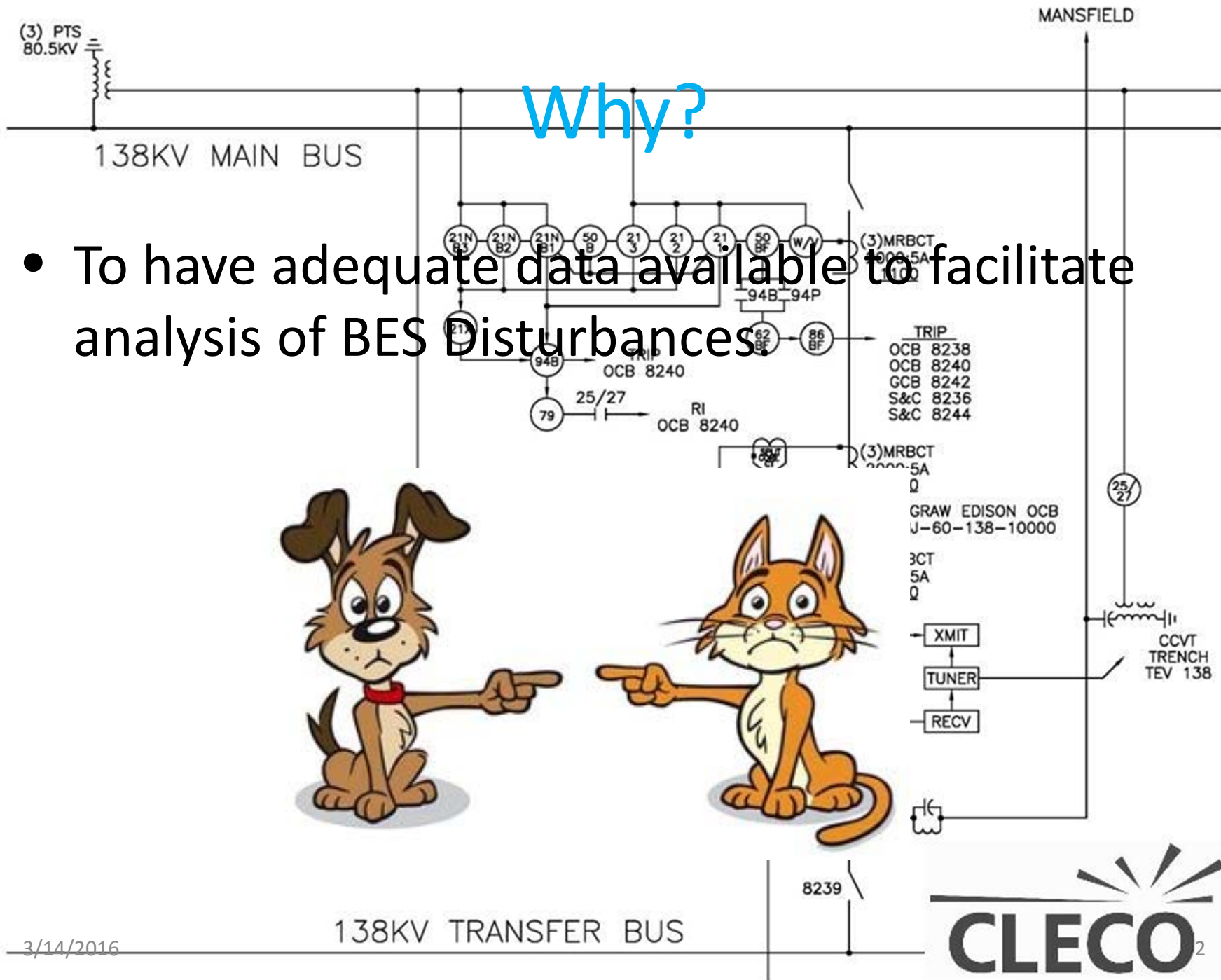


PRC-002 Locations

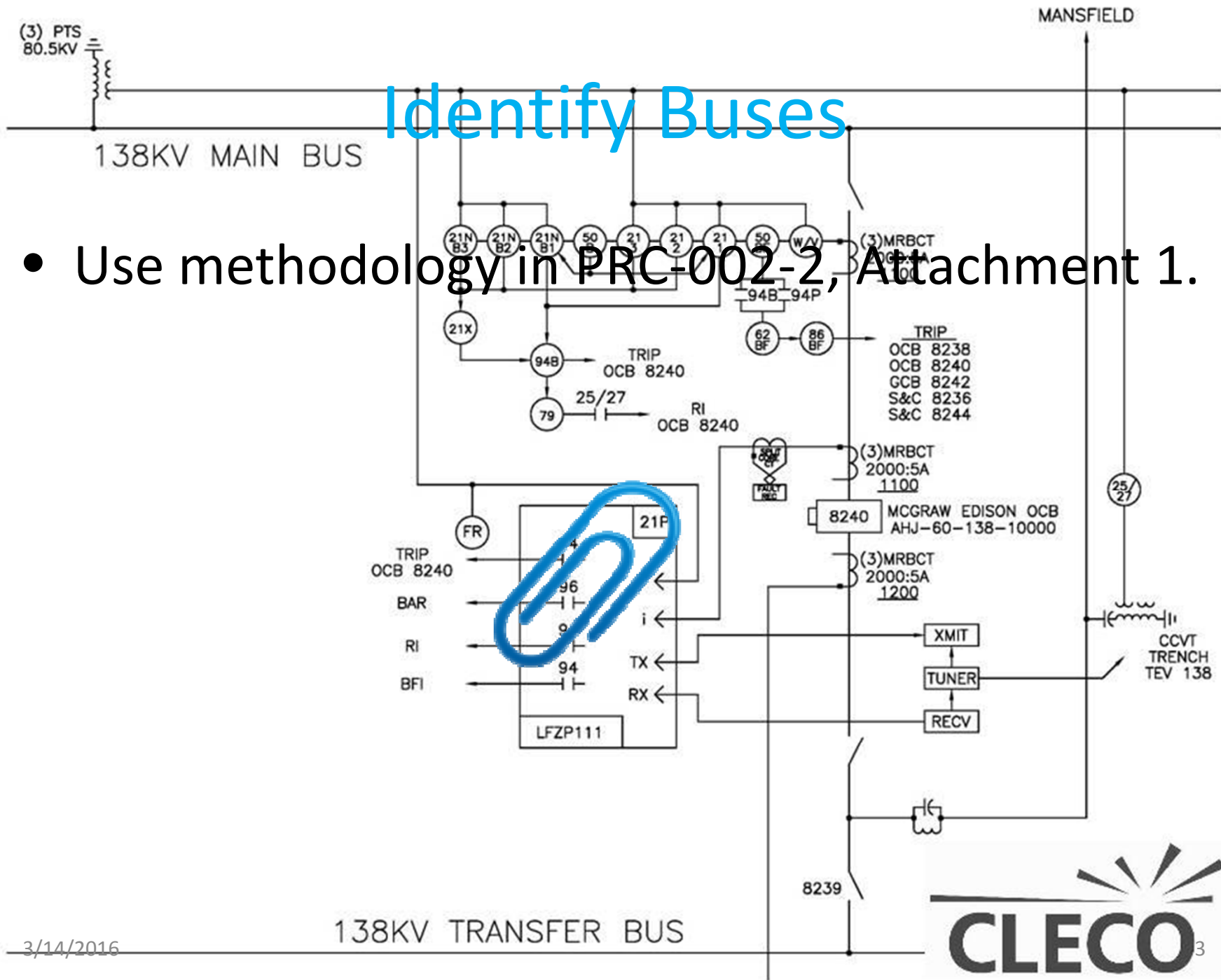
Disturbance Monitoring and Reporting Requirements going into effect on July 1, 2016



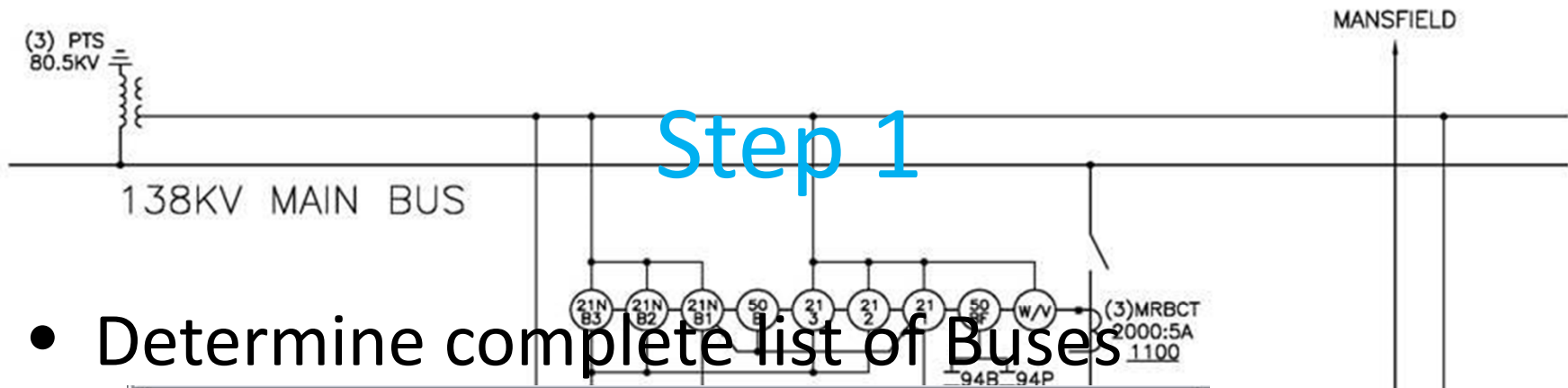


- To have adequate data available to facilitate analysis of BES Disturbances





- Use methodology in PRC-002-2, Attachment 1.



- Determine complete list of Buses

2016-03-09_Bus Summary [Read-Only]

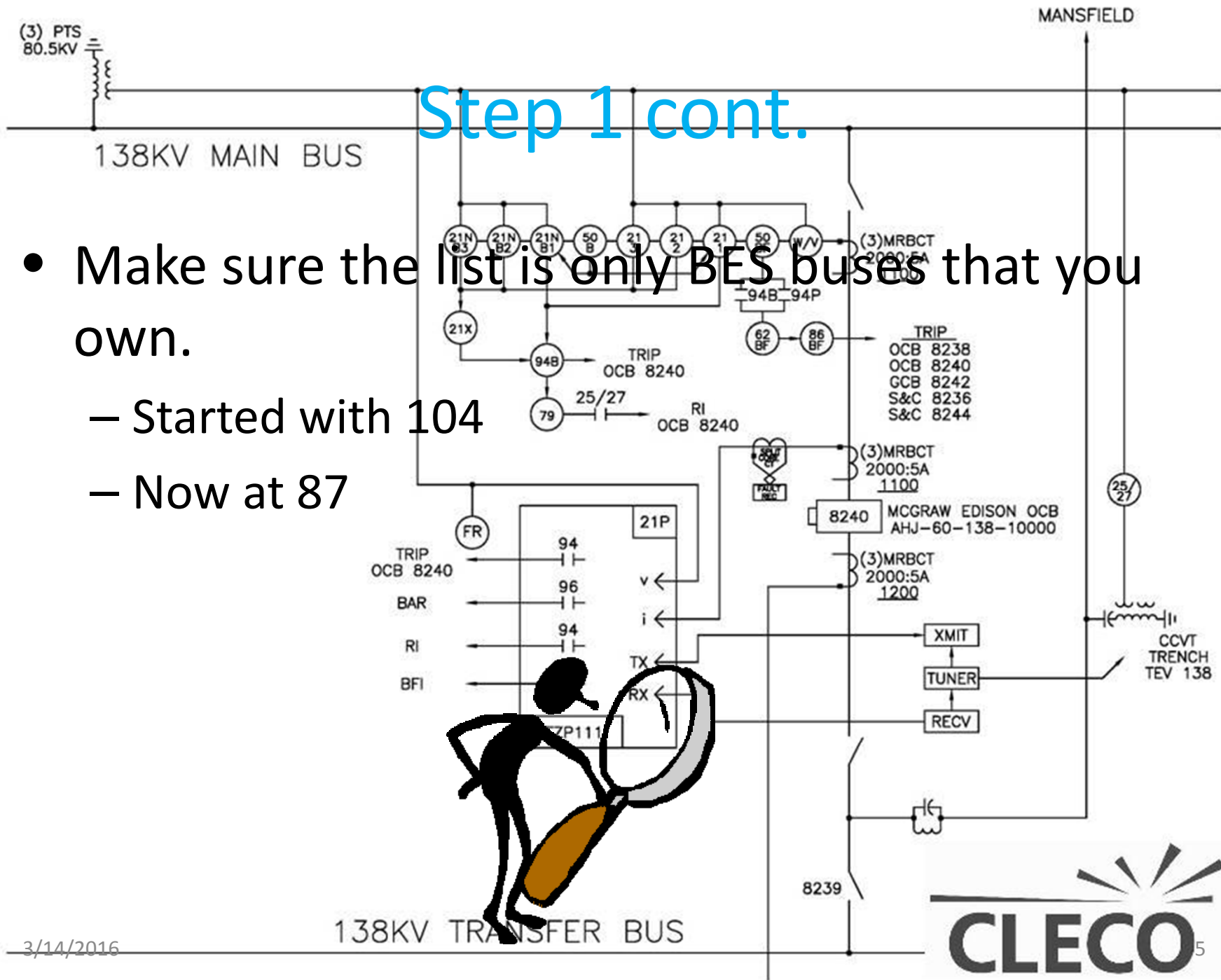
	A	B	C	D	E	F	G
1							
2	NO	BUS	KV	3Φ AMPS	MVA	# of Buses	
3	500770	RODEM	230	28291.9	11,270.69	1	
4	500941	WELLS	230	27208.6	10,839.14	2	
5	0	LAYFIELD6b	500	11977.5	10,372.82	3	
6	509366	LAYFIELD6	500	11901.2	10,306.74	4	
7	335366	RICHARD	138	39949.4	9,548.83	5	
8	335369	4ACADIA	138	39363.6	9,408.81	6	
9	500020	CLECO-ACADIA	138	37903.1	9,059.71	7	
10	0	RICH-0001	138	37887.3	9,055.94	8	
11	500190	COCODR	230	22728.6	9,054.43	9	
12	0	RORK138	138	36860.6	8,810.53	10	
13	500765	RORK230	230	20577.9	8,197.65	11	
14	0	COUGH WEST	138	32111.9	7,675.48	12	
15	0	COUGH_A2	138	32111	7,675.27	13	
16	0	COUGH_A1	138	32088.4	7,669.87	14	
17	500230	COUGH EAST	138	32082.5	7,668.46	15	
18	500760	RAPIDS	230	18655.8	7,431.94	16	
19	500790	SHERWD	230	16858.4	6,715.91	17	
20	500880	VILPLT	230	16621.2	6,621.42	18	
21	500776	SELLERS RD	230	16467	6,559.99	19	
22	500465	LAYFIELD4	230	15744.5	6,272.16	20	

W EDISON OCB
0-138-10000

MIT
↑
INER
↑
ECV

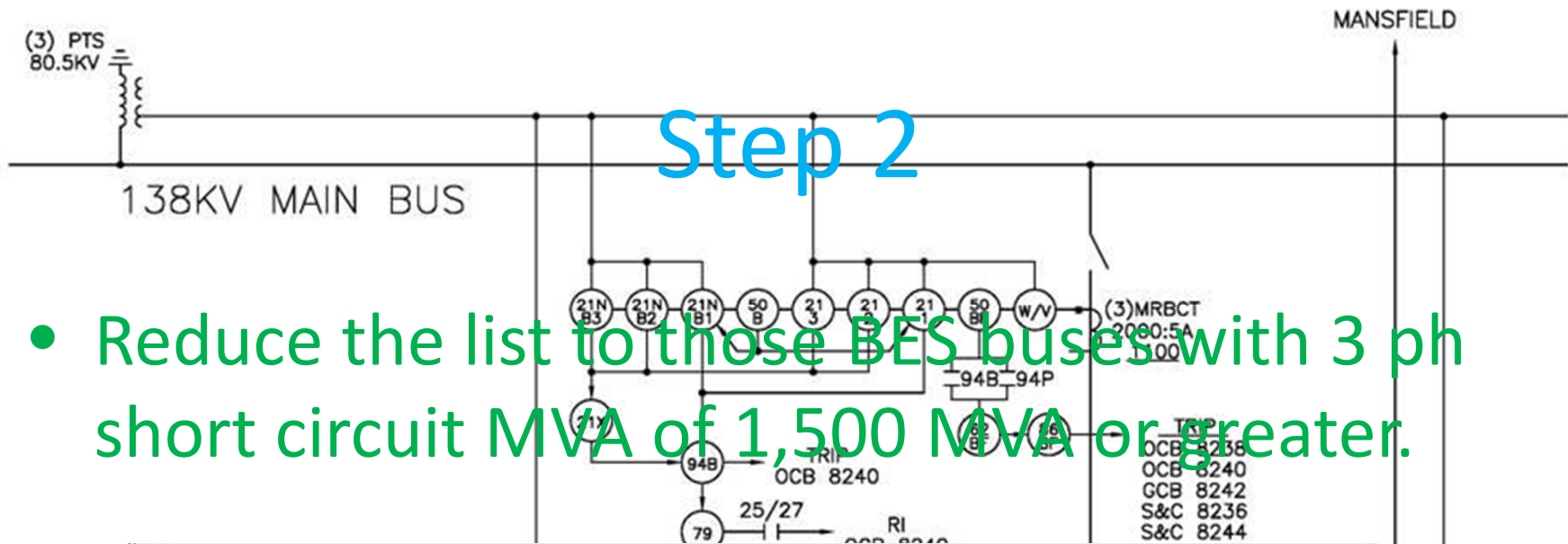
CCVT
TRENCH
TEV 138





Step 1 cont.

- Make sure the list is only BES buses that you own.
 - Started with 104
 - Now at 87



Step 2

- Reduce the list to those BES buses with 3 ph short circuit MVA of 1,500 MVA or greater.

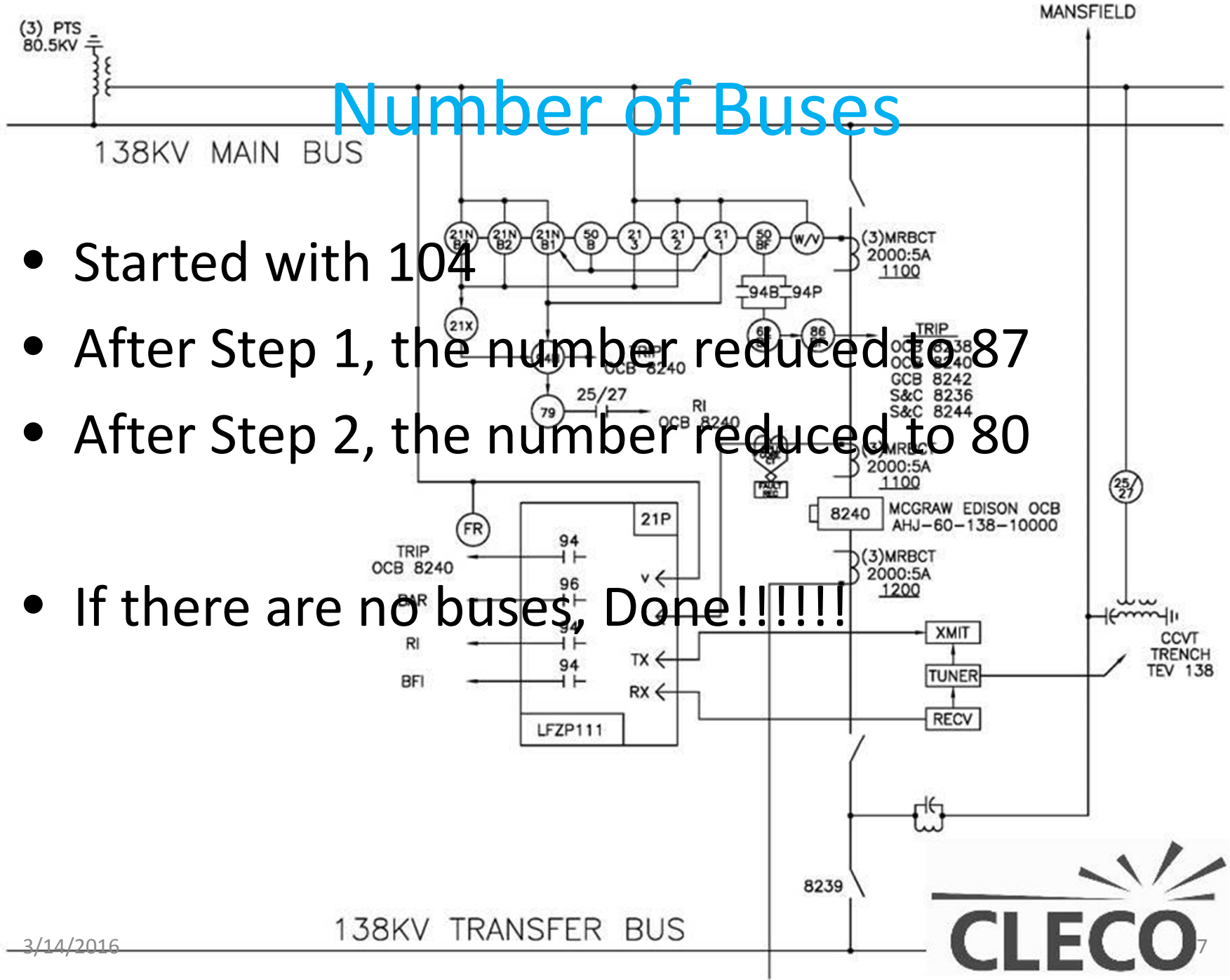
2016-03-09_Bus Summary [Read-Only]

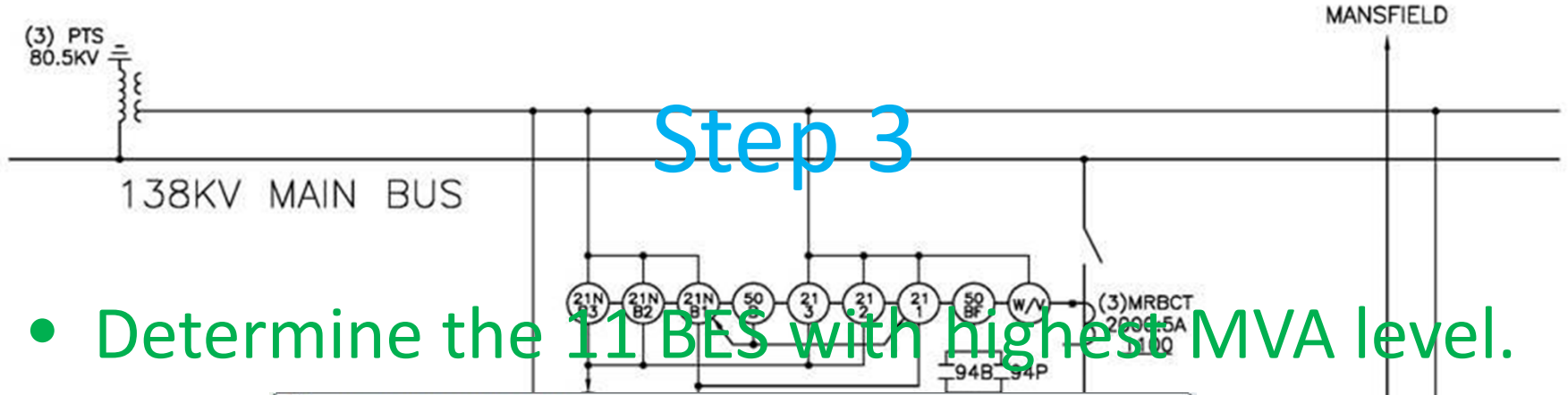
	A	B	C	D	E	F	G
1							
2	NO	BUS	KV	3Φ AMPS	MVA		# of Buses
81	500900	WSTBAY	138	6625.3	1,583.60		79
82	500350	FRANKLIN3	115	7877.8	1,569.15		80
83	500530	MANFLD	138	6099.9	1,458.02		81
84	500070	PART	138	5689.3	1,359.87		82
85	500180	CLRNCE	138	4297	1,027.08		83
86	500430	I.P.	138	3339.1	798.12		84
87	500930	WFORK	138	3169.1	757.49		85
88	500960	YBAYOU	138	3065.4	732.70		86
89	500380	GUIDRY	138	2863.9	684.54		87
90							
91							



Number of Buses

- Started with 104
- After Step 1, the number reduced to 87
- After Step 2, the number reduced to 80
- If there are no buses, Done!!!!!!



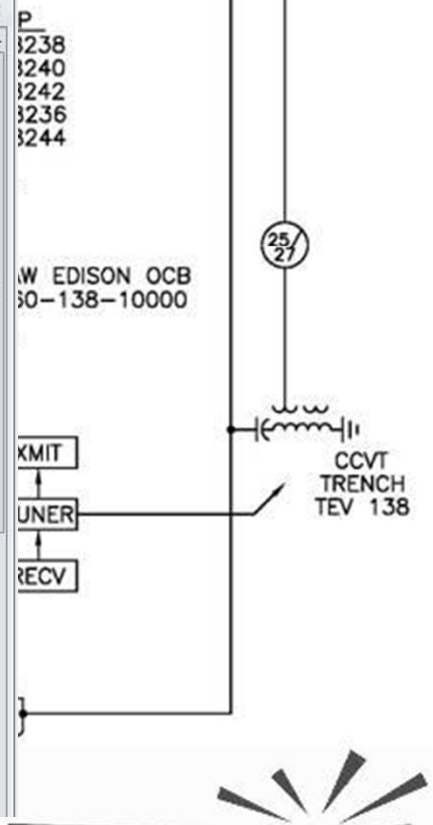


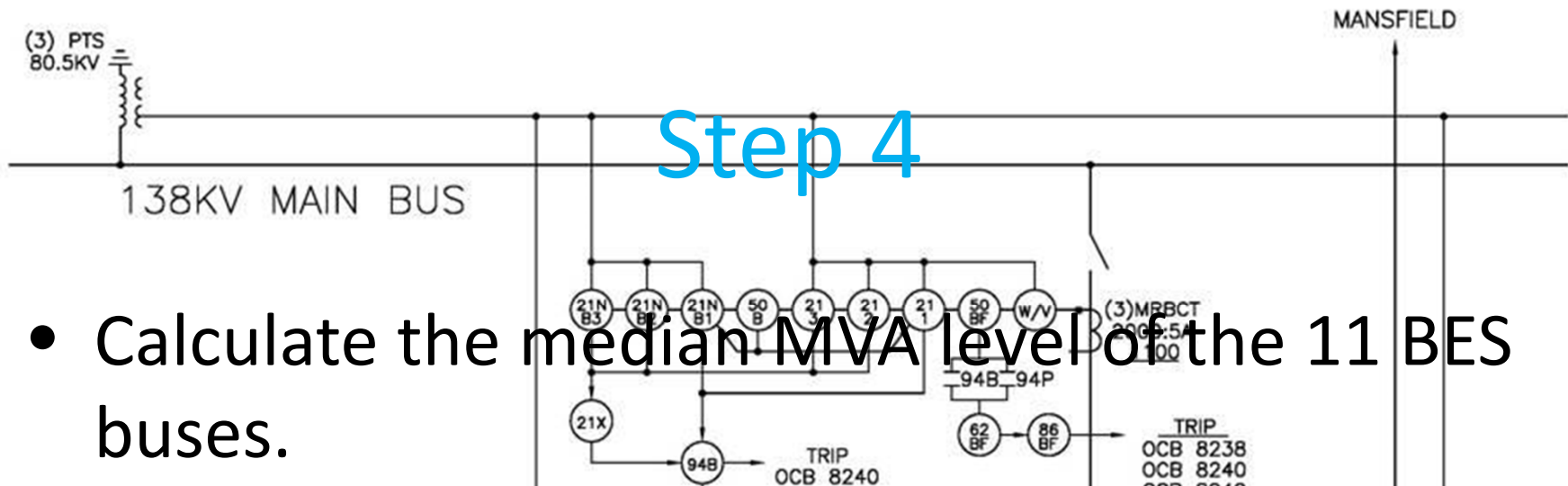
Step 3

- Determine the 11 BES with highest MVA level.

2016-03-09_Bus Summary [Read-Only]

	A	B	C	D	E	F	G
1							
2	NO	BUS	KV	3Φ AMPS	MVA	# of Buses	
3	500770	RODEM	230	28291.9	11,270.69	1	
4	500941	WELLS	230	27208.6	10,839.14	2	
5	500020	CLECO-ACADIA	138	37903.1	9,059.71	3	
6	500190	COCODR	230	22728.6	9,054.43	4	
7	0	RORK138	138	36860.6	8,810.53	5	
8	500765	RORK230	230	20577.9	8,197.65	6	
9	0	COUGH WEST	138	32111.9	7,675.48	7	
10	0	COUGH_A2	138	32111	7,675.27	8	
11	0	COUGH_A1	138	32088.4	7,669.87	9	
12	500230	COUGH EAST	138	32082.5	7,668.46	10	
13	500760	RAPIDS	230	18655.8	7,431.94	11	
14	500790	SHERWD	230	16858.4	6,715.91	12	
15	500880	VILPLT	230	16621.2	6,621.42	13	
16	500776	SELLERS RD	230	16467	6,559.99	14	
17	500465	LAYFIELD4	230	15744.5	6,272.16	15	
18	500200	COLFAX	230	15602.9	6,215.75	16	
19	500250	DOLHIL	345	10335.2	6,175.88	17	
20	500640	NSLIDL	230	13863.6	5,522.87	18	
21	500510	MADSNV	230	13496.2	5,376.50	19	
22	500260	DOHILL	230	13489.8	5,373.95	20	
23	500360	FRONT STREET	230	13222.9	5,267.63	21	





- Calculate the median MVA level of the 11 BES buses.

2016-03-09_Bus Summary [Read-Only]

	A	B	C	D	E	F	G	H
1								
2	NO	BUS	KV	3Φ AMPS	MVA		# of Buses	
3	500770	RODEM	230	28291.9	11,270.69		1	
4	500941	WELLS	230	27208.6	10,839.14		2	
5	500020	CLECO-ACADIA	138	37903.1	9,059.71		3	
6	500190	COCODR	230	22728.6	9,054.43		4	
7	0	RORK138	138	36860.6	8,810.53		5	
8	500765	RORK230	230	20577.9	8,197.65		6	
9	0	COUGH WEST	138	32111.9	7,675.48		7	
10	0	COUGH_A2	138	32111	7,675.27		8	
11	0	COUGH_A1	138	32088.4	7,669.87		9	
12	500230	COUGH EAST	138	32082.5	7,668.46		10	
13	500760	RAPIDS	230	18655.8	7,431.94		11	
14	500790	SHERWD	230	16858.4	6,715.91		12	
15	500880	VILPLT	230	16621.2	6,621.42		13	
16	500776	SELLERS RD	230	16467	6,559.99		14	

Function Arguments

MEDIAN

Number1 = {11270.6918958113;10839.13}

Number2 = number

= 8197.652712

Returns the median, or the number in the middle of the set of given numbers.

Number1: number1,number2,... are 1 to 255 numbers or names, arrays that contain numbers for which you want the median.

Formula result = 8197.652712

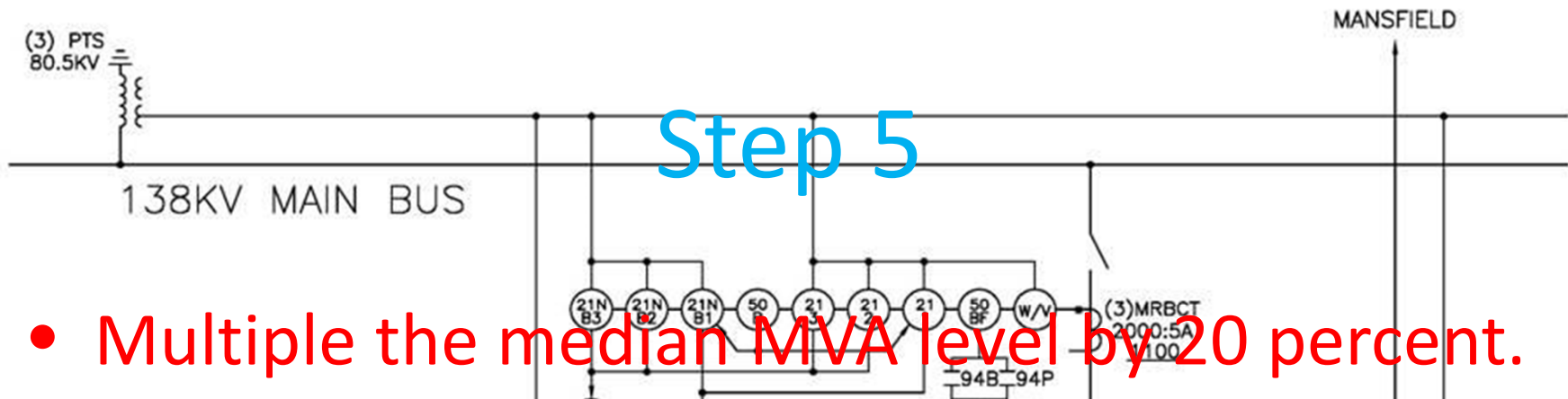
[Help on this function](#) OK

3/14/2016

138KV TRANSFER BUS

8239





- Multiple the median MVA level by 20 percent.

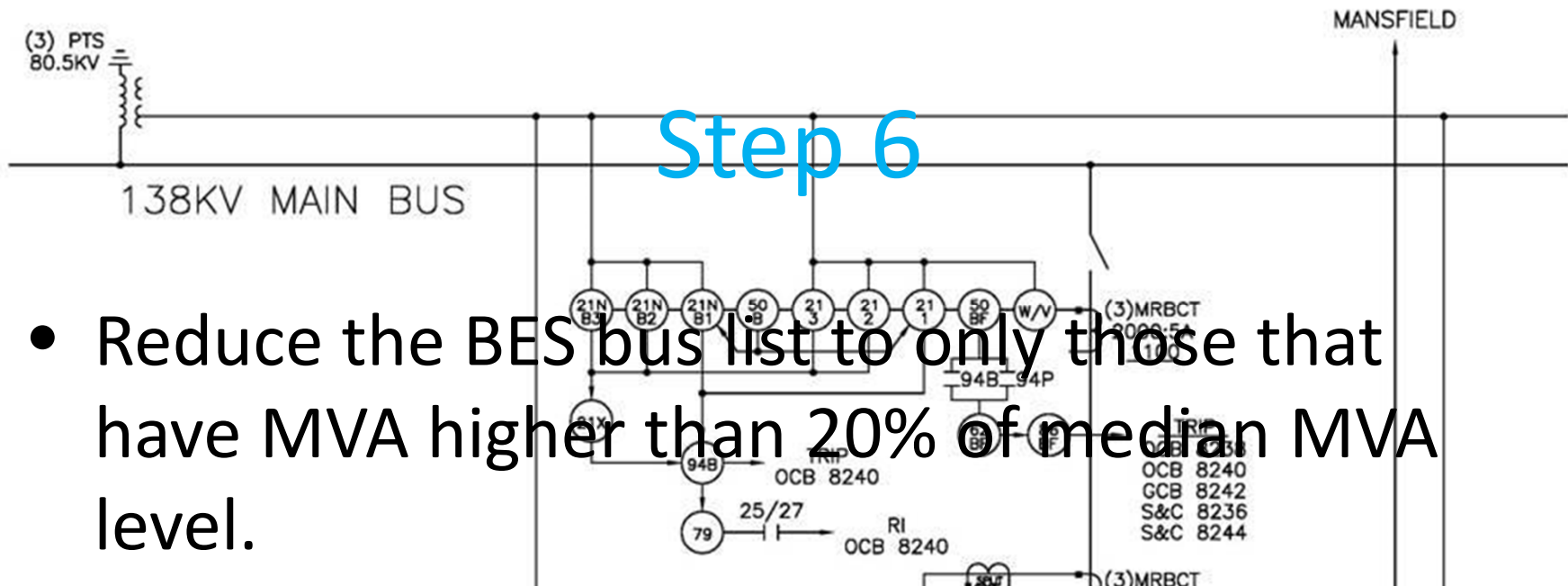
2016-03-09_Bus Summary [Read-Only]

	A	B	C	D	E	F	G	H
	NO	BUS	KV	3Φ AMPS	MVA		# of Buses	
1								
2								
3	500770	RODEM	230	28291.9	11,270.69		1	
4	500941	WELLS	230	27208.6	10,839.14		2	
5	500020	CLECO-ACADIA	138	37903.1	9,059.71		3	
6	500190	COCODR	230	22728.6	9,054.43		4	
7	0	RORK138	138	36860.6	8,810.53		5	
8	500765	RORK230	230	20577.9	8,197.65		6	8,197.65
9	0	COUGH WEST	138	32111.9	7,675.48		7	
10	0	COUGH_A2	138	32111	7,675.27		8	1639.531
11	0	COUGH_A1	138	32088.4	7,669.87		9	
12	500230	COUGH EAST	138	32082.5	8197.65 x 0.20 = 1639.53			
13	500760	RAPIDS	230	18655.8				
14	500790	SHERWD	230	16858.4	6,715.91		12	
15	500880	VILPLT	230	16621.2	6,621.42		13	
16	500776	SELLERS RD	230	16467	6,559.99		14	



138KV TRANSFER BUS





- Reduce the BES bus list to only those that have MVA higher than 20% of median MVA level.

2016-03-09_Bus Summary [Read-Only]

	A	B	C	D	E	F	G	H
1								
2	NO	BUS	KV	3Φ AMPS	MVA		# of Buses	
73	500060	B_VISTA	138	7592.7	1,814.83		71	
74	500560	MARKSV	138	7556.6	1,806.20		72	
75	500935	WOPELUSAS	138	7391.5	1,766.74		73	
76	500630	NTHBND	138	7312.6	1,747.88		74	
77	500740	RAMOS	138	7173.5	1,714.63		75	
78	500160	CENT	138	7141.7	1,707.03		76	1639.53
79	500550	MANY	138	7105.3	1,698.33		77	
80	500650	OAKDLE	138	7047.8	1,684.59		78	
81	500900	WSTBAY	138	6625.3	1,583.60		79	
82	500350	FRANKLIN3	115	7877.8	1,569.15		80	

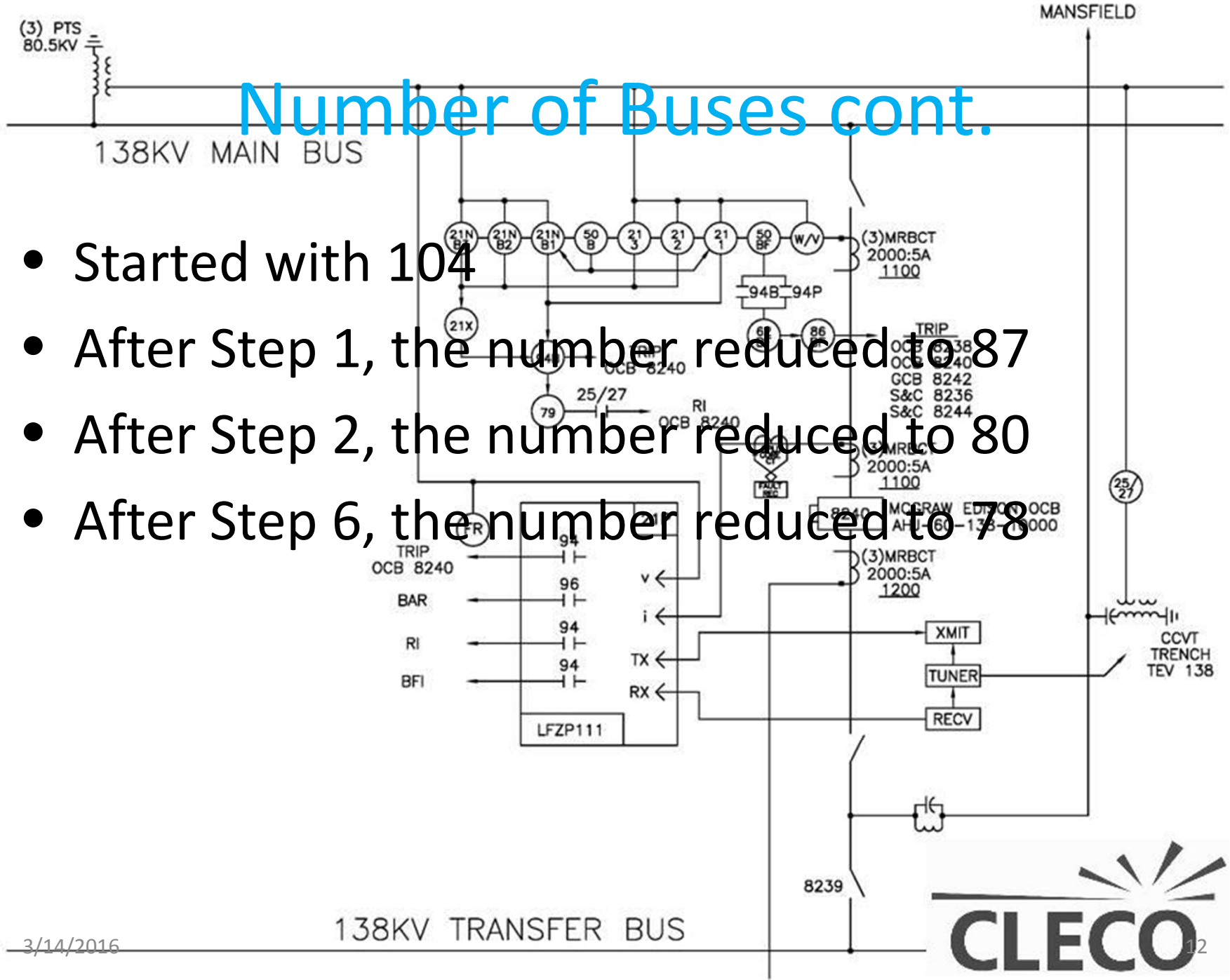
3/14/2016

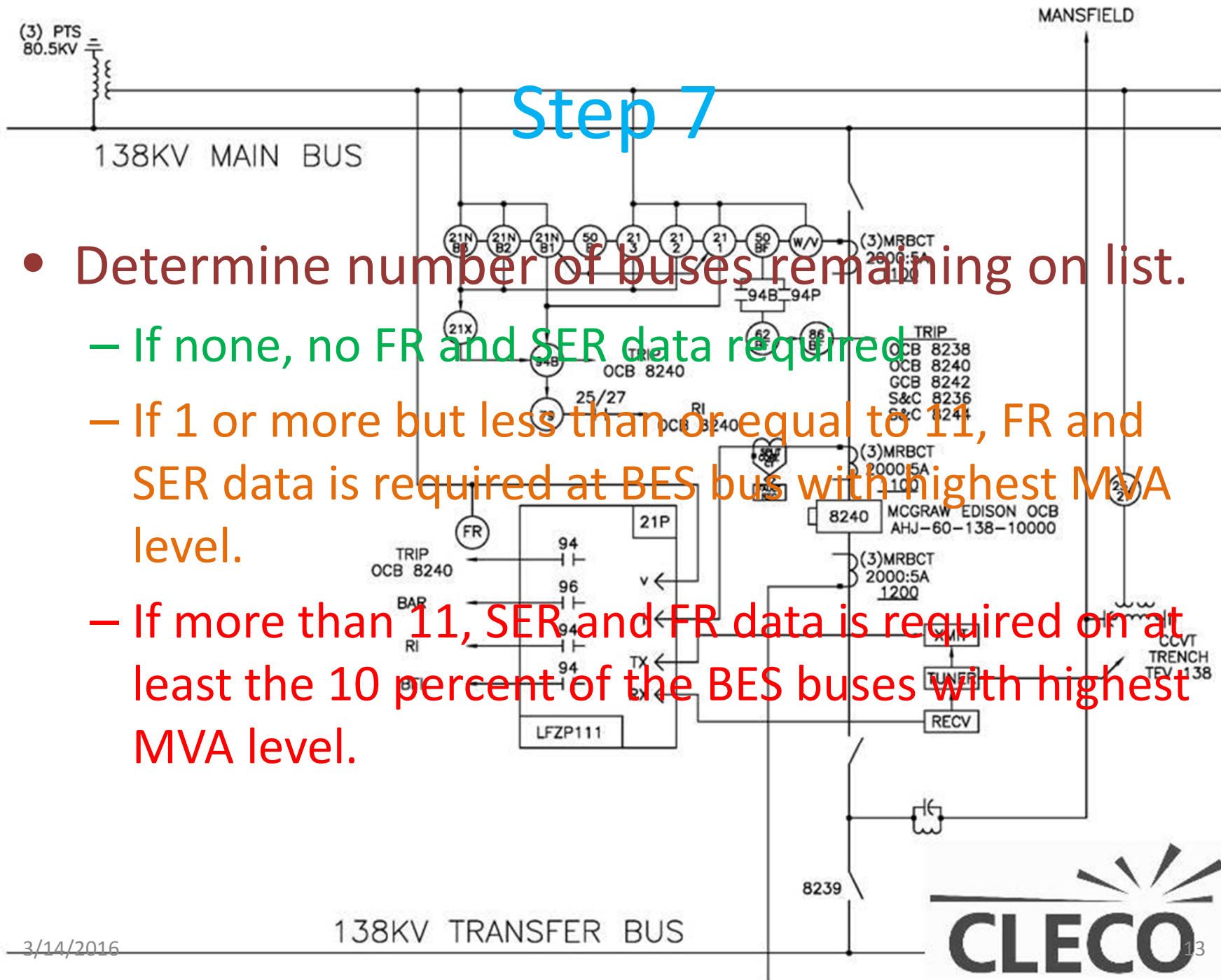
138KV TRANSFER BUS



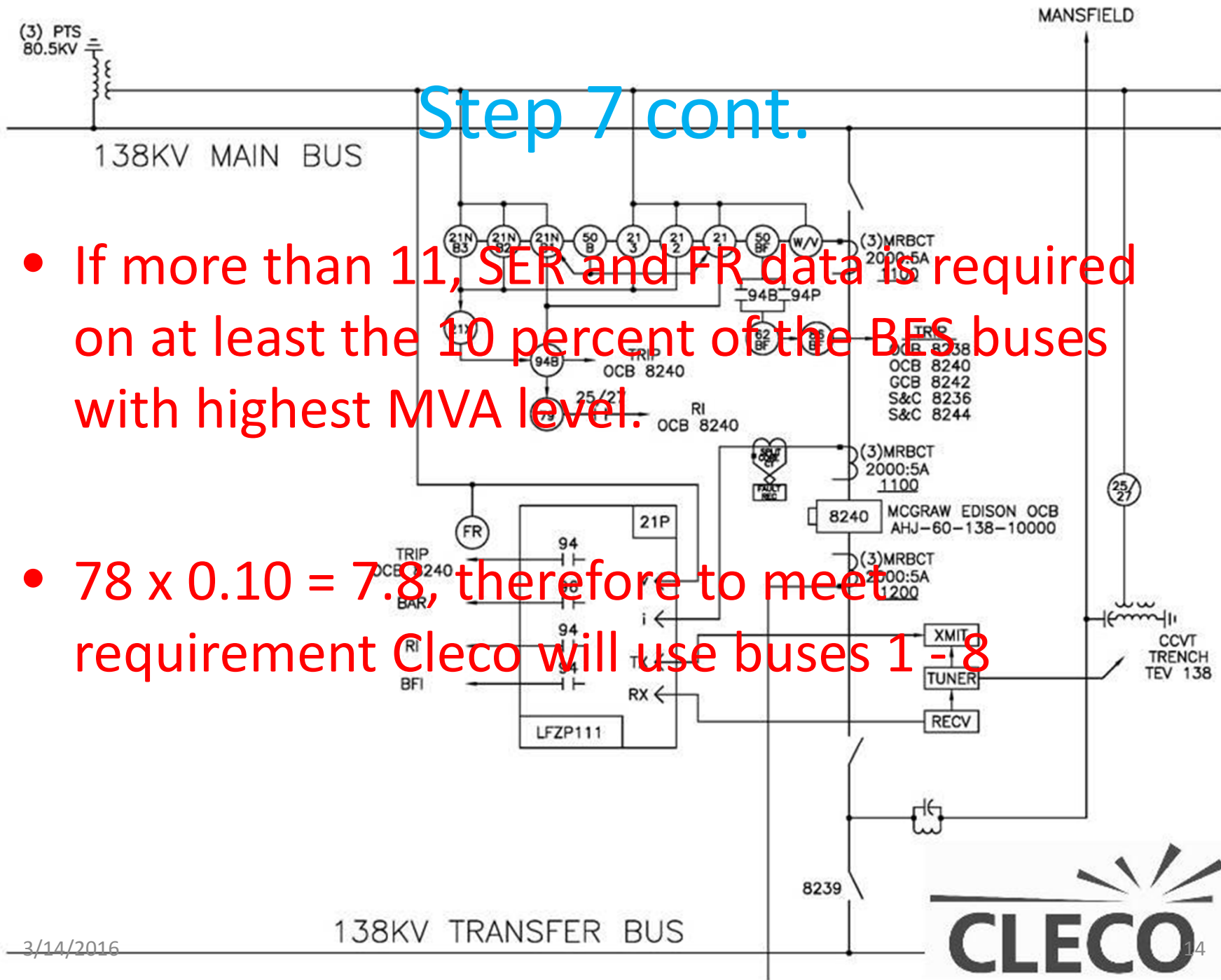
Number of Buses cont.

- Started with 104
- After Step 1, the number reduced to 87
- After Step 2, the number reduced to 80
- After Step 6, the number reduced to 78



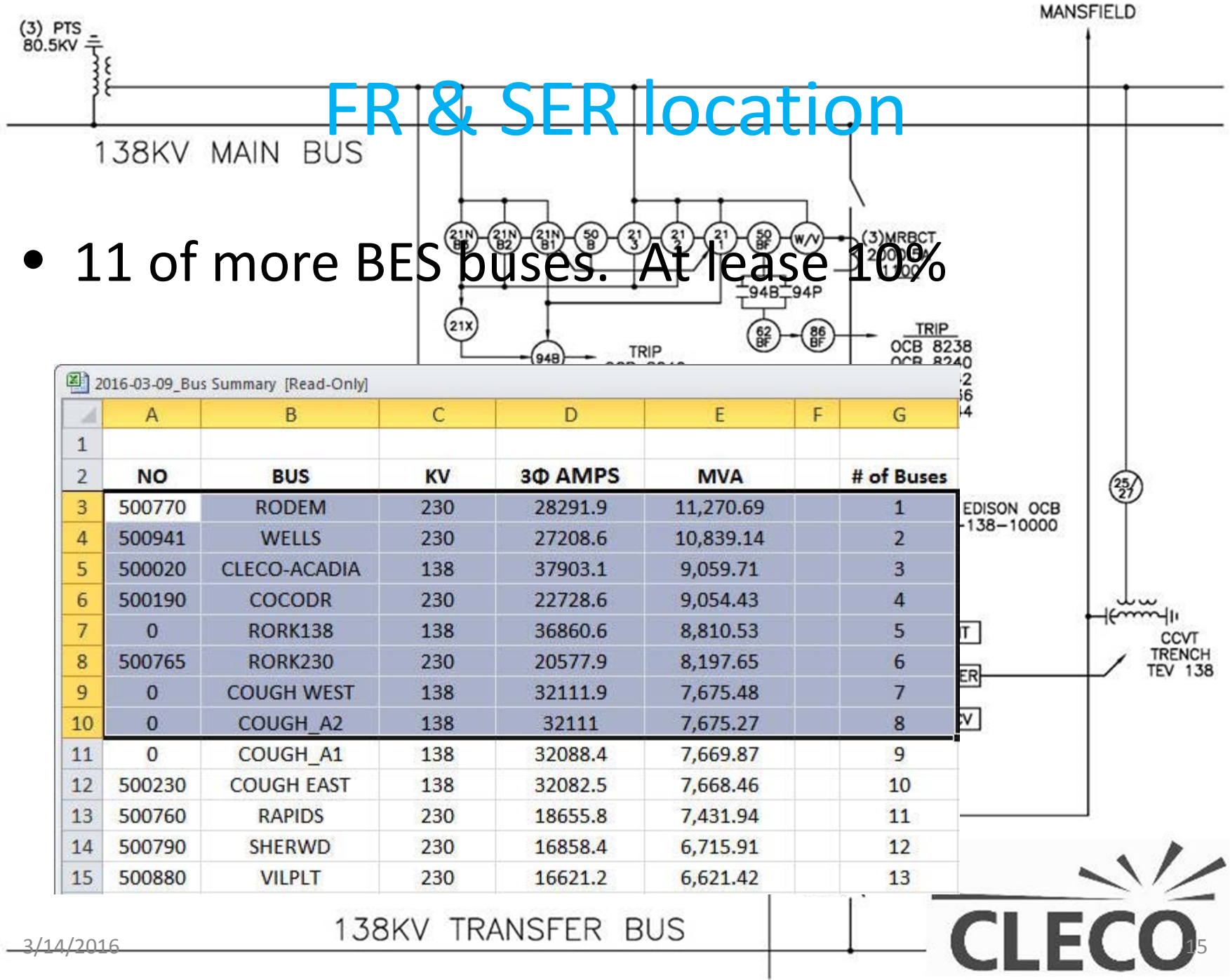


- Determine number of buses remaining on list.
 - If none, no FR and SER data required
 - If 1 or more but less than or equal to 11, FR and SER data is required at BES bus with highest MVA level.
 - If more than 11, SER and FR data is required on at least the 10 percent of the BES buses with highest MVA level.



Step 7 cont.

- If more than 11, SER and FR data is required on at least the 10 percent of the BES buses with highest MVA level.
- $78 \times 0.10 = 7.8$, therefore to meet requirement Cleco will use buses 1 - 8



FR & SER location

- 11 of more BES buses. At least 10%

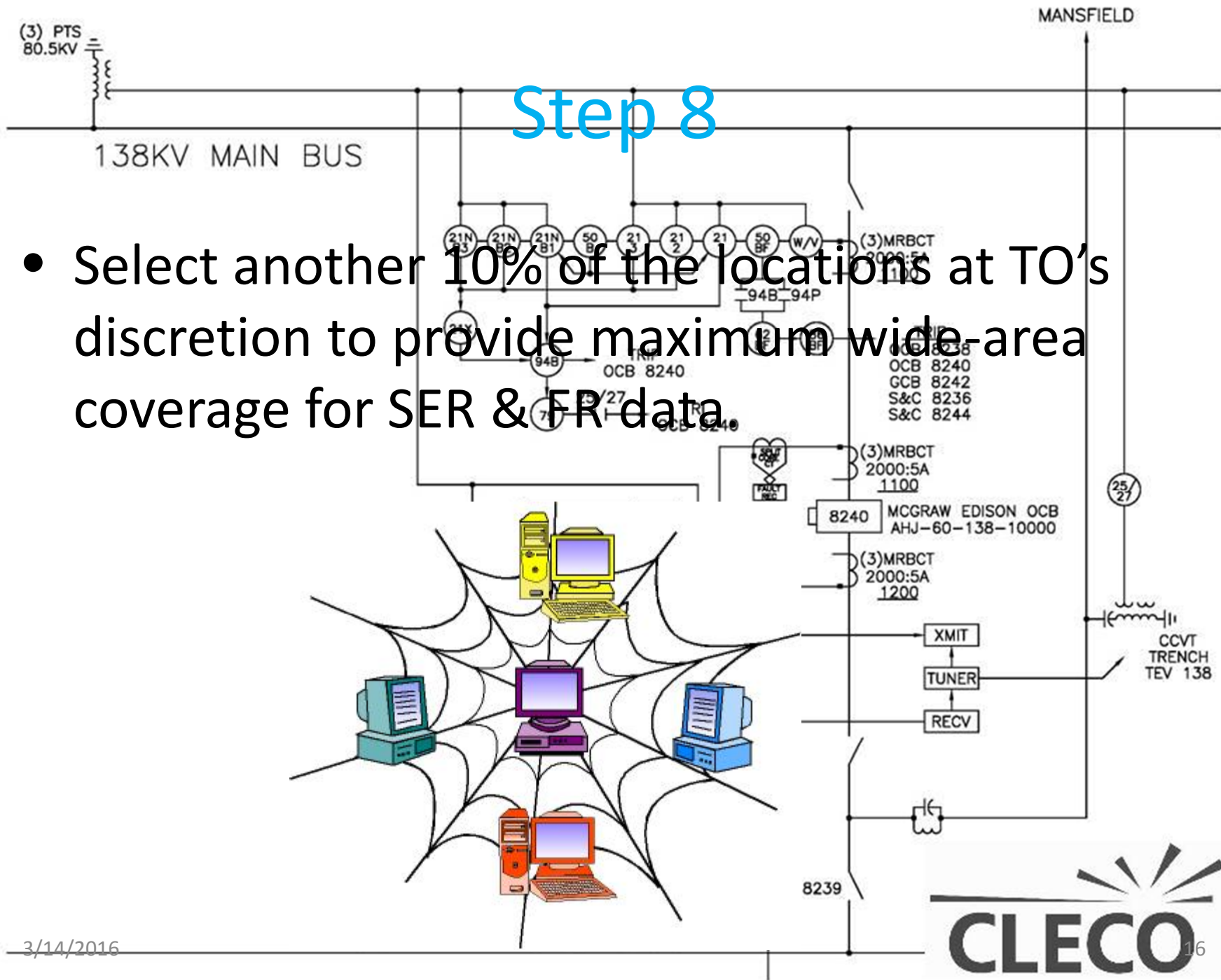
2016-03-09_Bus Summary [Read-Only]

	A	B	C	D	E	F	G
1							
2	NO	BUS	KV	3Φ AMPS	MVA		# of Buses
3	500770	RODEM	230	28291.9	11,270.69		1
4	500941	WELLS	230	27208.6	10,839.14		2
5	500020	CLECO-ACADIA	138	37903.1	9,059.71		3
6	500190	COCODR	230	22728.6	9,054.43		4
7	0	RORK138	138	36860.6	8,810.53		5
8	500765	RORK230	230	20577.9	8,197.65		6
9	0	COUGH WEST	138	32111.9	7,675.48		7
10	0	COUGH_A2	138	32111	7,675.27		8
11	0	COUGH_A1	138	32088.4	7,669.87		9
12	500230	COUGH EAST	138	32082.5	7,668.46		10
13	500760	RAPIDS	230	18655.8	7,431.94		11
14	500790	SHERWD	230	16858.4	6,715.91		12
15	500880	VILPLT	230	16621.2	6,621.42		13

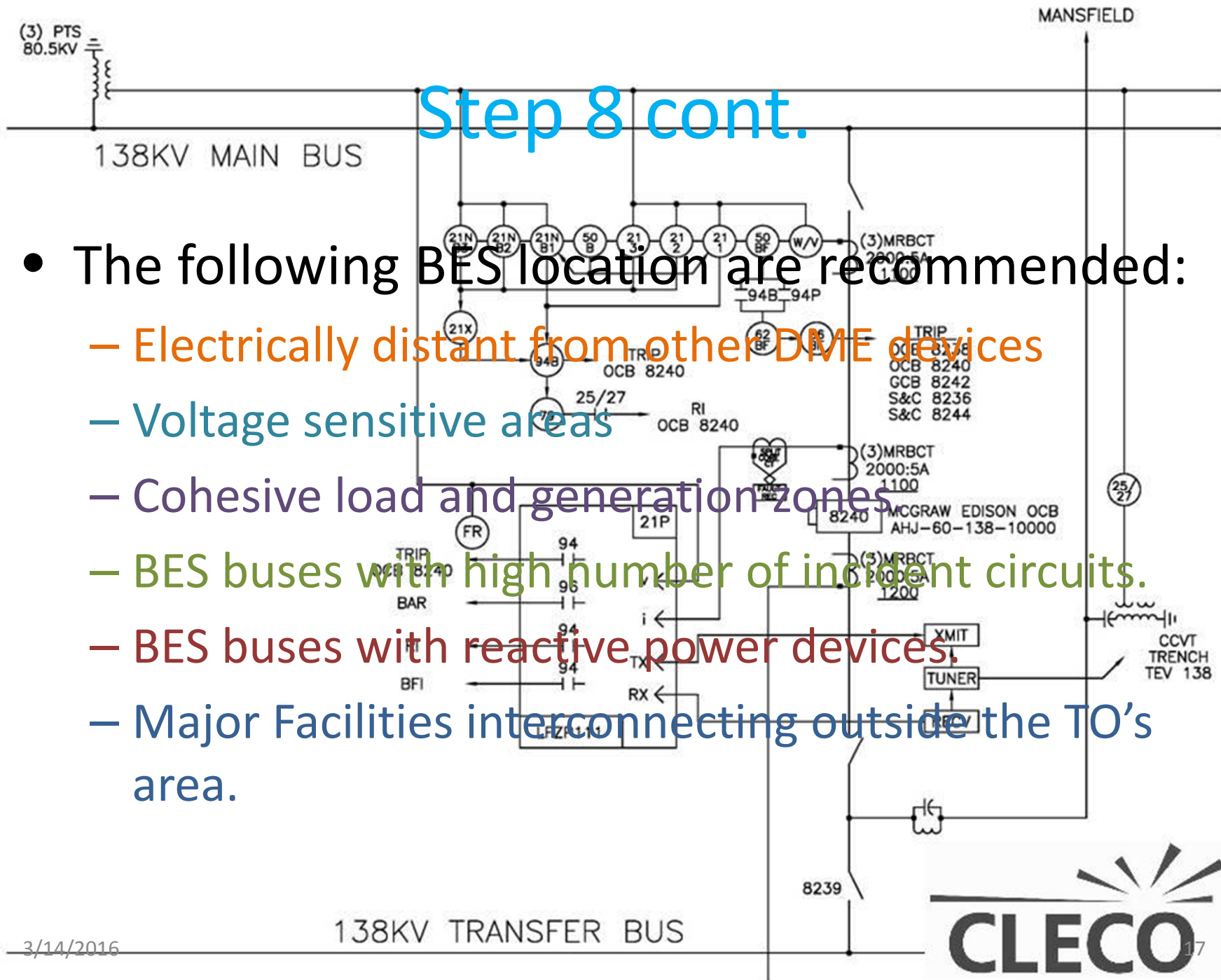
3/14/2016

138KV TRANSFER BUS





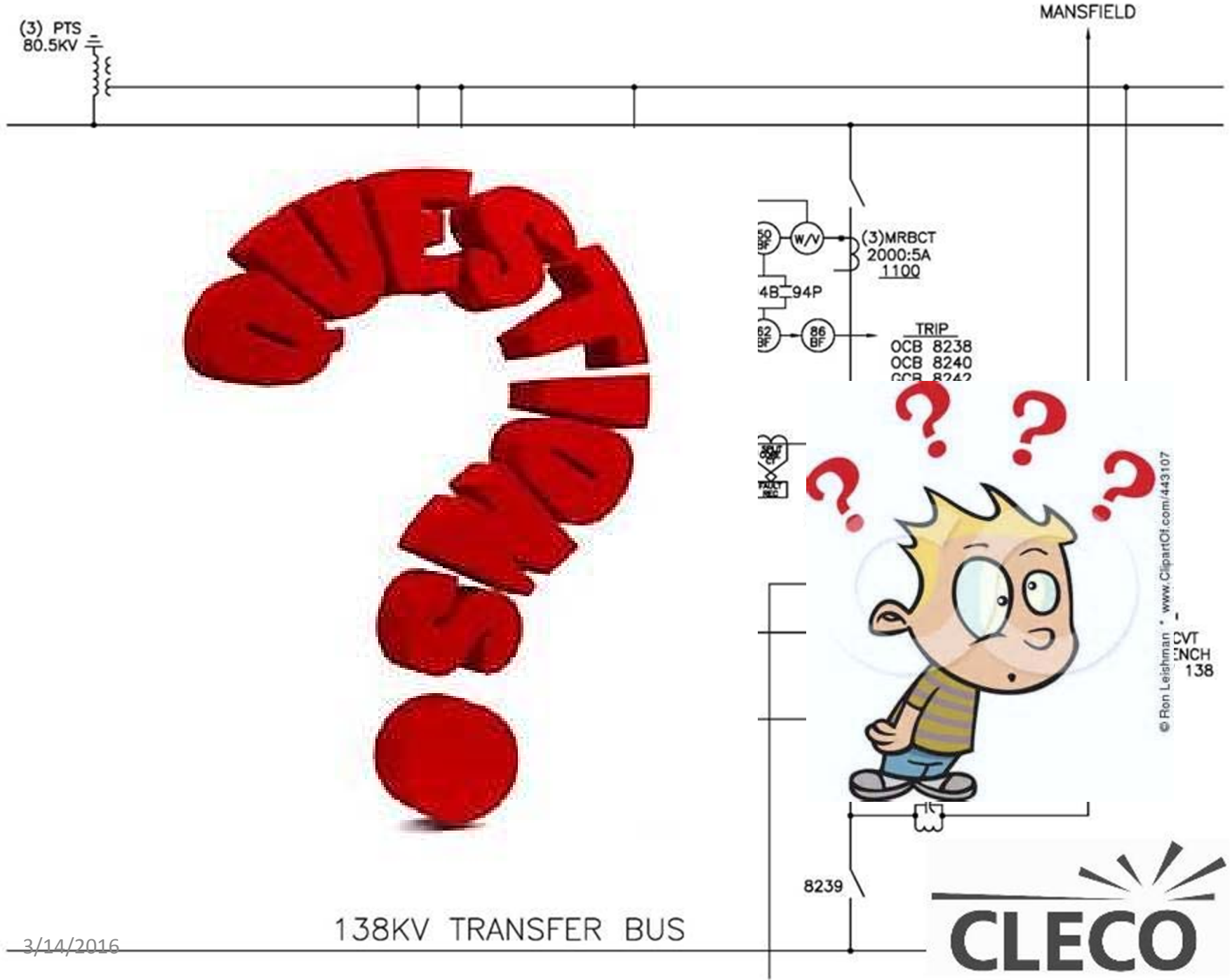
- Select another 10% of the locations at TO's discretion to provide maximum wide-area coverage for SER & FR data.



Step 8 cont.

- The following BES location are recommended:
 - Electrically distant from other DME devices
 - Voltage sensitive areas
 - Cohesive load and generation zones
 - BES buses with high number of incident circuits.
 - BES buses with reactive power devices.
 - Major Facilities interconnecting outside the TO's area.





QUESTIONS



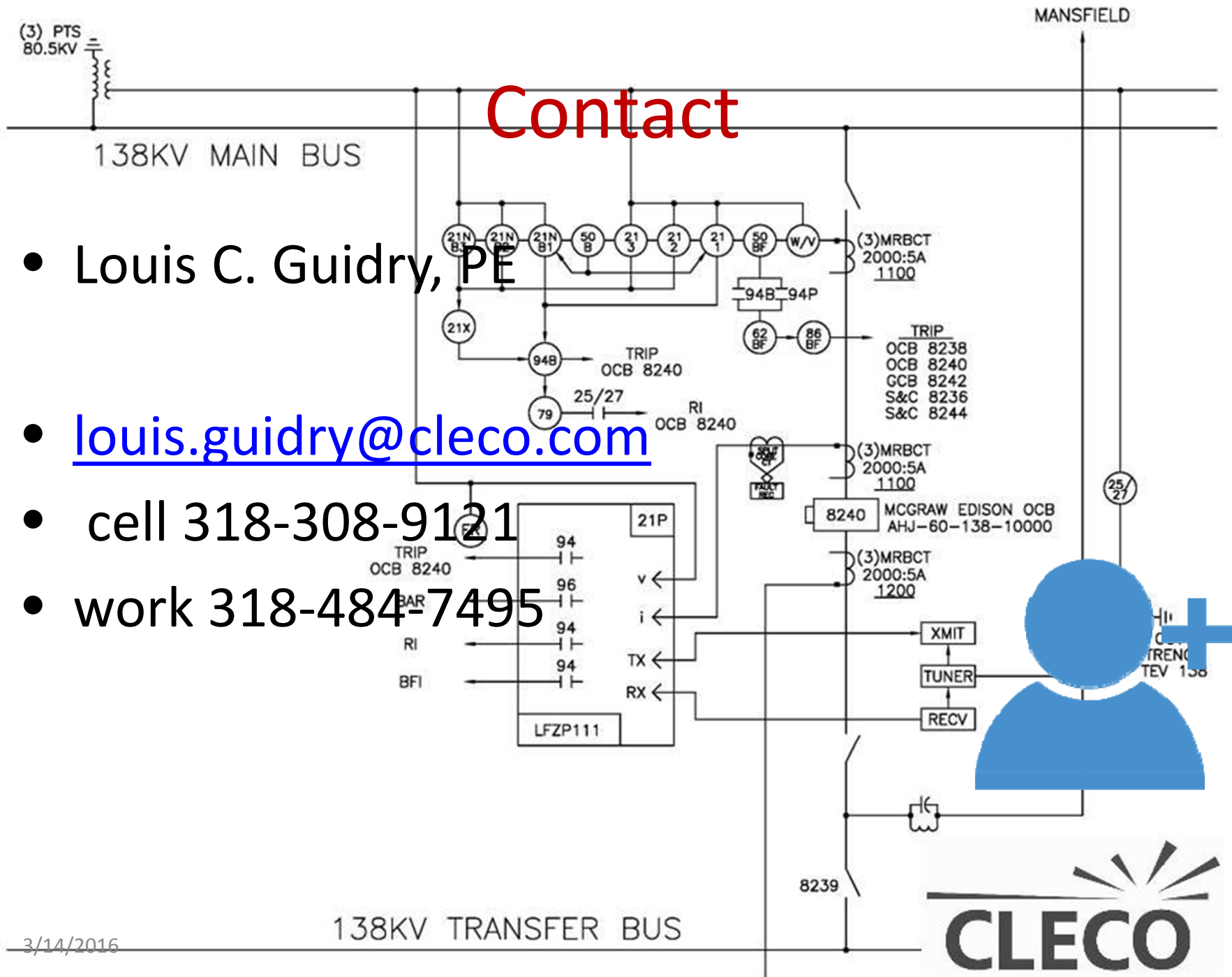
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138KV TRANSFER BUS



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