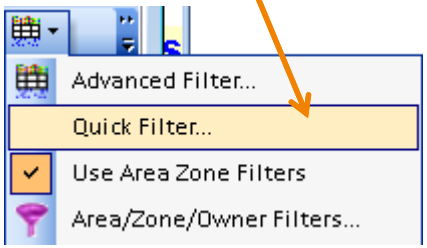
Advanced Filtering: Across Object Types

- Use advanced filters across object types
  - Example: define a Bus filter and then use this bus filter on a generator, load, or switched shunt object
  - If the object being filtered contains more than one of the filter object type, OR is assumed
    - If a bus object uses an area filter, the bus meets the filter if the area of the bus meets the filter
    - If an area object uses a bus filter, the area meets the filter if ANY single bus in the area meets the filter
    - If an interface object uses a branch filter, the interface meets the filter if ANY single branch in the interface meets the filter

 © 2015 PowerWorld Corporation

Quick Filter

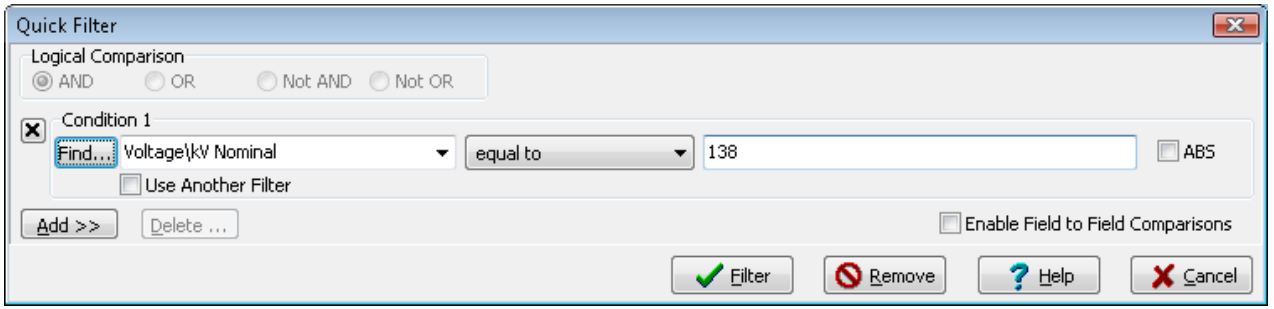
- Filters may also be quickly created and applied without saving the filter by name
- Choose **Quick Filter…** from the **Advanced Filter dropdown** or **Filterbar**



 © 2015 PowerWorld Corporation

Quick Filter

- Quick Filters are created just like Advanced Filters

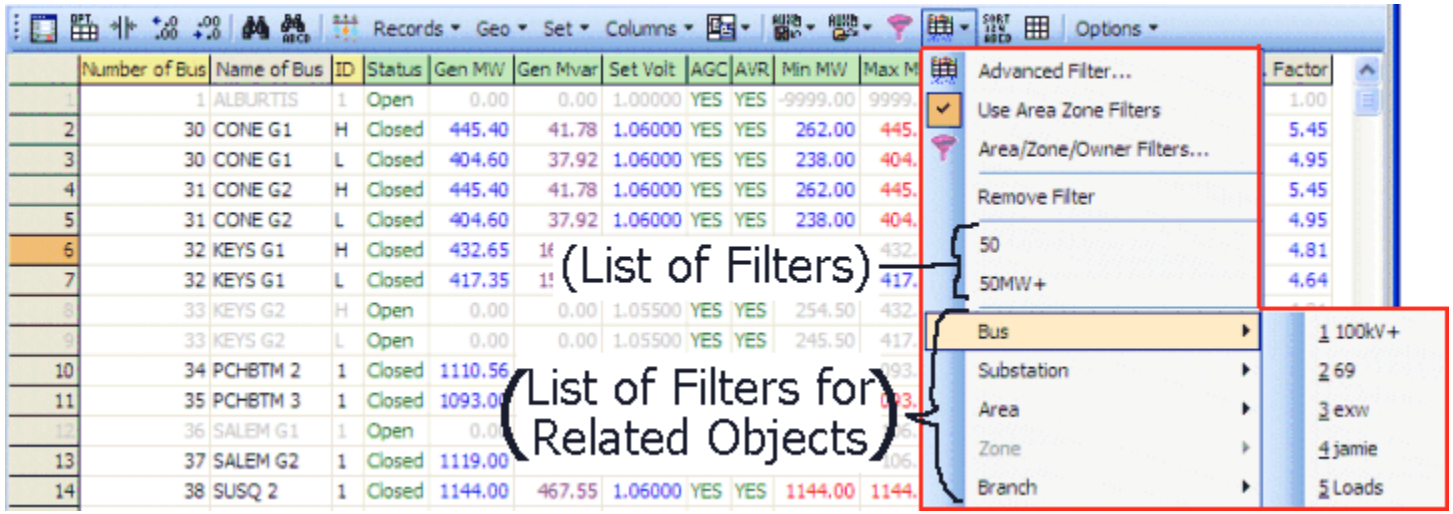


- **Condition 1** will default to the field and value of the presently selected cell in the **Case Info Display**
  - Subsequent selection of **Quick Filter** with different cell selections can be used to add conditions
- If not saved, Quick Filters are lost when another Advanced or Quick Filter is created or applied
  - To save a Quick Filter, open the **Advanced Filter Dialog** while the Quick Filter is applied, then click **Save** or **Save As**

 © 2015 PowerWorld Corporation

Case Information Toolbar : Filters Menu

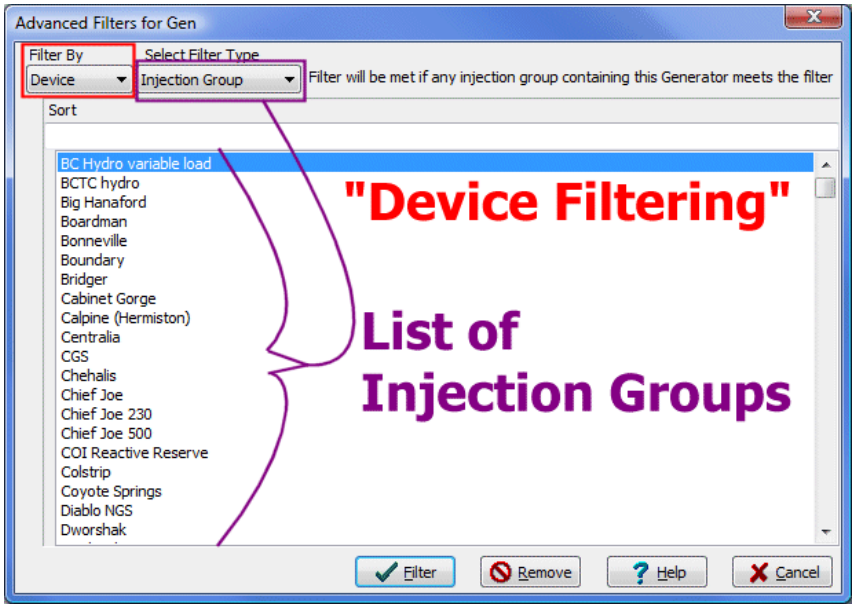
- Provides access to the old **Advanced Filter…** button and **Area/Zone/Owner Filters**
- Also provides submenu access to advanced filters defined for related object types



 © 2015 PowerWorld Corporation

Advanced Filtering : Device Filtering

- **Filter By** = Device
- Directly use one of the power system model objects as a filter
- Relationship between the object types will determine filter action
  - Use an injection group as a device filter on a list of generators
  - Result will be to only show the generators in the injection group



 © 2015 PowerWorld Corporation

Device Filtering in Scripts

- Very convenient when you only want to change one object and don't want to create an Advanced Filter
- Example
  - Put the value of the Load MW field at Bus 1 into the Custom Float 1 field for Generator at bus 1 with ID 1
  - SetData(Gen, [CustomSingle], ["&BUS 1 BusLoadMW"], "<DEVICE>GEN 1 1");

 © 2015 PowerWorld Corporation

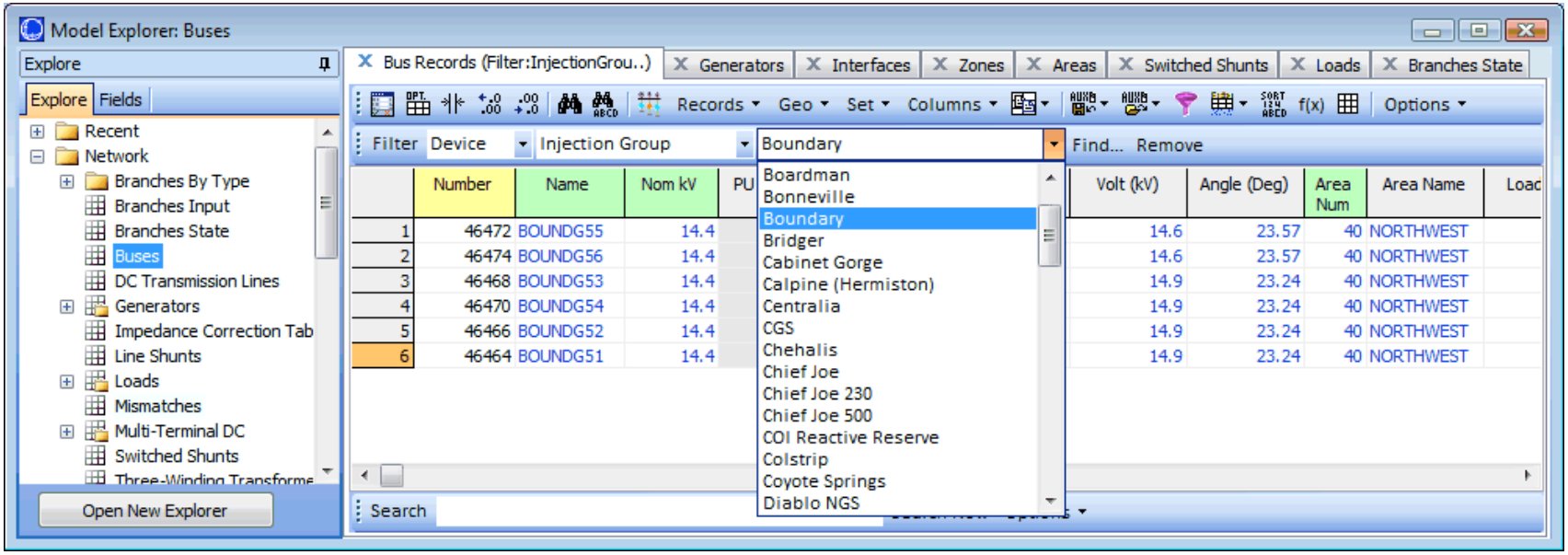
Case Information Filterbar

- Shown Directly above the case information display on the Model Explorer
  - Not shown by default in other locations
  - To show, right-click on case info toolbar to choose Filterbar>Top
- **Filter By** and **Filter Type** → same as drop-down on filter dialog
- **List of Filters** or **List of Devices**
  - For Advanced Filters, this will be a list of presently defined filters
  - For Device Filters, this will a list of the devices of the type
  - If more than 1,000 entries in drop-down, then drop-down will behave like clicking the **Find..** Button instead
- **Find…** button → will open the Advanced Filter dialog
- **Remove** button → will remove filtering from the case info

© 2015 PowerWorld Corporation

Filterbar Example: Device Filtering

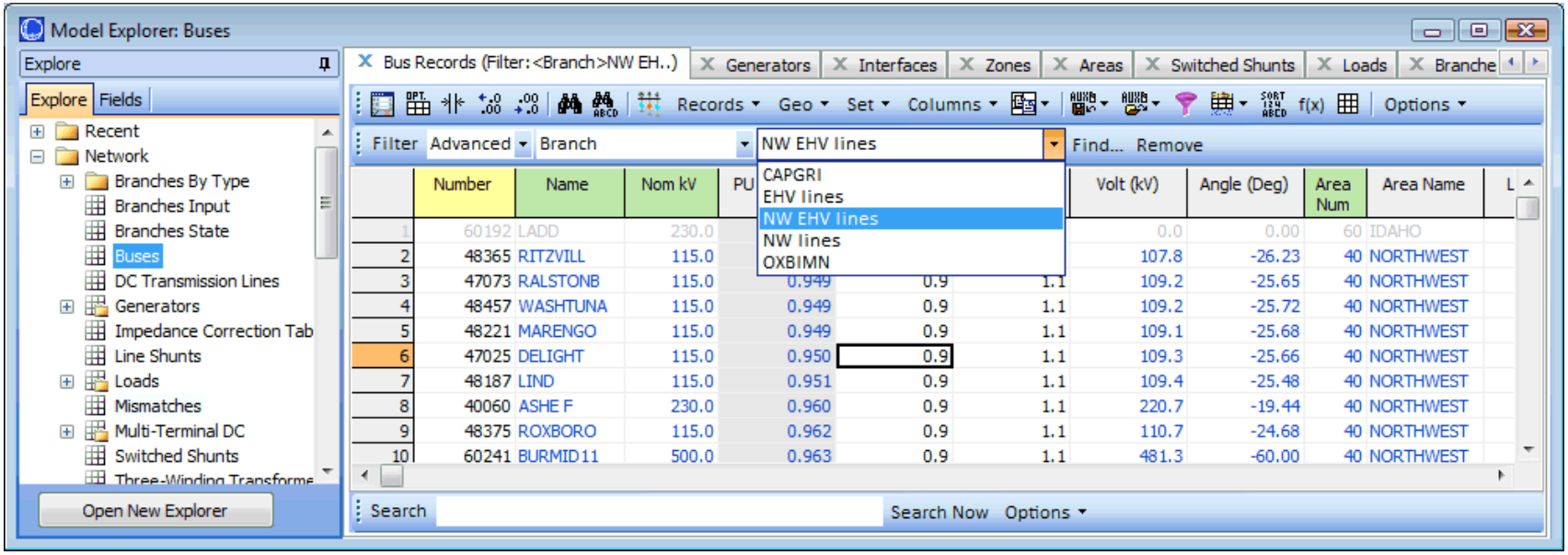
- Use Injection Group as a Device Filter on a list of buses
  - Get a list of the terminal buses for all generator, loads, and shunts in the injection group



 © 2015 PowerWorld Corporation

Filterbar Example: Advanced Filtering

- Use the advanced filter for a branch on a list of buses
  - Get a list of terminal buses of the branches that meet the advanced filter



 © 2015 PowerWorld Corporation

Simple Sorting

- To sort a column, left-click on the column heading. Click again to sort in the opposite direction.
- SHIFT + Left-Click will sort by Absolute Value

Sorted Descending by Gen MW

Arrow showing sort direction

	Number	Name	Area Name	Nom kV	PU Volt	Volt (kV)	Angle (Deg)	Load MW	Load Mvar	Gen MW ▼	Gen Mvar	Switched Shunts Mvar	Act G Shu MW
1	14931	PALOVRD1	ARIZONA	24.00	1.00652	24.157	-40.10	61.76	46.36	1382.00	354.38		0.
2	14933	PALOVRD3	ARIZONA	24.00	1.00651	24.156	-40.08	61.76	46.36	1382.00	354.38		0.
3	14932	PALOVRD2	ARIZONA	24.00	1.00642	24.154	-40.19	61.76	46.36	1379.00	354.38		0.
4	36412	DIABLO 2	PG AND E	25.00	1.03000	25.750	-50.82	47.40	9.62	1200.00	-20.62		0.
5	36411	DIABLO 1	PG AND E	25.00	1.03000	25.750	-51.15	47.40	9.62	1180.00	-34.56		0.
6	40063	CGS	NORTHWEST	25.00	0.99601	24.900	-10.30	54.55	37.49	1155.00	-152.83		0.
7	24130	S.ONOFR3	SOCALIF	22.00	0.97937	21.546	-69.92			1080.00	127.08		0.

Absolute Value Sort

Click here to remove sorting

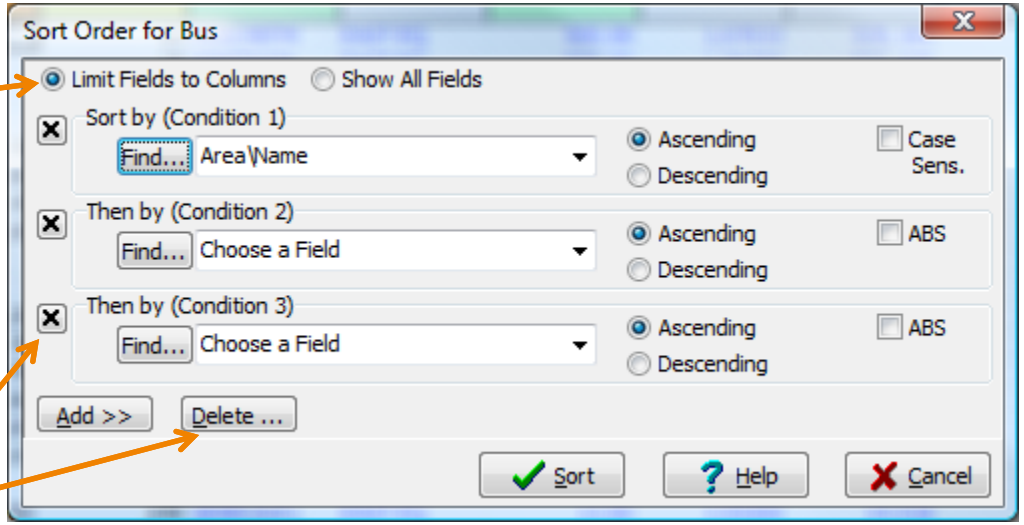
	Number	Name	Area Name	Nom kV	PU Volt	Volt (kV)	Angle (Deg)	Load MW	Load Mvar	Gen MW	Gen Mvar ▼	Switched Shunts Mvar	Act G Sh MW
1	14932	PALOVRD2	ARIZONA	24.00	1.00642	24.154	-40.19	61.76	46.36	1379.00	354.38		0
2	14931	PALOVRD1	ARIZONA	24.00	1.00652	24.157	-40.10	61.76	46.36	1382.00	354.38		0
3	14933	PALOVRD3	ARIZONA	24.00	1.00651	24.156	-40.08	61.76	46.36	1382.00	354.38		0
4	30000	PTSB 7	PG AND E	20.00	1.05000	21.000	-62.54	16.10	3.27	710.00	214.61		0
5	26040	INTERM2G	LADWP	26.00	1.03668	26.954	-54.44	53.00	40.00	950.00	188.81		0
6	26039	INTERM1G	LADWP	26.00	1.03668	26.954	-54.44	53.00	40.00	950.00	188.81		0
7	40063	CGS	NORTHWEST	25.00	0.99601	24.900	-10.30	54.55	37.49	1155.00	-152.83		0

 © 2015 PowerWorld Corporation

Advanced Sorting

- Click on the **Advanced Sort** toolbar button to open the Advanced Sorting Dialog

Check to Limit the Fields available to sort by to those which are shown on the list display



Click to delete condition

 © 2015 PowerWorld Corporation

Advanced Sorting

- Choose the sort order you desire
- Can be either ascending or descending
- No maximum amount of sort conditions
- Other advanced options
  - Absolute value (ABS) compare for numeric conditions
  - Case sensitive compare for string conditions

 © 2015 PowerWorld Corporation

Save As

- Save As
  - Auxiliary File…
    - This will save ***ALL*** information shown in the present case information display as a DATA section in an auxiliary file
    - ***ALL*** fields being displayed will be saved
  - Auxiliary File (only selected records)…
    - Same as previous, but
    - ***Only Selected*** records will be saved
    - Again ***ALL*** fields being displayed will be saved
  - Auxiliary File (only selected records/columns)
    - Same as previous, but
    - ***Only Selected*** records will be saved
    - ***Only Selected*** fields will be saved

 © 2015 PowerWorld Corporation

Save As

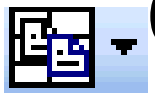
- Save As
  - CSV (Comma delimited)...
    - This will save ***ALL*** information shown in the present case information display in a comma-separate value (CSV) text file
    - The first line of text will be the object type
    - The second line of text will be the list of the displayed fields
    - The rest will be values of all displayed fields for all objects shown, separated by commas
  - CSV (only selected records/columns)…
    - Same as previous but ***Only Selected*** Records and columns will be saved
  - HTML…
    - This will save the case info as an HTML file
  - Other formats (depending on the display)
    - Some case information displays have other formats available. Often these are formats from older versions of Simulator.

 © 2015 PowerWorld Corporation

Load

- Load
  - Auxiliary File (any data)…
    - Will load all DATA sections from an auxiliary
  - Auxiliary File (only *specific* data)…
    - Will load only specific kinds of data from an auxiliary file
  - CSV File (only *specific* data)…
    - Can only load the CSV format that is saved from Simulator or from Excel with information sent from Simulator
  - Other formats (depending on the display)
    - Some case information displays have other formats available. Often these are formats from older versions of Simulator.

 © 2015 PowerWorld Corporation



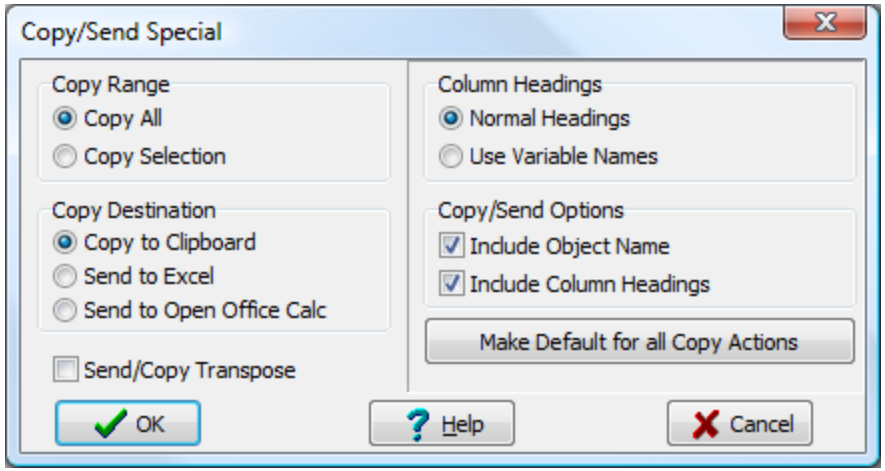
Copying from and Pasting to Case Information Displays

- There are five Copy/Send options
  - Copy All: copy all contents of display
  - Copy Selection: copy selection
  - Send All to Excel: send all contents directly to excel (this will open a session of Excel and populate a worksheet)
  - Send Selection to Excel: send only selection
  - Copy/Send Special

© 2015 PowerWorld Corporation

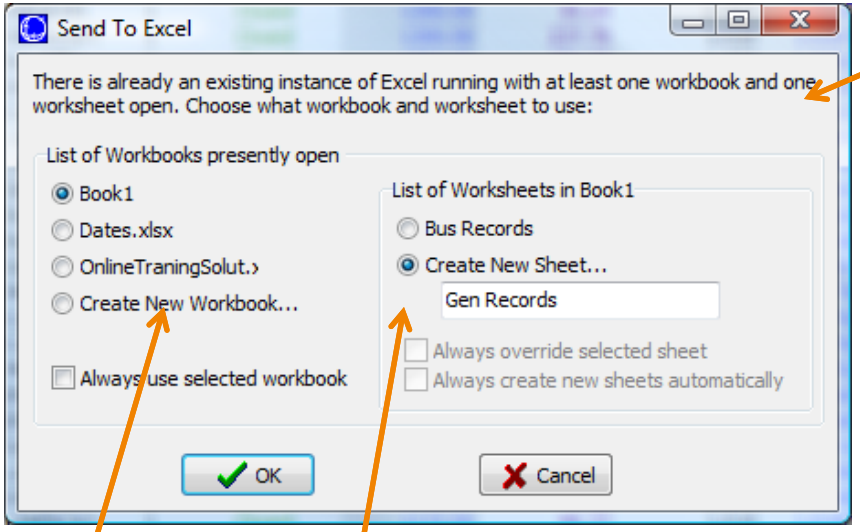
Copy/Send Special

- Provides the same options as the other four Copy/Send options
- Allows you to specify whether to use the column headings from the case info display or variable names from the DATA section of the auxiliary file format.
- Allows you to specify whether to copy the two informational rows (described next).
- Send/Copy the transpose of the data will send/copy the column information to rows and the row information to columns.



 © 2015 PowerWorld Corporation

Copy/Send to Excel



Dialog Occurs only if session of Excel is already running

Select existing or new workbook and worksheet for sending data

Cell A1 describes the kind of data

Row 2 describes which fields are being pasted

	A	B	C	D	
1	Load Records				
2	Number of Bus	Name of Bus	ID	Name_Nominal kV of Bus	A
3	13	PEACHBTM	1	PEACHBTM_500.00	E
4	15	WHITPAIN	1	WHITPAIN_500.00	E
5	19	BURCHES	1	BURCHES_500.00	E
6	30	CONE G1	1	CONE G1_ 22.00	E
7	31	CONE G2	1	CONE G2_ 22.00	E
8	32	KEYS G1	1	KEYS G1_ 22.00	E

For Loads, *Number* and *ID* are the **key fields**

 © 2015 PowerWorld Corporation

Description of Data: (Cell A1)

- The first entry in Cell A1 (highlighted) is a description of the data
  - It is VERY important
  - Keep this description and DO NOT modify
  - When pasting back into the case information display, Simulator reads this line to find what kind of data is being pasted
  - Besides the string that is written by Simulator, you may also use the *Object Name* of the type of data being pasted. See DATA sections of the auxiliary file format for more information.

 © 2015 PowerWorld Corporation

Description of Fields: (Second Row in Table)

- The second row (highlighted) provides a list of the fields in the data
  - Also VERY important
  - When pasting back into Simulator, the second row is used to determine what kind of fields are being pasted
  - Note that if Simulator does not recognize a field heading, it ignores this field in the paste
  - You may alternatively use the *Variable Names* from the DATA section of the auxiliary format

 © 2015 PowerWorld Corporation

Data Record Key Fields

- Each kind of data record has a few columns that serve as *key fields* for Simulator
  - Buses: *Number*
  - Lines: *From Number*, *To Number*, and *Circuit*
  - Loads: *Number* and *ID*
- If you want to paste data back into Simulator you MUST keep these columns intact
- You can get a list of the key fields by choosing **Export Case Object Fields → Text File** from the Window ribbon tab.
  - The key fields will be denoted in this output with asterisks (*1*, *2*, and *3*)

 © 2015 PowerWorld Corporation

Secondary Key Fields

- There are also secondary key fields
  - Often represent a combination of Name/Nominal kV for bus-related objects
  - The secondary key fields will be denoted in this output with asterisks (*A*, *B*, and *C*)
- When pasting into Simulator, we first look to see if the key fields are available. If they are not, then we look for the secondary key fields and use them instead.

© 2015 PowerWorld Corporation

Labels

- Unique identifier for an object of a particular type
- Refer to equipment in the model in a way unique to your organization
- Likely to change less frequently that bus numbers
- Can be used for pasting and updating
  - Label (for use in input from AUX or Paste)

 © 2015 PowerWorld Corporation

Use the Spreadsheet

- You can now utilize the power of your spreadsheet in any manner you wish. Just make sure the final format of the spreadsheet meets the requirements of having the two header rows EXACTLY correct and keep the columns which represent the key.
- Outside of these requirements, you can delete and modify the columns and rows of the spreadsheet however you wish
- For example, you can change the reactive power component of all the loads and then read them back in to see how the voltages are affected

 © 2015 PowerWorld Corporation

Select the Spreadsheet

- When you have completed your spreadsheet use and want to paste back into Simulator:
  - Select the entire spreadsheet (the easiest way to do this is to click on the top left square between the Row A and Column 1 headers)
  - Select **Copy**
- You can alternatively select only part of the spreadsheet as long as you capture all of the required format

 © 2015 PowerWorld Corporation

Pasting into Simulator

- Go back to Simulator, click on the **Copy, Paste, and Send** toolbar menu and choose **Paste**
  - If the clipboard format is not correct, then Simulator will disable the Paste option
- A few last notes: you can only paste values into the case information displays if the values are enterable. This means they will be displayed as blue (by default).

© 2015 PowerWorld Corporation

Pasting NEW objects

- You can also paste in new objects from the spreadsheet
- Be careful. You must provide all required data regarding the object.
- For instance, if you create a bus you should include an area number and a zone number.
- Required Fields can be highlighted in green by using the **Highlight Key/Required** fields options
  - In the Display/Column Options
  - In the heading caption of the case info display

 © 2015 PowerWorld Corporation

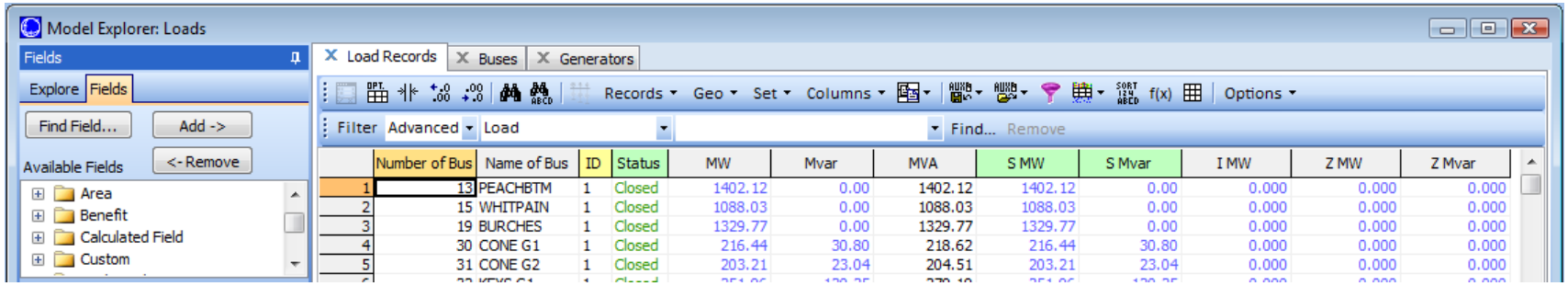
Redundant Data

- Also, be careful about pasting redundant data. For example, in the Bus Records both voltage in *per unit* and voltage in *kV* are enterable, but they specify the same information.
- Make sure you only copy ONE of these columns into Simulator. Otherwise you may not get what you expect. Simulator will paste the information in twice, and whatever value was 2nd will show up.

 © 2015 PowerWorld Corporation

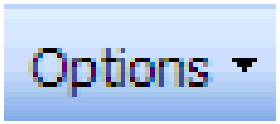
Example Redundant Data

- Load Records represent an example of redundant data. The MW value is a function of the S MW, I MW and Z MW values
  - $MW = S\ MW + I\ MW * V_{pu} + Z\ MW * V_{pu}^2$
- Thus if you do the following nothing happens because the S MW, I MW and Z MW columns get pasted in separately
  - Send All the display out to Excel
  - Modify the MW columns
  - Copy All and then paste back into Simulator

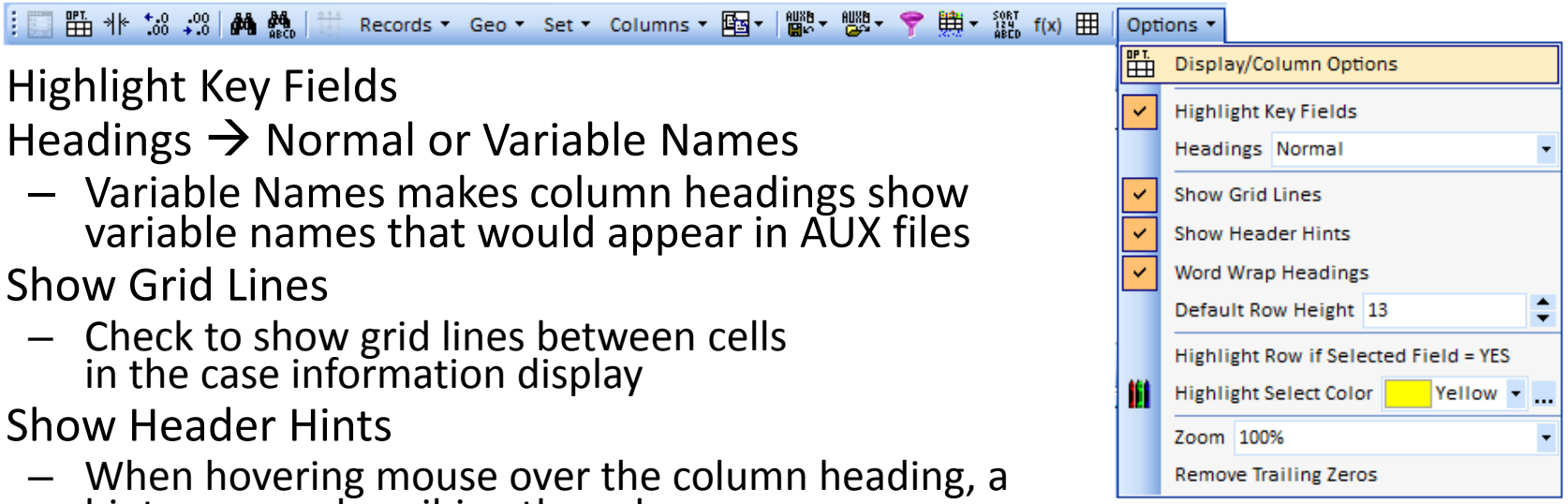


	Number of Bus	Name of Bus	ID	Status	MW	Mvar	MVA	S MW	S Mvar	I MW	Z MW	Z Mvar
1	13	PEACHBTM	1	Closed	1402.12	0.00	1402.12	1402.12	0.00	0.000	0.000	0.000
2	15	WHITPAIN	1	Closed	1088.03	0.00	1088.03	1088.03	0.00	0.000	0.000	0.000
3	19	BURCHES	1	Closed	1329.77	0.00	1329.77	1329.77	0.00	0.000	0.000	0.000
4	30	CONE G1	1	Closed	216.44	30.80	218.62	216.44	30.80	0.000	0.000	0.000
5	31	CONE G2	1	Closed	203.21	23.04	204.51	203.21	23.04	0.000	0.000	0.000

 © 2015 PowerWorld Corporation



Case Information Displays: Options Menu



- Highlight Key Fields
- Headings → Normal or Variable Names
  - Variable Names makes column headings show variable names that would appear in AUX files
- Show Grid Lines
  - Check to show grid lines between cells in the case information display
- Show Header Hints
  - When hovering mouse over the column heading, a hint appears describing the column
- Word Wrap Headings
- Default Row Height
- Highlight Row if Selected Field = YES
- Zoom Percentage → Change zoom on the active case information
- Remove Trailing Zeros → Check to not show trailing zeros
- Key Fields → Change the key field type that is being used in SUBDATA and other fields that allow different key types

 © 2015 PowerWorld Corporation

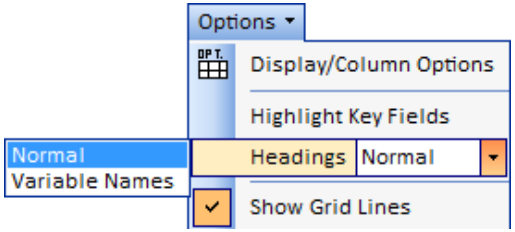
Options se Information Displays: Options Menu

- Highlight Key Fields (and Required Fields)

	Number	Name	Area Name	Nom kV	PU Volt	Volt (kV)	Angle (Deg)	Load MW	Load Mvar
1	10000	12ST_TAP	NEW MEXICO	46.00	1.00469	46.216	-58.98		
2	10004	ALCAZAR	NEW MEXICO	115.00	1.04056	119.664	-63.89		
3	10005	ALCAZAR	NEW MEXICO	12.50	0.99951	12.494	-70.14	16.12	0.51
4	10006	ALIRE_T	NEW MEXICO	46.00	0.98259	45.199	-62.76	1.92	1.58

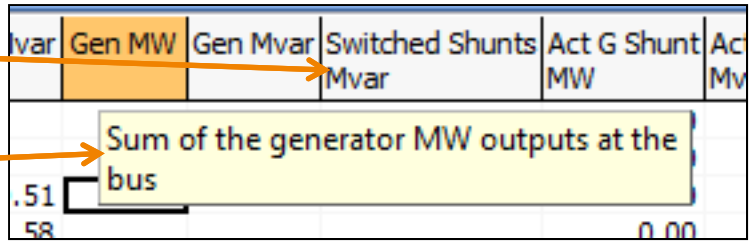
	Number	Name	Area Name	Nom kV	PU Volt	Volt (kV)	Angle (Deg)	Load MW	Load Mvar
1	10000	12ST_TAP	NEW MEXICO	46.00	1.00469	46.216	-58.98		
2	10004	ALCAZAR	NEW MEXICO	115.00	1.04056	119.664	-63.89		
3	10005	ALCAZAR	NEW MEXICO	12.50	0.99951	12.494	-70.14	16.12	0.51
4	10006	ALIRE_T	NEW MEXICO	46.00	0.98259	45.199	-62.76	1.92	1.58

- Heading: Variable Names



	BusNum(1*)	BusName (*)	AreaName	BusNomVolt(*)	BusPUVolt	BusKVVolt	BusAngle	BusLoadMW	BusLoadMVR
1	10000	12ST_TAP	NEW MEXICO	46.00	1.00469	46.216	-58.98		
2	10004	ALCAZAR	NEW MEXICO	115.00	1.04056	119.664	-63.89		
3	10005	ALCAZAR	NEW MEXICO	12.50	0.99951	12.494	-70.14	16.12	0.51
4	10006	ALIRE_T	NEW MEXICO	46.00	0.98259	45.199	-62.76	1.92	1.58

- Word Wrap Headings
- Show Header Hints
- Remove Trailing Zeros



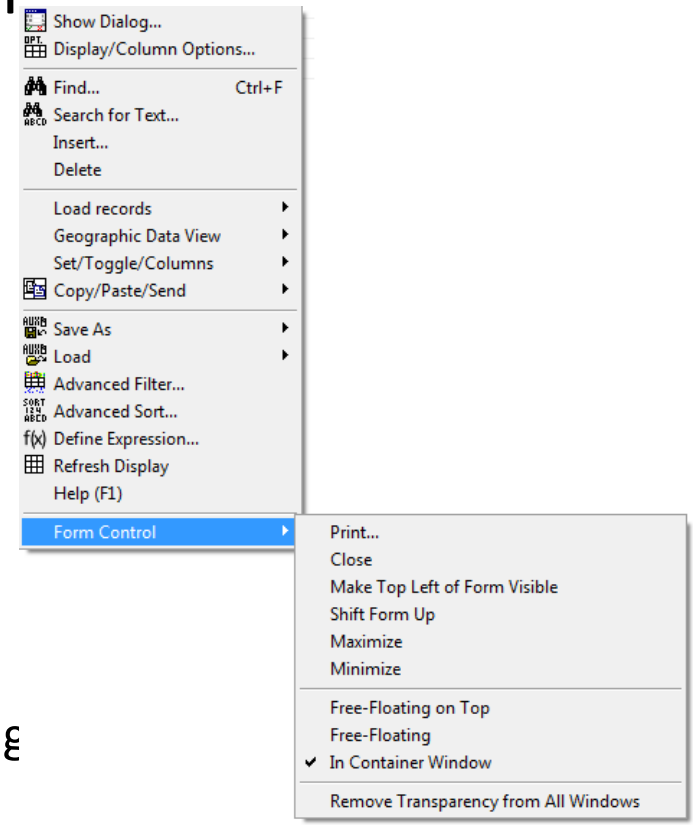
5	50774	ABF G1-2	1	Closed	2.50	0.10	0.98000	NO	YES	0.00	2.50	-2.00	2.00
6	50774	ABF G1-2	2	Closed	2.50	0.10	0.98000	NO	YES	0.00	2.50	-2.00	2.00
7	13300	ABIQUI12	1	Closed	8.00	4.52	1.01500	NO	YES	0.00	13.80	-8.30	8.30

5	50774	ABF G1-2	1	Closed	2.5	0.1	0.98	NO	YES	0	2.5	-2	2
6	50774	ABF G1-2	2	Closed	2.5	0.1	0.98	NO	YES	0	2.5	-2	2
7	13300	ABIQUI12	1	Closed	8	4.52	1.015	NO	YES	0	13.8	-8.3	8.3

© 2015 PowerWorld Corporation

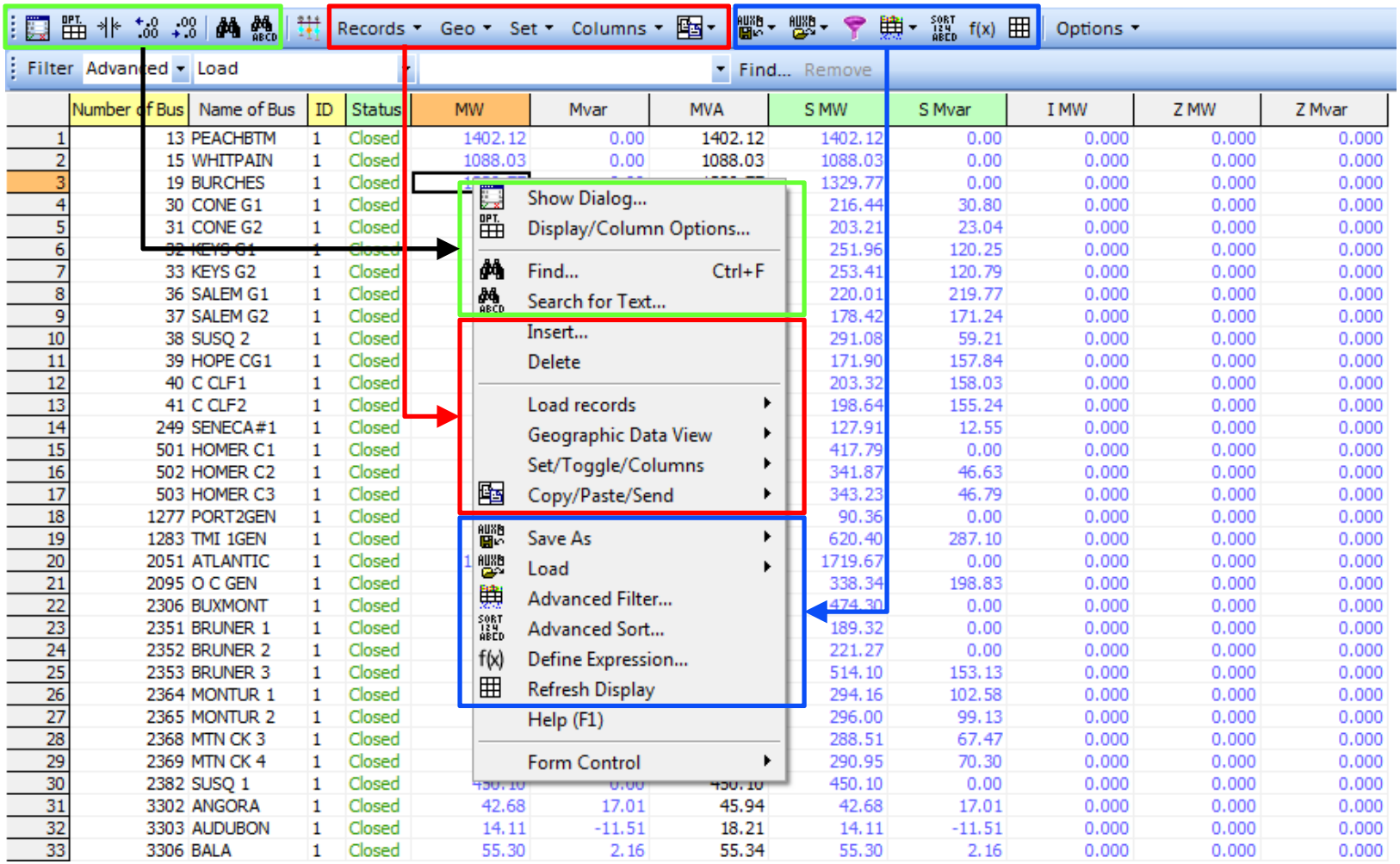
Case Information Display Local Menu

- Local menu can be opened by right-clicking on a case information display
- Most of the options and actions available are identical to the options available on the Case Information Toolbar
- Options on Local Menu not available on the Case Information Toolbar
  - Help
  - Form Control
    - Provides options for printing and showing the case information display



 © 2015 PowerWorld Corporation

Case Information Display
Local Menu



	Number of Bus	Name of Bus	ID	Status	MW	Mvar	MVA	S MW	S Mvar	I MW	Z MW	Z Mvar
1	13	PEACHBTM	1	Closed	1402.12	0.00	1402.12	1402.12	0.00	0.000	0.000	0.000
2	15	WHITPAIN	1	Closed	1088.03	0.00	1088.03	1088.03	0.00	0.000	0.000	0.000
3	19	BURCHES	1	Closed				1329.77	0.00	0.000	0.000	0.000
4	30	CONE G1	1	Closed				216.44	30.80	0.000	0.000	0.000
5	31	CONE G2	1	Closed				203.21	23.04	0.000	0.000	0.000
6	32	KEYS G1	1	Closed				251.96	120.25	0.000	0.000	0.000
7	33	KEYS G2	1	Closed				253.41	120.79	0.000	0.000	0.000
8	36	SALEM G1	1	Closed				220.01	219.77	0.000	0.000	0.000
9	37	SALEM G2	1	Closed				178.42	171.24	0.000	0.000	0.000
10	38	SUSQ 2	1	Closed				291.08	59.21	0.000	0.000	0.000
11	39	HOPE CG1	1	Closed				171.90	157.84	0.000	0.000	0.000
12	40	C CLF1	1	Closed				203.32	158.03	0.000	0.000	0.000
13	41	C CLF2	1	Closed				198.64	155.24	0.000	0.000	0.000
14	249	SENECA#1	1	Closed				127.91	12.55	0.000	0.000	0.000
15	501	HOMER C1	1	Closed				417.79	0.00	0.000	0.000	0.000
16	502	HOMER C2	1	Closed				341.87	46.63	0.000	0.000	0.000
17	503	HOMER C3	1	Closed				343.23	46.79	0.000	0.000	0.000
18	1277	PORT2GEN	1	Closed				90.36	0.00	0.000	0.000	0.000
19	1283	TMI 1GEN	1	Closed				620.40	287.10	0.000	0.000	0.000
20	2051	ATLANTIC	1	Closed				1719.67	0.00	0.000	0.000	0.000
21	2095	O C GEN	1	Closed				338.34	198.83	0.000	0.000	0.000
22	2306	BUXMONT	1	Closed				474.30	0.00	0.000	0.000	0.000
23	2351	BRUNER 1	1	Closed				189.32	0.00	0.000	0.000	0.000
24	2352	BRUNER 2	1	Closed				221.27	0.00	0.000	0.000	0.000
25	2353	BRUNER 3	1	Closed				514.10	153.13	0.000	0.000	0.000
26	2364	MONTUR 1	1	Closed				294.16	102.58	0.000	0.000	0.000
27	2365	MONTUR 2	1	Closed				296.00	99.13	0.000	0.000	0.000
28	2368	MTN CK 3	1	Closed				288.51	67.47	0.000	0.000	0.000
29	2369	MTN CK 4	1	Closed				290.95	70.30	0.000	0.000	0.000
30	2382	SUSQ 1	1	Closed				450.10	0.00	0.000	0.000	0.000
31	3302	ANGORA	1	Closed	42.68	17.01	45.94	42.68	17.01	0.000	0.000	0.000
32	3303	AUDUBON	1	Closed	14.11	-11.51	18.21	14.11	-11.51	0.000	0.000	0.000
33	3306	BALA	1	Closed	55.30	2.16	55.34	55.30	2.16	0.000	0.000	0.000

© 2015 PowerWorld Corporation

Custom Field Descriptions: Custom Floats, Integers, and String

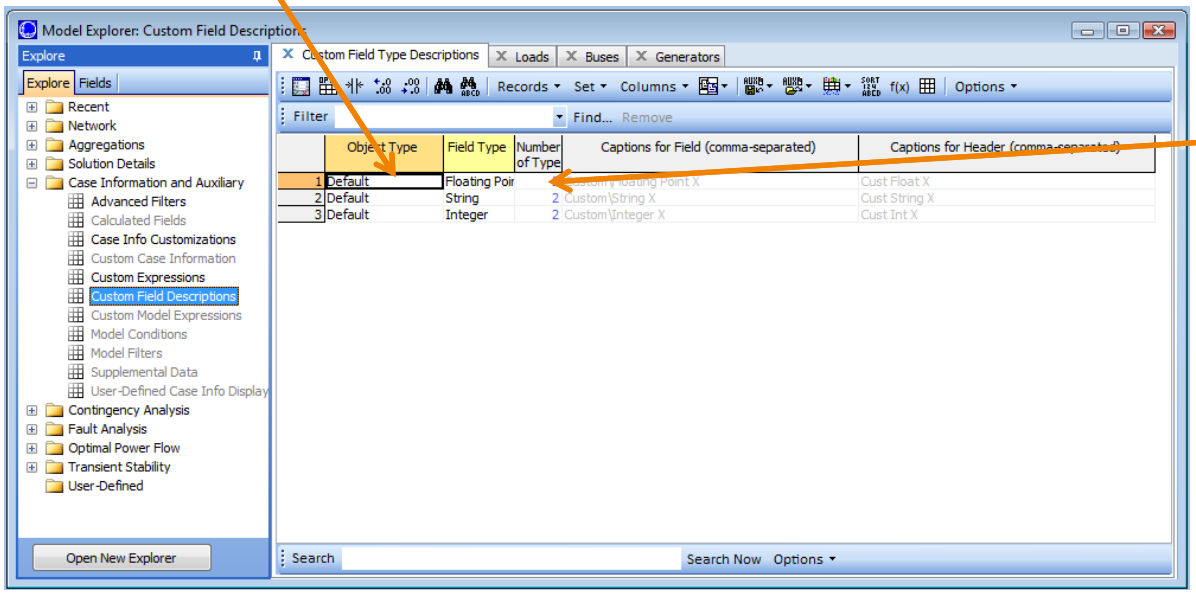
- In early versions of Simulator, the following were allowed with each object
  - 5 custom floating points
  - 5 custom strings
  - You could not give these fields their own name
- Simulator 13 and later now allows
  - Any number of floating points
  - Any number of strings
  - Any number of integers
  - You can now give these fields names
- By default, Simulator is configured to allow 2 custom floats, 2 integers, and 2 strings
  - Use Custom Field Descriptions to add more

 © 2015 PowerWorld Corporation

Custom Field Descriptions: Custom Floats, Integers, and String

- Access these definitions on the Model Explorer Explore Pane under **Case Information and Auxiliary/Custom Field Descriptions**

Default object types are always listed

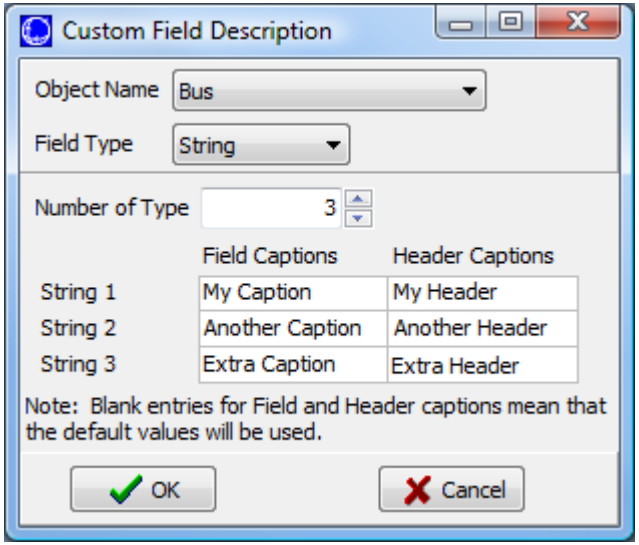


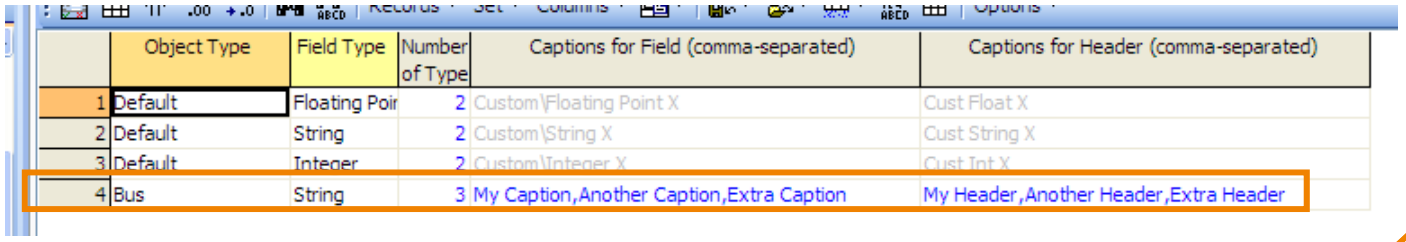
You can change the default number of fields directly here.

 © 2015 PowerWorld Corporation

Custom Field Descriptions: Custom Floats, Integers, and String

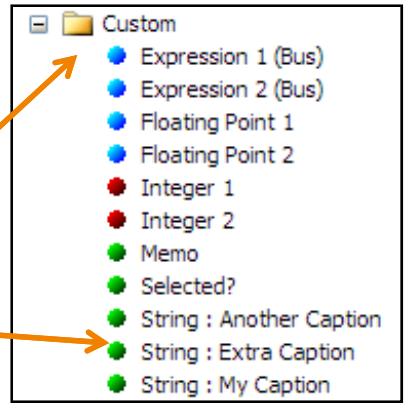
- Right-Click and choose Insert
  - Choose the Object Type
  - Choose the Field Type
  - Choose the Number of Type
  - Define Field Captions
  - Define Header Captions





	Object Type	Field Type	Number of Type	Captions for Field (comma-separated)	Captions for Header (comma-separated)
1	Default	Floating Poir	2	Custom\Floating Point X	Cust Float X
2	Default	String	2	Custom\String X	Cust String X
3	Default	Integer	2	Custom\Integer X	Cust Int X
4	Bus	String	3	My Caption,Another Caption,Extra Caption	My Header,Another Header,Extra Header

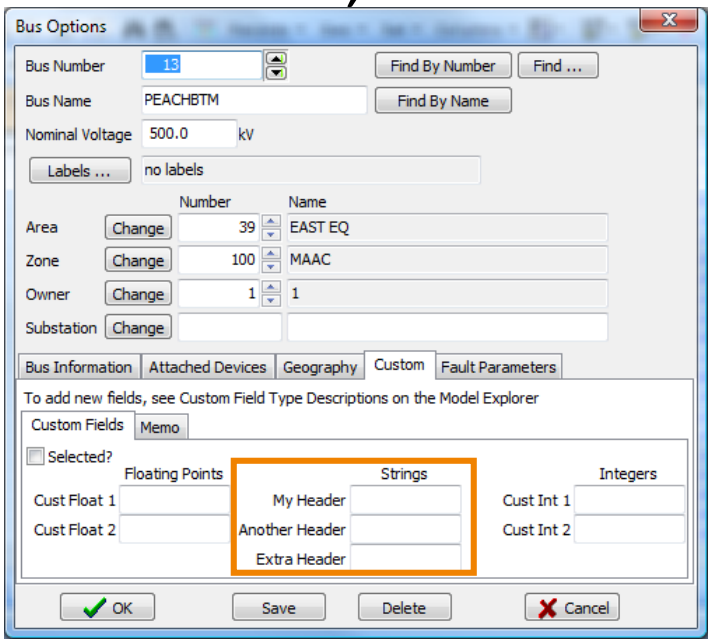
Folder View of Available Bus Fields Becomes

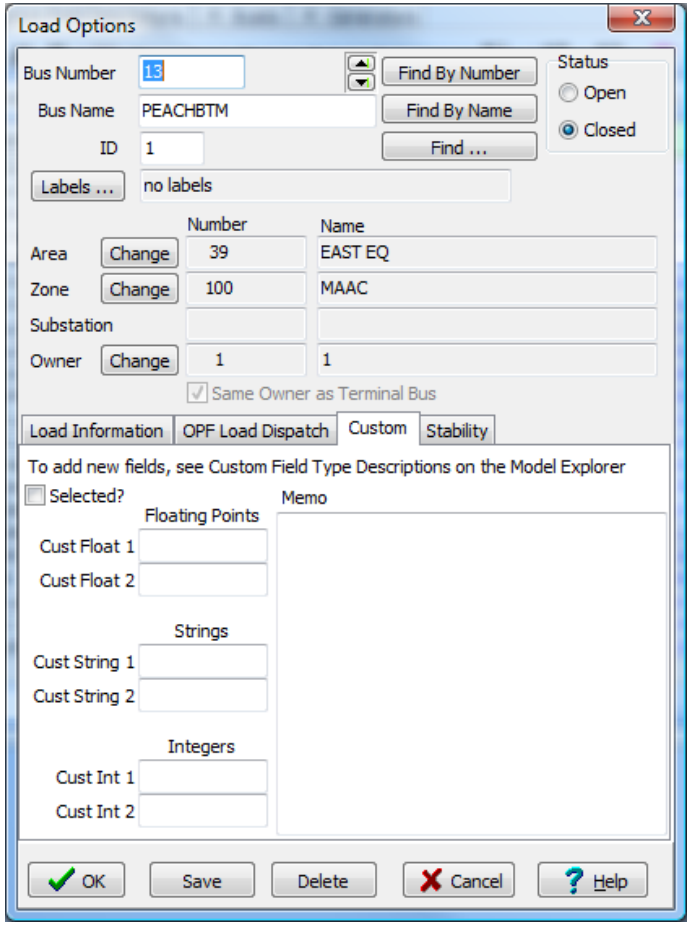


 © 2015 PowerWorld Corporation

Integration of Custom Fields into User Interface Dialogs

- Custom tab is available on information dialogs throughout
  - Access to Custom Fields, Memo, and Selected Field





 © 2015 PowerWorld Corporation

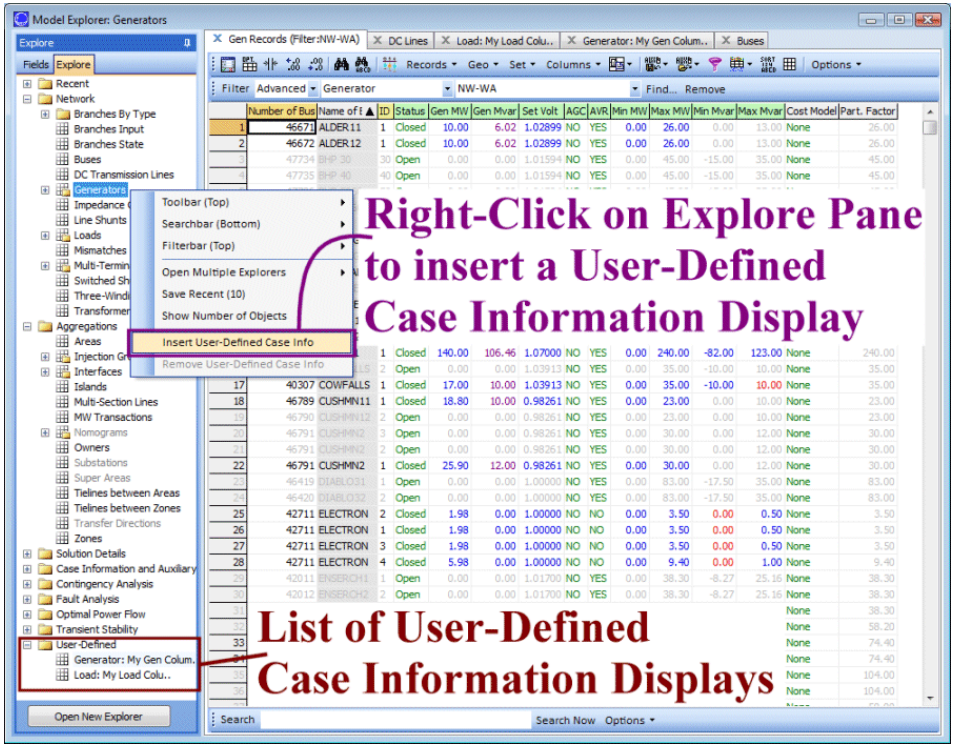
User-Defined Case Information Displays

- What's the motivation?
  - Normally, customizing the built-in case information displays is sufficient
  - However, it may be convenient to define one set of generator fields for studying voltage regulation problems and another set for MW-related studies
  - Some option settings only show up on dialogs, and this is the only access to them in the case information display format
- User-Defined Case Information Displays provide this ability
  - Allow customization of columns, filters, sorting, etc. without requiring repeated customizations
  - On user-defined case information displays, the various record-specific actions that often appear in the Records drop-down are not available

© 2015 PowerWorld Corporation

User-Defined Case Info Management

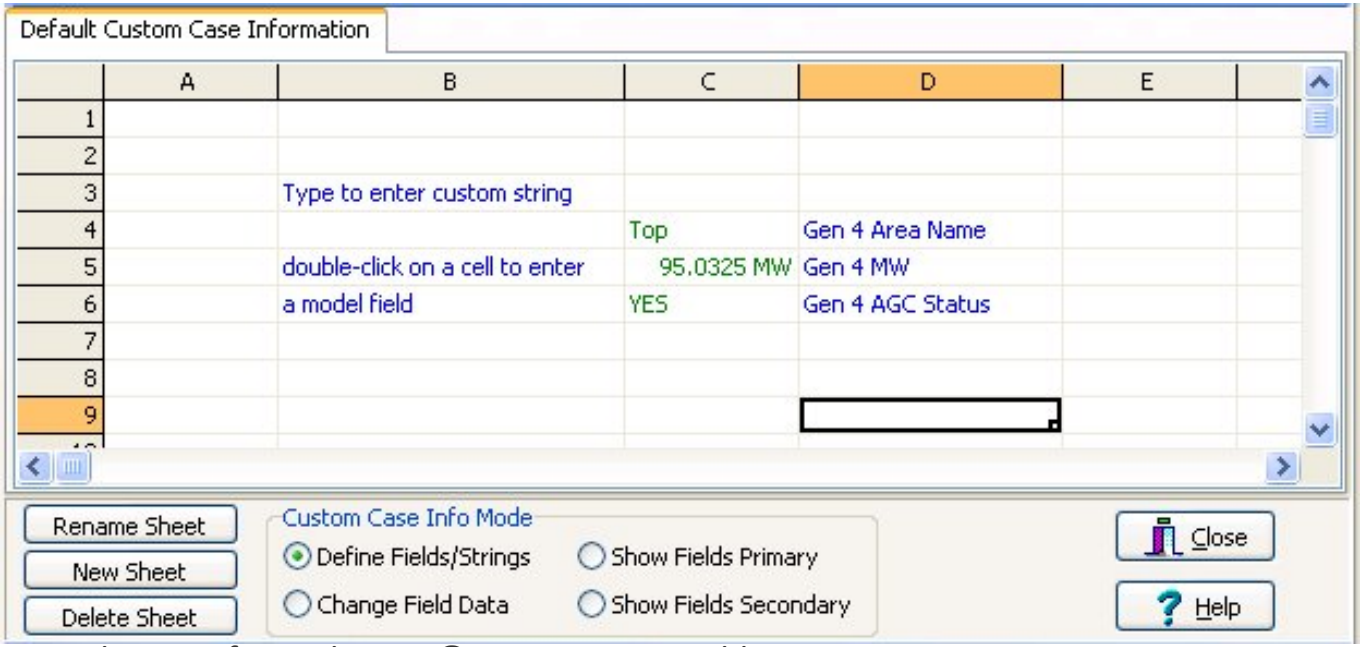
- Right-Click on Explore Pane to create User-Defined Case Infos
  - They show up under the **User-Defined** Folder of the Explore Pane
  - Customization is the same as other case info
  - Navigate to **Case Information and Auxiliary\User-Defined Case Info Displays** to save customization settings to AUX file
- User-Defined Case Infos can be made to display any object type, including various settings and options



 © 2015 PowerW

Custom Case Info Displays

- Create spreadsheet-like case info displays with any type of information of interest
- Select **Custom Case Information** from the Model Explorer



 © 2015 PowerWorld Corporation

Custom Case Info Displays

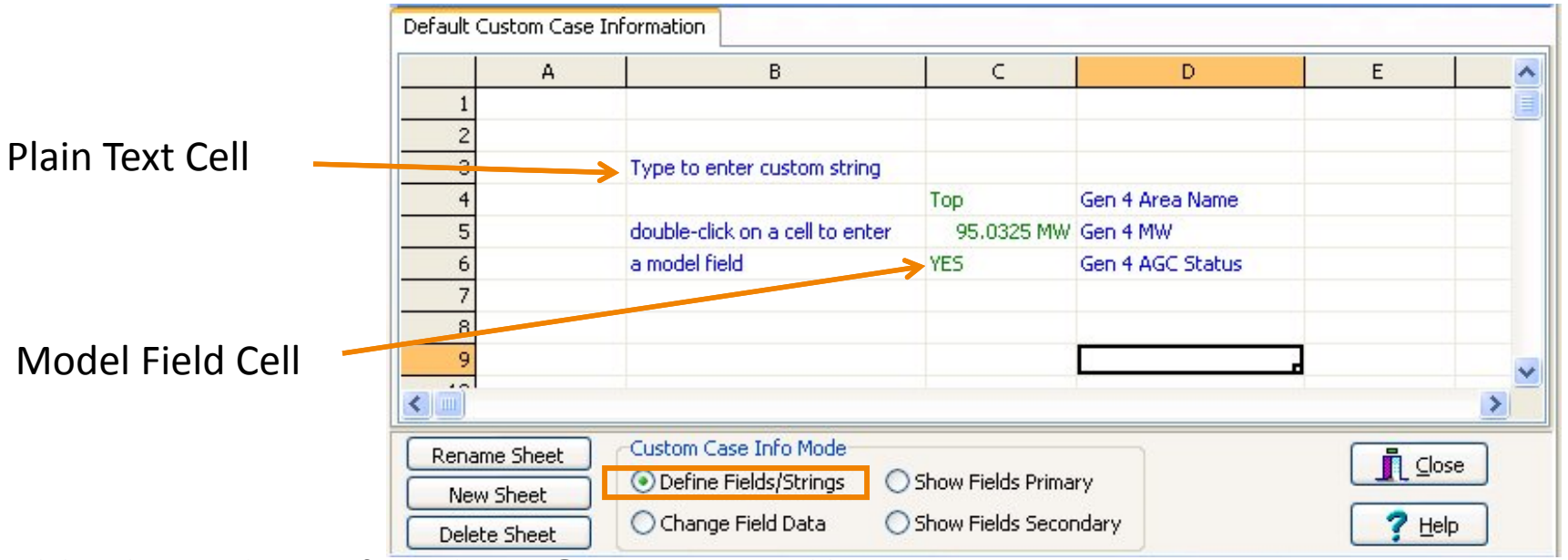
- Sheets may be added, renamed, or deleted
- Four Modes
  - Define Fields/String
  - Change Field Data
  - Show Fields Primary
  - Show Fields Secondary

- Double-click in a cell to add data from case (while in any mode except Change Field Data)

 © 2015 PowerWorld Corporation

Define Fields/String Mode

- Plain Text Cell
  - type any text or numbers in a blank cell to create a plain text cell
  - Text color matches Enterable Field Color (blue by default)
- Model Field Cell
  - Double-click on cell to open a dialog to define the model field



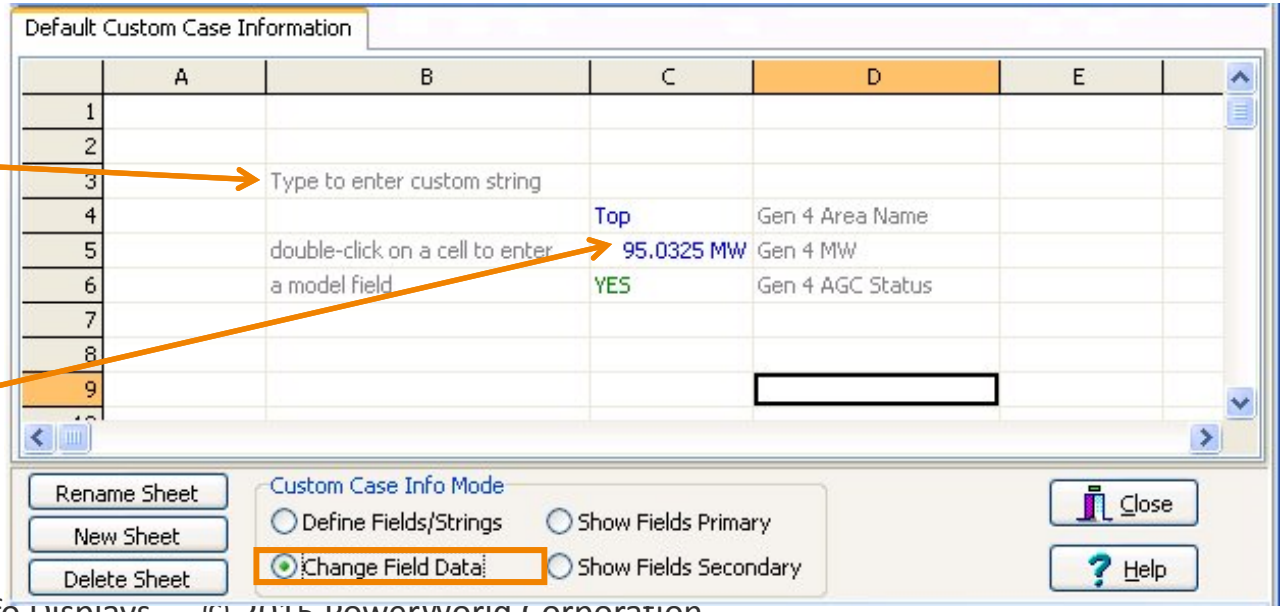
 © 2015 PowerWorld Corporation

Change Field Data Mode

- Blank Cell and Plain Text Cell
  - May not be edited
  - Text color matches Field Not Presently Used Color (gray by default)
- Model Field Cell: behaves according to the field it represents (read-only, enterable, toggleable)

Plain Text Cell

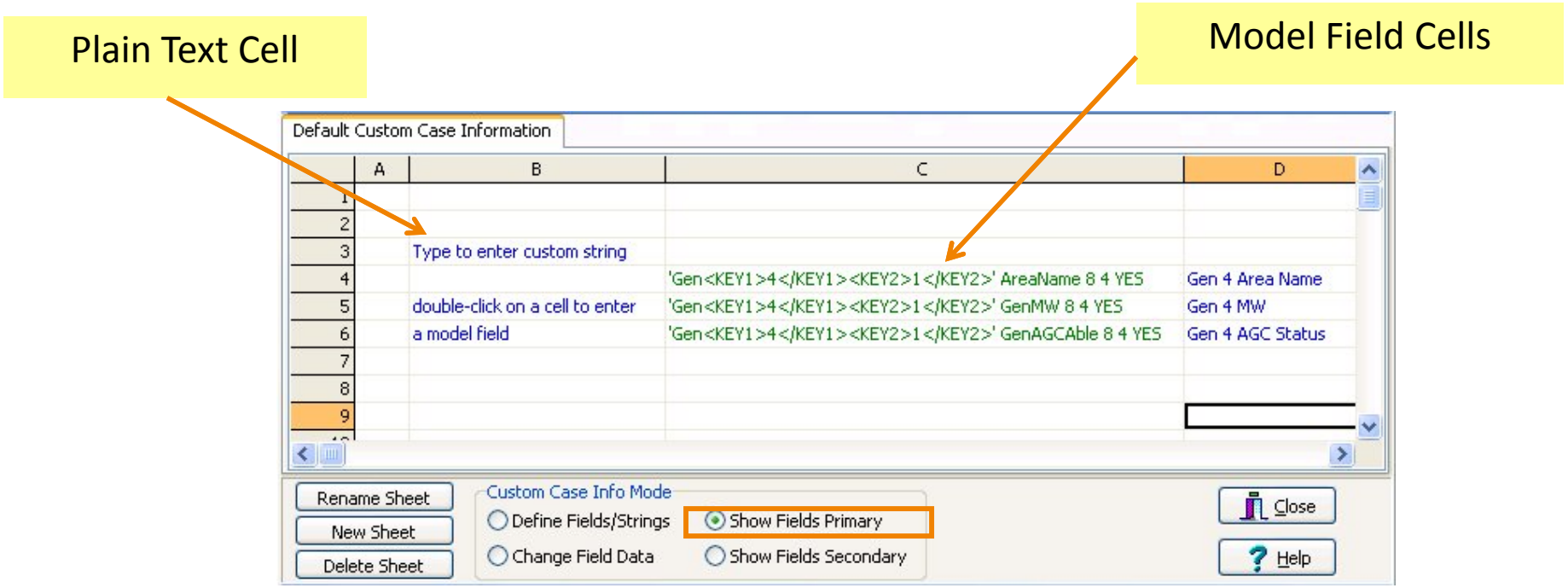
Model Field Cells



© 2015 PowerWorld Corporation

Show Fields Primary Mode

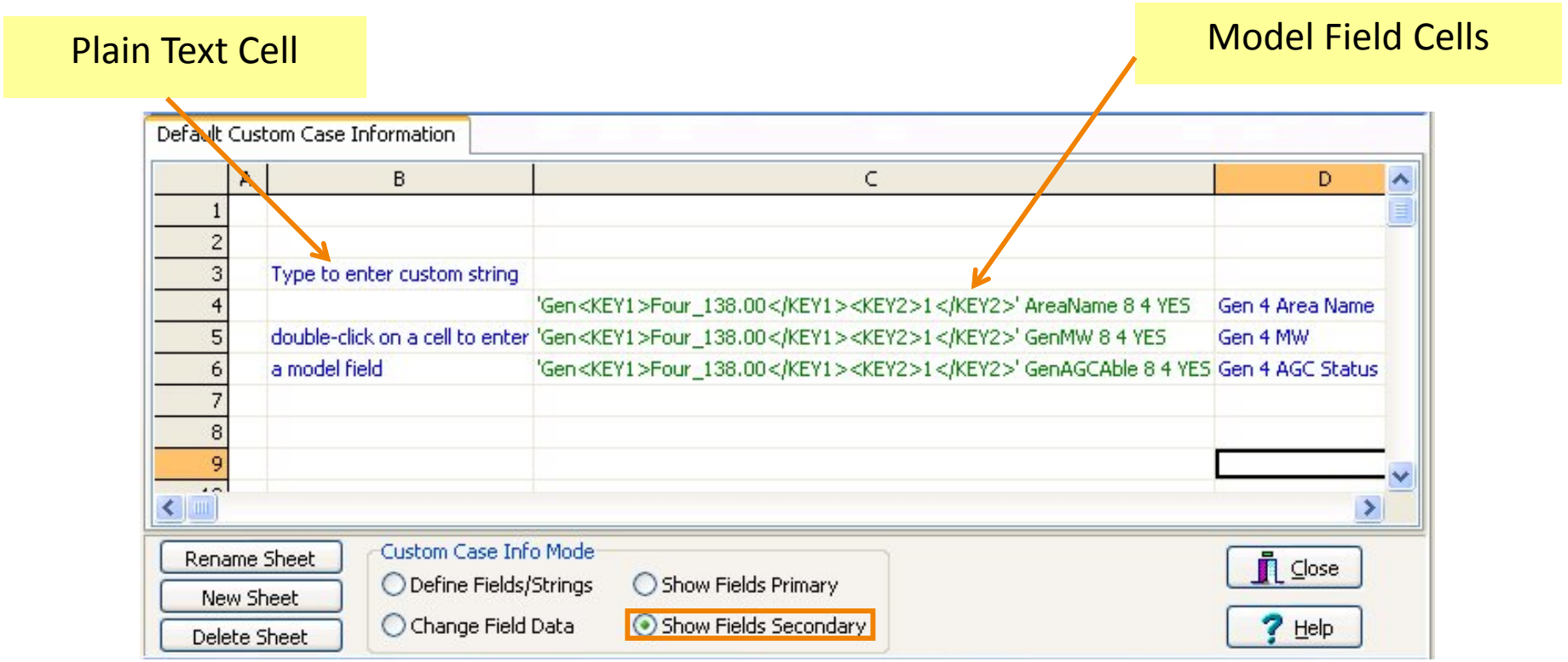
- Blank Cell and Plain Text Cell
  - Behave the same as in Define Fields/Strings Mode
- Model Field Cell
  - display string representation of Model Field link



 © 2015 PowerWorld Corporation

Show Fields Secondary Mode

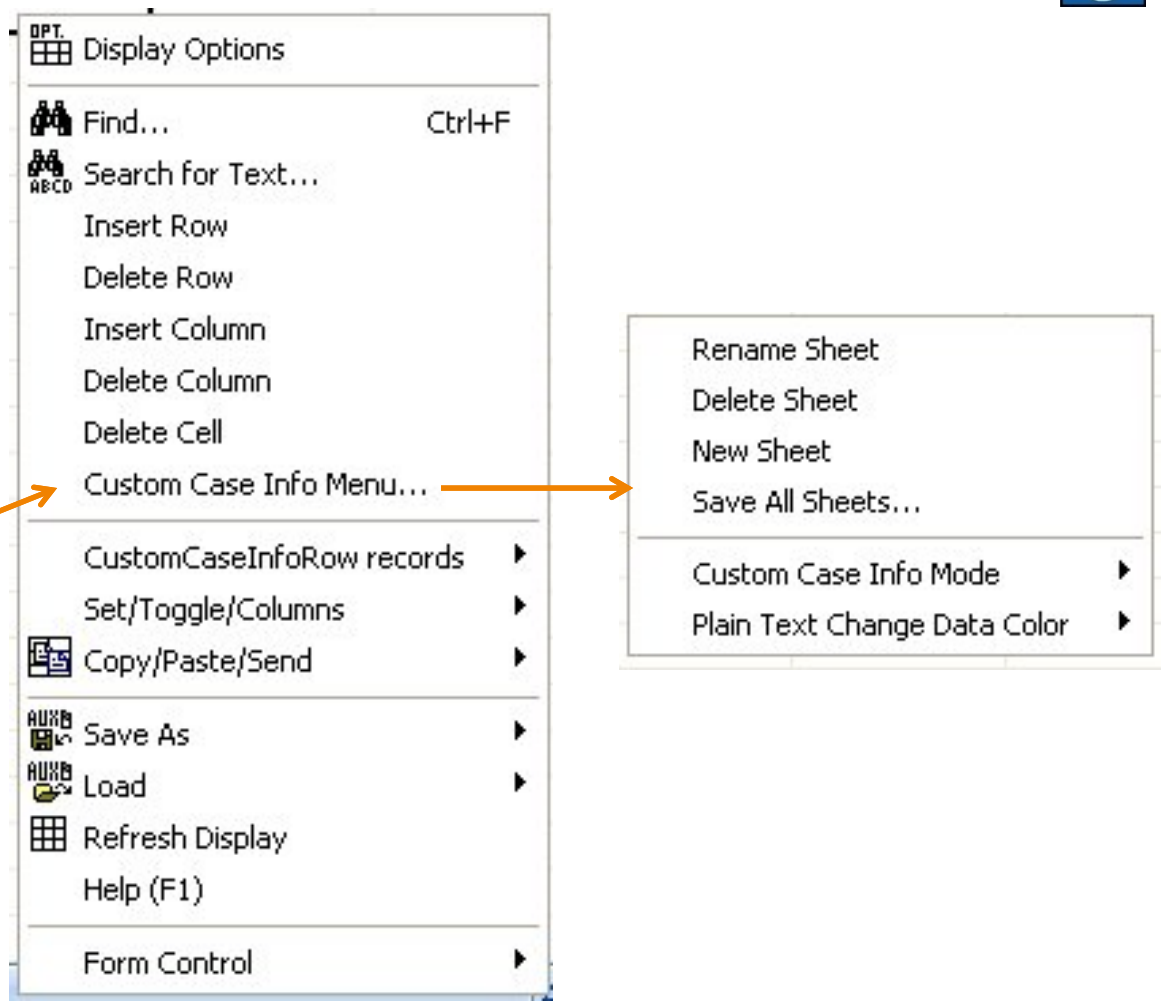
- Similar to the Show Fields Primary Mode, except Model Field string uses secondary field representation (e.g. Name and Nom_kV for bus)



 © 2015 PowerWorld Corporation

Custom Case Info Display

- Local Menu
  - Contains "spreadsheet-like" commands for manipulating cells and workbooks
- Custom Case Info Menu
  - Switch mode or change appearance of display



 © 2015 PowerWorld Corporation