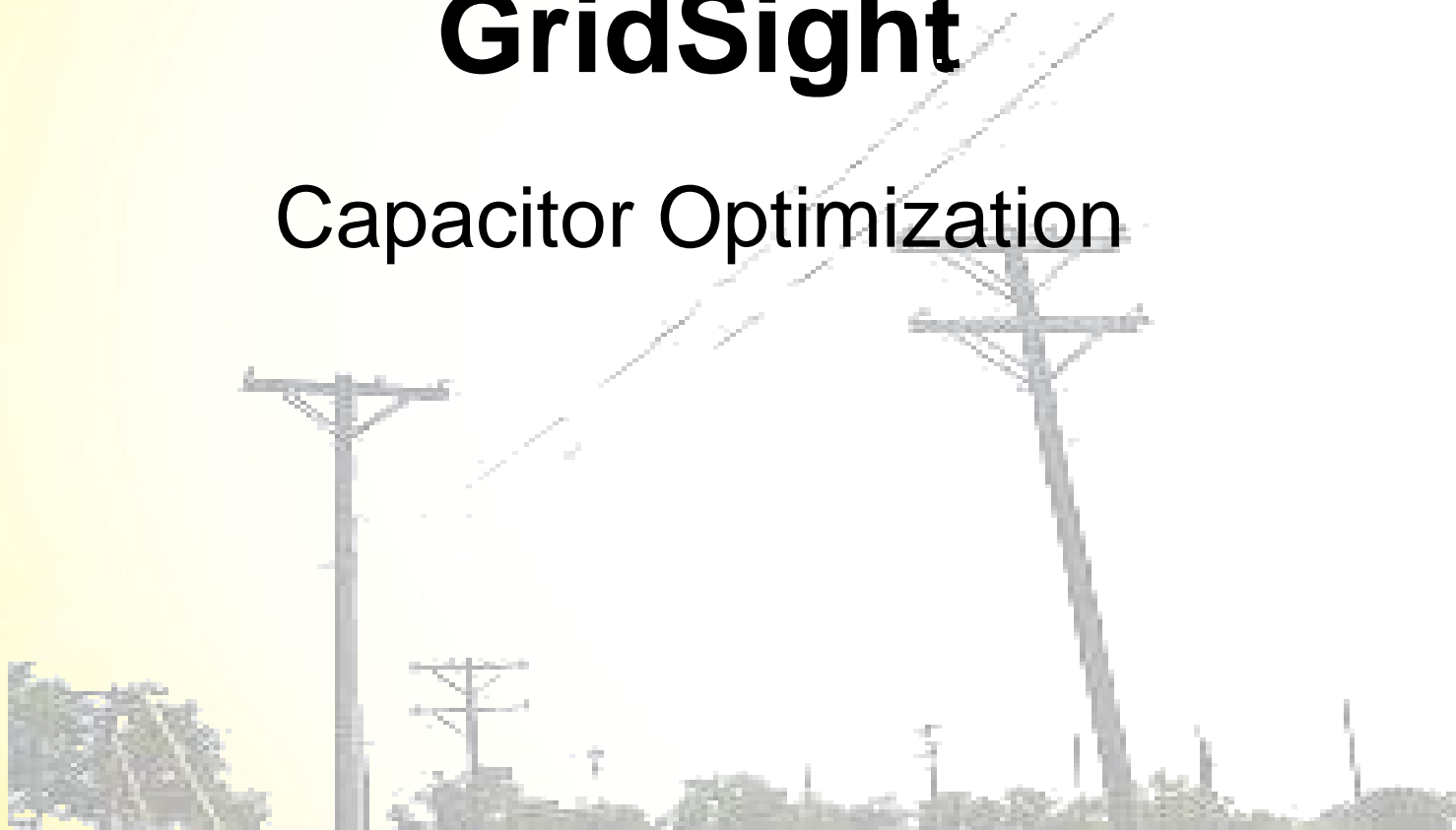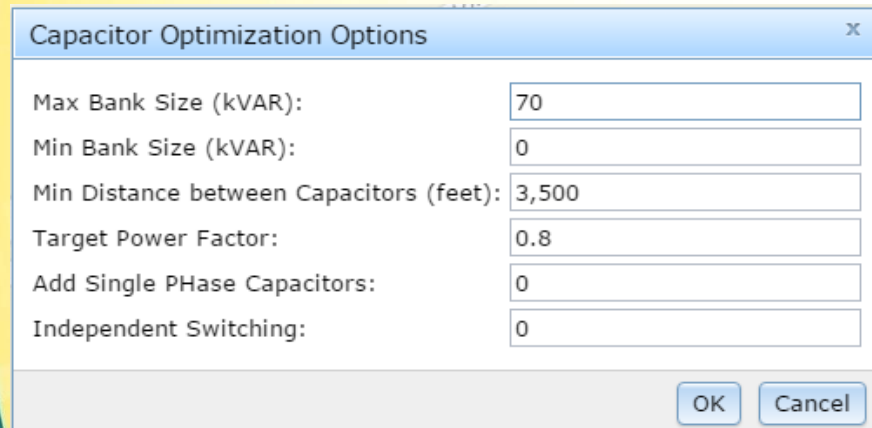# GridSight

Capacitor Optimization

Performing Capacitor Optimization study

In order to perform a Capacitor Optimization Study, take the following steps:
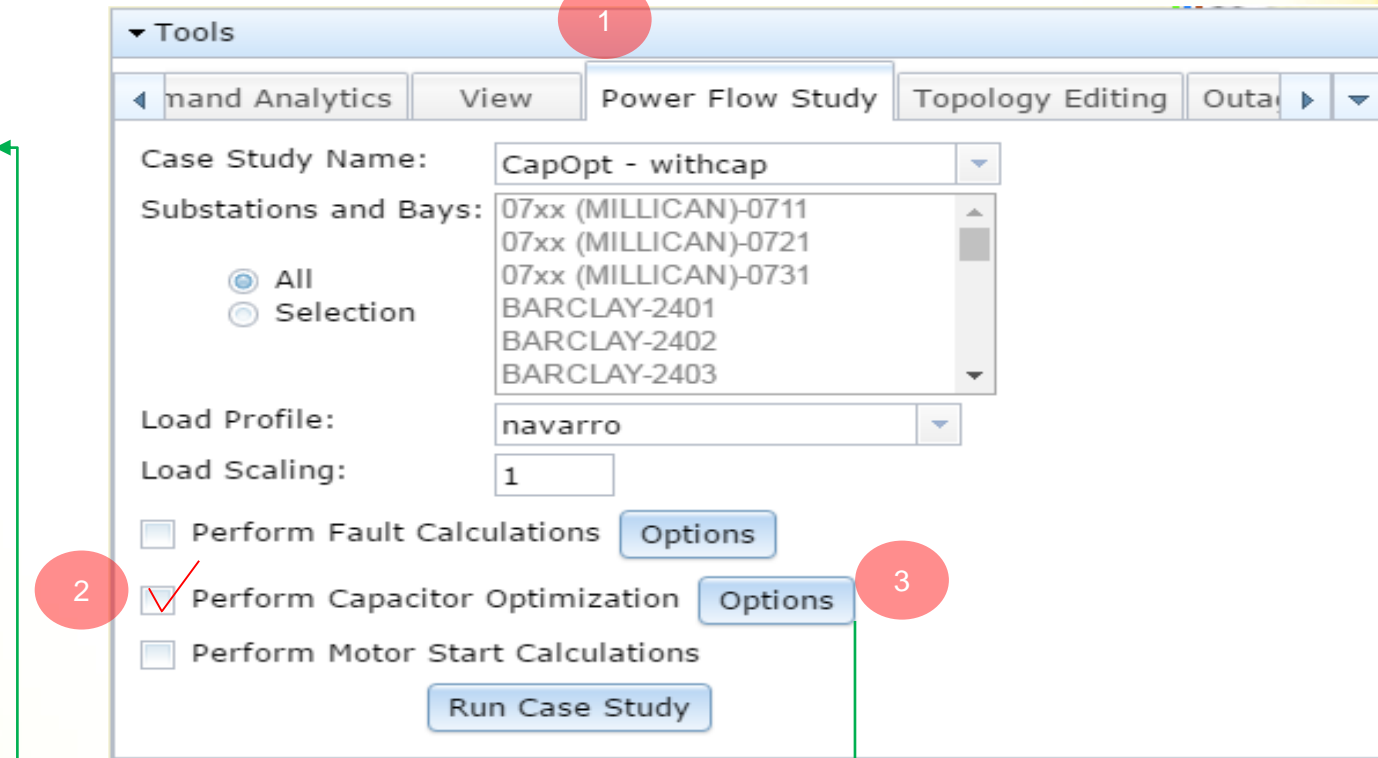
1. Go to Tools / Power Flow Study
2. Check the Perform Capacitor Optimization
3. Click on Options

Performing Capacitor Optimization study-cont'd

4. Enter the maximum capacitor bank size (kvar) in Max Bank Size (kVAR).
5. Enter the minimum capacitor bank size (kvar) in Min Bank Size (kVAR).
6. Enter the minimum distance between the capacitors for capacitor optimization in Min Distance between Capacitors(feet).
7. Enter the target power factor at feeder head (usually set to 0.8) in Target Power Factor.
8. Set Add Single Phase Capacitors to '1' if capacitors can be allocated on a single basis.
9. Set Independent Switchable to '1' if the capacitors are to be inserted as switchable.

Capacitor Optimization Options

Max Bank Size (kVAR):	70
Min Bank Size (kVAR):	0
Min Distance between Capacitors (feet):	3,500
Target Power Factor:	0.8
Add Single PHase Capacitors:	0
Independent Switching:	0

OK   Cancel

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Results of Capacitor Optimization study

In order to see the recommended capacitor placement, take the following steps:

1. Click on Run Case Study

2. Open Messages dialog box and all the information about the location of the issues, where the capacitors need to be inserted and their properties such as bank size and phase appear.
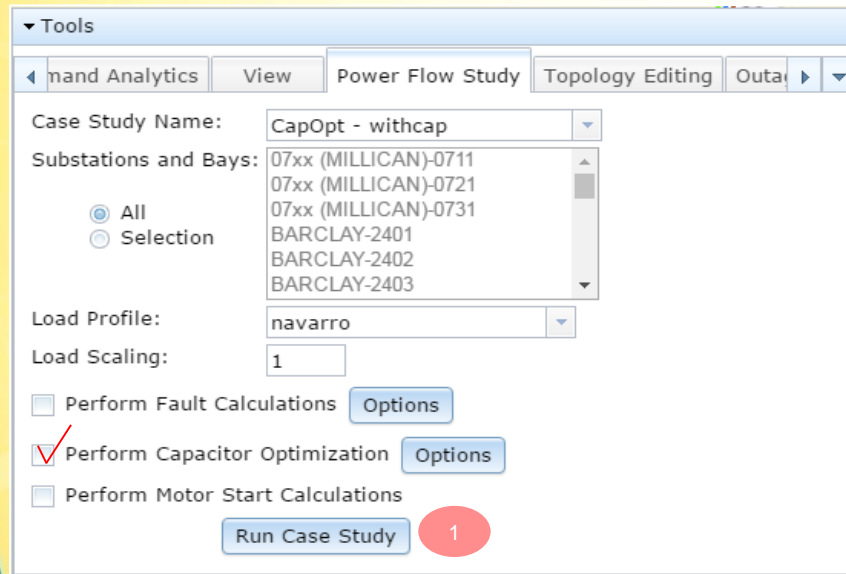
For each recommended capacitor, it's phase and it's size are indicated in Messages dialog. In addition, the location that the capacitor should be inserted is indicated.

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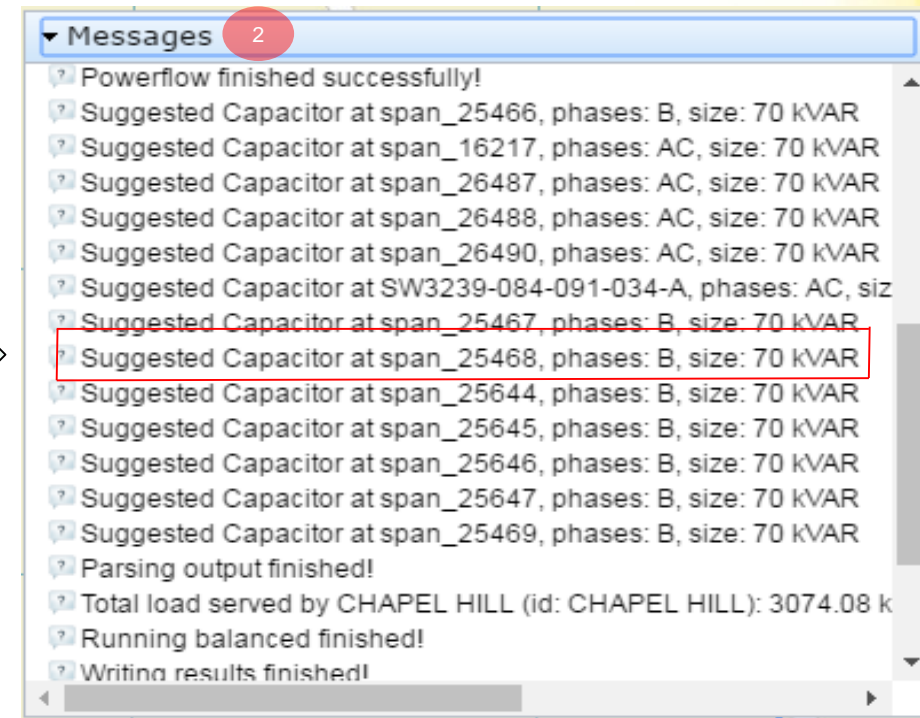
Evaluating the performed capacitor placement

In order to see results and compare the before/after voltage drops, take the following steps:

1. Go to Analysis
2. Choose the Case Study Name that you have performed (before or after) and enter appropriate values in Voltage Deviation Thr. and Thermal Thr.(%).
3. Choose between Voltage issues and Thermal issues
4. Click on Refresh Results to update the latest study.
5. Choose between Chart results and Report results.
6. Click on Show Current Analysis Report.

❖ By choosing the Chart results, a chart appears below the same window and indicates voltage or thermal issues. The user be guided to the issue location on the model by clicking on the issue on the chart.

The user can also choose the phase or phases for which the chart shows the results

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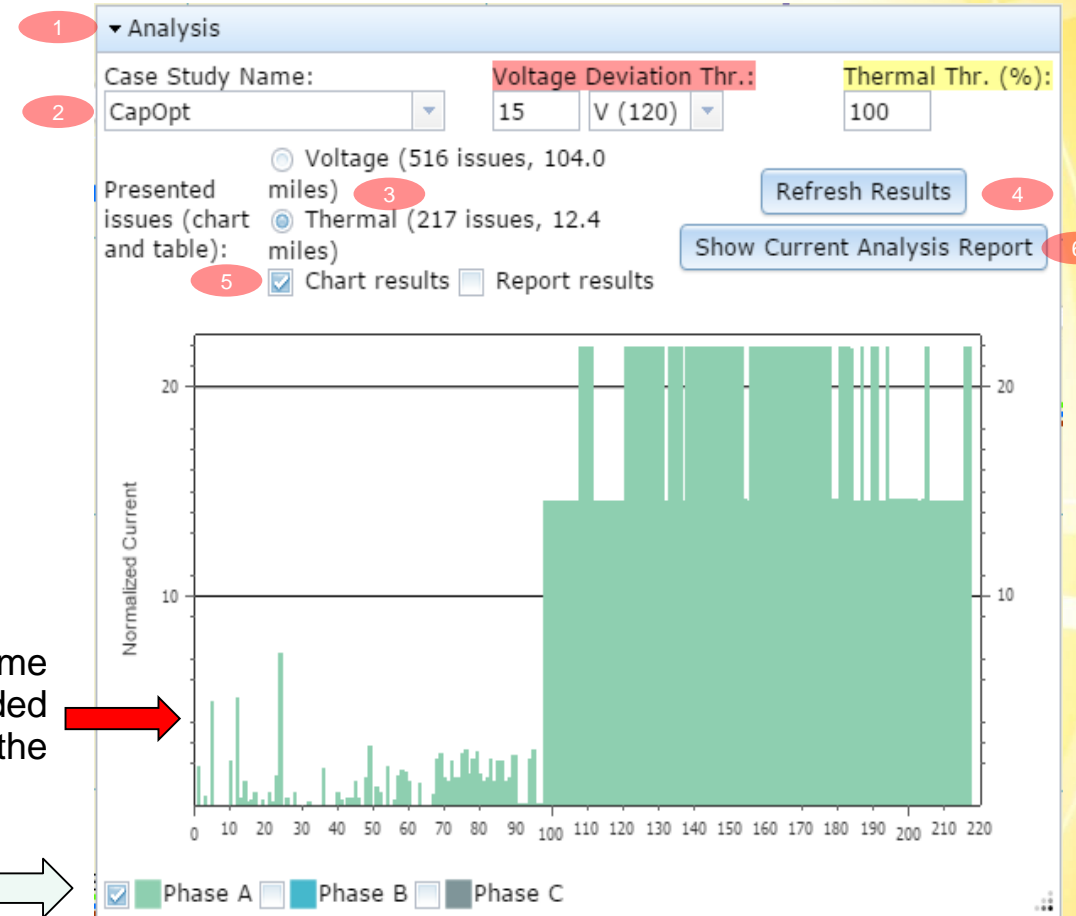
Evaluating the performed capacitor placement-cont'd

❖ By choosing the Report Results and then clicking on Show Current Analysis Report , a new tab opens and shows the issues in a report.

Section	Feeder	Parent	Equipment	Length (mi)	Nominal (kV)	V drop (120V base)			Rating	Current Loading (%)			Current (A)			Loading (kW)			Power Factor			Losses (l	
						A	B	C		A	B	C	A	B	C	A	B	C	A	B	C	A	B
N292EEE3	CHINA SPRINGS-1202	N4C9CBE	Fuse T 7.2KV 10AMP	NA	7.2	1.8			10	177			17.7			107.2			0.84				
N1E92BEC	BOSQUE-2401	N373B	Fuse T 7.2KV 10AMP	NA	7.2		1.8		10		111			11.1			67.0			0.85			
N20896DA	LEON JUNCTION-2401	N20896D3	Recloser E 14.4KV 25AMP	NA	14.4	2.9		5.7	25	41		153	10.2		38.4	122.7		448.2	0.84		0.84		
N3D4934D	CRAWFORD-2401	N45000F	Recloser E 14.4KV 15AMP	NA	14.4			22.3	15			229			34.4			343.9			0.85		
NA966F2	CRAWFORD-2402	NA4BF31	Fuse T 0.0KV 10AMP	NA	14.4	5.2	4.3	7.7	10	493	254	629	49.3	25.4	62.9	587.9	338.6	732.8	0.86	0.96	0.86		
N2A0FCF8	LEON JUNCTION-2401	N23845F9	Recloser E 14.4KV 15AMP	NA	14.4			8.8	15			145			21.7			246.8			0.85		
N1E9316D	BOSQUE-2401	N4FD120	Fuse T 7.2KV 10AMP	NA	7.2		2.6		10		189			18.9			113.5			0.85			
N4231CD9	MOFFAT-1202	N4231CD1	Recloser H 7.2KV 25AMP	NA	7.2		6.1		25		105			26.3			152.8			0.85			
N2197370	LORENA-2402	N21BFC4	Fuse T 14.4KV 10AMP	NA	14.4		0.5		10		104			10.4			127.8			0.85			
S3CCA8D3	PETTIBONE-1201	S2FB88E6	7.2KV 100 AMP	NA	7.2	30.8		5.9	100	206		46	206.7		46.9	953.7		276.3	0.86		0.85	0.0	
N1C06065	CAYOTE-1201	N17E1F40	Recloser H 7.2KV 25AMP	NA	7.2			18.0	25			154			38.5			200.7			0.85		

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Exporting the Results of a Capacitor Optimization study

In order to export the results in a report for further study, take the following steps:

1. Go to Tools / Reporting
2. Choose Case Study Name. It might be Capacitor Optimization report before adding the capacitors (CapOpt) , or Capacitor Optimization report after adding them (CapOpt-withcap).
3. Select the same Substations and Bays for the study.
4. Click on Generate Report File.
5. Go to Messages dialog and a link appears for opening the report. Click on the link and a new tab in your browser opens showing the report.
   ❖ By having both of the reports (before and after the capacitor placement) the user can compare the situations and check if the placement is good enough.

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