

Data of existing distribution branches of the 33-bus system

Bus	From	To	R (Ω)	X (Ω)
1	1	2	0.0922	0.0470 0
2	2	3	0.4930	0.2511 0
3	3	4	0.3660	0.1864 0
4	4	5	0.3811	0.1941 0
5	5	6	0.8190	0.7070 0
6	6	7	0.1872	0.6188 0
7	7	8	0.7114	0.2351 0
8	8	9	1.0300	0.7400 0
9	9	10	1.0400	0.7400 0
10	10	11	0.1966	0.0650 0
11	11	12	0.3744	0.1238 0
12	12	13	1.4680	1.1550 0
13	13	14	0.5416	0.7129 0
14	14	15	0.5910	0.5260 0
15	15	16	0.7463	0.5450 0
16	16	17	1.2890	1.7210 0
17	17	18	0.7320	0.5740 0
18	2	19	0.1640	0.1565 0
19	19	20	1.5042	1.3554 0
20	20	21	0.4095	0.4784 0
21	21	22	0.7089	0.9373 0
22	3	23	0.4512	0.3083 0
23	23	24	0.8980	0.7091 0
24	24	25	0.8960	0.7011 0
25	6	26	0.2030	0.1034 0
26	26	27	0.2842	0.1447 0
27	27	28	1.0590	0.9337 0
28	28	29	0.8042	0.7006 0
29	29	30	0.5075	0.2585 0
30	30	31	0.9744	0.9630 0
31	31	32	0.3105	0.3619 0
32	32	33	0.3410	0.5302 0

Example) Configuration lines code in AMPL programming in 33-bus system:

- First column (Number of buses);
- Second column (3 – substation; 5 – PV Generation; 4 – BESS located at specific bus);
- Five column (active power);
- Nine and tem column (representes active and reactive load at buses).

1	3	"-----"	1	0	10.0 0.0	-990.0 999.0	0.0000 0.0000
	0	0 0	0	0	0		
2	0	"-----"	1	0	0.0 0.0	0.0 0.0	0.1000 0.0600
	0	0 0	0	0	0		
3	0	"-----"	1	0	0.0 0.0	0.0 0.0	0.0900 0.0400
	0	0 0	0	0	0		
4	0	"-----"	1	0	0.0 0.0	0.0 0.0	0.1200 0.0800
	0	0 0	0	0	0		
5	5	"-----"	1	0	0.3 0.0	0.0 0.0	0.0600 0.0300
	0	0 0	0	0	0		
6	0	"-----"	1	0	0.0 0.0	0.0 0.0	0.0600 0.0200
	0	0 0	0	0	0		

7	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2000	0.1000
	0	0 0	0	0	0					
8	5	"-----"	1	0	0.3	0.0	0.0	0.0	0.2000	0.1000
	0	0 0	0	0	0					
9	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0200
	0	0 0	0	0	0					
10	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0200
	0	0 0	0	0	0					
11	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0450	0.0300
	0	0 0	0	0	0					
12	5	"-----"	1	0	0.4	0.0	0.0	0.0	0.0600	0.0350
	0	0 0	0	0	0					
13	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0350
	0	0 0	0	0	0					
14	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1200	0.0800
	0	0 0	0	0	0					
15	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0100
	0	0 0	0	0	0					
16	5	"-----"	1	0	0.4	0.0	0.0	0.0	0.0600	0.0200
	0	0 0	0	0	0					
17	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0200
	0	0 0	0	0	0					
18	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0900	0.0400
	0	0 0	0	0	0					
19	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0900	0.0400
	0	0 0	0	0	0					
20	5	"-----"	1	0	0.2	0.0	0.0	0.0	0.0900	0.0400
	0	0 0	0	0	0					
21	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.0900	0.0400
	0	0 0	0	0	0					
22	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0900	0.0400
	0	0 0	0	0	0					
23	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0900	0.0500
	0	0 0	0	0	0					
24	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.4200	0.2000
	0	0 0	0	0	0					
25	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.4200	0.2000
	0	0 0	0	0	0					
26	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0250
	0	0 0	0	0	0					
27	5	"-----"	1	0	0.4	0.0	0.0	0.0	0.0600	0.0250
	0	0 0	0	0	0					
28	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0200
	0	0 0	0	0	0					
29	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1200	0.0700
	0	0 0	0	0	0					
30	5	"-----"	1	0	0.3	0.0	0.0	0.0	0.2000	0.6000
	0	0 0	0	0	0					
31	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1500	0.0700
	0	0 0	0	0	0					
32	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2100	0.1000
	0	0 0	0	0	0					
33	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0600	0.0400
	0	0 0	0	0	0					

Data of existing distribution branches of the 141-bus system

Bus	From	To	R (Ω)	X (Ω)
1	1	2	0 0.00371059	0.00263021
2	2	3	0 0.01109318	0.00786491
3	3	4	0 0.00005788	0.00003858
4	4	5	0 0.00059164	0.00041800
5	5	6	0 0.00043730	0.00031511

6	6	7	0 0.00301606	0.00401927
7	7	8	0 0.00473309	0.00630865
8	8	9	0 0.00417361	0.00295175
9	9	10	0 0.00326043	0.00230867
10	10	11	0 0.00074598	0.00052733
11	11	12	0 0.00830220	0.00587135
12	12	13	0 0.00789063	0.00556910
13	13	14	0 0.00313825	0.00221864
14	14	15	0 0.00615431	0.00435367
15	15	16	0 0.00553051	0.00391638
16	16	17	0 0.00255947	0.00181349
17	17	18	0 0.00532473	0.00363985
18	18	19	0 0.00119613	0.00084887
19	19	20	0 0.00359483	0.00254018
20	20	21	0 0.00234725	0.00158198
21	21	22	0 0.00368487	0.00197427
22	22	23	0 0.00169131	0.00122829
23	23	24	0 0.00439226	0.00319612
24	24	25	0 0.00255947	0.00181349
25	25	26	0 0.00468808	0.00340834
26	26	27	0 0.00215433	0.00156912
27	27	28	0 0.00375561	0.00266236
28	28	29	0 0.00421219	0.00297747
29	29	30	0 0.00219934	0.00159485
30	30	31	0 0.00082315	0.00058521
31	31	32	0 0.00223150	0.00157555
32	2	33	0 0.00284886	0.00201928
33	33	34	0 0.00012862	0.00005788
34	5	35	0 0.01462371	0.00356268
35	5	36	0 0.00813500	0.01006425
36	6	37	0 0.00035370	0.00046945
37	37	38	0 0.01309317	0.00926040
38	38	39	0 0.00603212	0.00426364
39	39	40	0 0.00223150	0.00157555
40	40	41	0 0.00590350	0.00418004
41	41	42	0 0.01490667	0.01054656
42	42	43	0 0.00776201	0.00549193
43	43	44	0 0.00284886	0.00201928
44	44	45	0 0.00260449	0.00185208
45	45	46	0 0.00102893	0.00081672
46	46	47	0 0.00409001	0.00289387
47	47	48	0 0.00268166	0.00189710
48	48	49	0 0.00470737	0.00327972
49	49	50	0 0.00532473	0.00357554
50	50	51	0 0.00255947	0.00181349
51	51	52	0 0.00144694	0.00102250
52	38	53	0 0.00540833	0.00382634
53	42	54	0 0.00103536	0.00073311
54	54	55	0 0.00338905	0.00239870
55	55	56	0 0.00574273	0.00406429
56	56	57	0 0.00557553	0.00394210
57	57	58	0 0.00433438	0.00306751
58	58	59	0 0.00301606	0.00213504
59	55	60	0 0.00214790	0.00151768
60	60	61	0 0.00210288	0.00149195
61	61	62	0 0.00264307	0.00187137
62	60	63	0 0.00227008	0.00160771
63	63	64	0 0.00673308	0.00476525
64	64	65	0 0.00433438	0.00306751

65	65	66	0 0.00194211	0.00137620
66	66	67	0 0.00293246	0.00207716
67	67	68	0 0.00140192	0.00099035
68	63	69	0 0.00235368	0.00166559
69	55	70	0 0.00148552	0.00105466
70	70	71	0 0.00077170	0.00018649
71	70	72	0 0.00450158	0.00318326
72	42	73	0 0.00148552	0.00105466
73	73	74	0 0.00019292	0.00041157
74	43	75	0 0.00243728	0.00172346
75	44	76	0 0.00354982	0.00251445
76	46	77	0 0.00331831	0.00280384
77	76	78	0 0.00107395	0.00070739
78	78	79	0 0.00266879	0.00064951
79	79	80	0 0.00645012	0.00156912
80	79	81	0 0.00972985	0.00237941
81	81	82	0 0.00021222	0.00005145
82	47	83	0 0.00054662	0.00039871
83	49	84	0 0.00332474	0.00288744
84	50	85	0 0.00094533	0.00023151
85	85	86	0 0.00023794	0.00010289
86	86	87	0 0.00000000	0.00000643
87	7	88	0 0.00111896	0.00148552
88	88	89	0 0.00301606	0.00401927
89	89	90	0 0.00192282	0.00255947
90	90	91	0 0.00136334	0.00181993
91	91	92	0 0.00202571	0.00270095
92	92	93	0 0.00180063	0.00239870
93	93	94	0 0.00132475	0.00176205
94	94	95	0 0.00132475	0.00176205
95	89	96	0 0.00441798	0.00312538
96	96	97	0 0.00623791	0.00441155
97	97	98	0 0.00580061	0.00126044
98	97	99	0 0.00021222	0.00005145
99	99	100	0 0.00021222	0.00005145
100	91	101	0 0.00148552	0.00105466
101	101	102	0 0.00371702	0.00263021
102	102	103	0 0.00571701	0.00139549
103	103	104	0 0.00404499	0.00098392
104	104	105	0 0.00752407	0.00183279
105	104	106	0 0.00073311	0.00016720
106	92	107	0 0.00545978	0.00133118
107	94	108	0 0.00393567	0.00167202
108	108	109	0 0.00290674	0.00123472
109	94	110	0 0.00021222	0.00005145
110	7	111	0 0.00462377	0.00327329
111	10	112	0 0.00688099	0.00167845
112	11	113	0 0.00223150	0.00157555
113	13	114	0 0.00400641	0.00283600
114	114	115	0 0.00429580	0.00304178
115	115	116	0 0.00025723	0.00006431
116	14	117	0 0.00325400	0.00235368
117	15	118	0 0.00103536	0.00073311
118	118	119	0 0.00297104	0.00210288
119	119	120	0 0.00272667	0.00192925
120	120	121	0 0.00326043	0.00230867
121	121	122	0 0.00470737	0.00333117
122	122	123	0 0.00375561	0.00266236
123	123	124	0 0.00392281	0.00277812

124	124	125	0	0.00503534	0.00356268
125	125	126	0	0.00536331	0.00390351
126	126	127	0	0.00223150	0.00157555
127	127	128	0	0.00366557	0.00270095
128	128	129	0	0.00376204	0.00273310
129	129	130	0	0.00066238	0.00046945
130	119	131	0	0.00228294	0.00162700
131	131	132	0	0.00223150	0.00157555
132	131	133	0	0.00591636	0.00430223
133	121	134	0	0.00540833	0.00393567
134	16	135	0	0.00338905	0.00239870
135	16	136	0	0.00194211	0.00137620
136	18	137	0	0.00375561	0.00266236
137	23	138	0	0.00494531	0.00359483
138	25	139	0	0.00610929	0.00432795
139	30	140	0	0.00333760	0.00242442
140	31	141	0	0.00375561	0.00266236

Example) Configuration lines code in AMPL programming in 141-bus system:

- First column (Number of bus);
- Second column (3 – substation; 5 – PV Generation; 4 – BESS located at specific bus);
- Five column (active power);
- Nine and tem column (representes active and reactive load at buses).

1	3	"-----"	1	0	0.0	0.0	-990.0	999.0	0.0000	0.0000
	0	0	0	0	0					
2	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
3	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
4	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
5	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
6	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
7	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
8	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0	0	0	0					
9	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0085	0.0053
	0	0	0	0	0					
10	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
11	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
12	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0213	0.0132
	0	0	0	0	0					
13	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0	0	0	0					
14	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					
15	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0	0	0	0					

16	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
17	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
18	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
19	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
20	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
21	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
22	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
23	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
24	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
25	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
26	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
27	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
28	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
29	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
30	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
31	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
32	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
33	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
34	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
35	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
0	0	0 0	0	0						
36	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
37	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0425	0.0263
	0	0 0	0	0	0					
38	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
39	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0170	0.0105
	0	0 0	0	0	0					
40	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
41	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
42	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
43	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
44	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0425	0.0263
	0	0 0	0	0	0					
45	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
46	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
47	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
48	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1062	0.0658
	0	0 0	0	0	0					

49	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
50	5	"-----"	1	0	1.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
51	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1062	0.0658
	0	0 0	0	0	0					
52	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
53	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0425	0.0263
	0	0 0	0	0	0					
54	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
55	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
56	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0213	0.0132
	0	0 0	0	0	0					
57	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
58	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
59	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
60	5	"-----"	1	0	1.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
61	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
62	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1700	0.1054
	0	0 0	0	0	0					
63	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
64	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
65	4	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
66	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1913	0.1185
	0	0 0	0	0	0					
67	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0425	0.0263
	0	0 0	0	0	0					
68	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0850	0.0527
	0	0 0	0	0	0					
69	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
0	0	0 0	0	0	0					
70	5	"-----"	1	0	1.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
71	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
72	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
73	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
74	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
75	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0382	0.0237
	0	0 0	0	0	0					
76	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
77	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
78	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
79	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.4271	0.2647
	0	0 0	0	0	0					
80	5	"-----"	1	0	1.0	0.0	0.0	0.0	0.6375	0.3951
	0	0 0	0	0	0					
81	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					

82	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
83	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
84	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1913	0.1185
	0	0 0	0	0	0					
85	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
86	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.4250	0.2634
	0	0 0	0	0	0					
87	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
88	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
89	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0553	0.0342
	0	0 0	0	0	0					
90	5	"-----"	1	0	1.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
91	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
92	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
93	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
94	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0935	0.0579
	0	0 0	0	0	0					
95	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
96	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
97	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
98	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
99	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
100	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
101	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0127	0.0079
	0	0 0	0	0	0					
102	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
103	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1062	0.0658
	0	0 0	0	0	0					
104	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
105	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
106	6	"-----"	1	0	1.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
107	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.4271	0.2647
	0	0 0	0	0	0					
108	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
109	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.6375	0.3951
	0	0 0	0	0	0					
110	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.6375	0.3951
	0	0 0	0	0	0					
111	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0213	0.0132
	0	0 0	0	0	0					
112	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.4250	0.2634
	0	0 0	0	0	0					
113	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
114	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					

115	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
116	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.2550	0.1580
	0	0 0	0	0	0					
117	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0553	0.0342
	0	0 0	0	0	0					
118	6	"-----"	1	0	1.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
119	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0935	0.0579
	0	0 0	0	0	0					
120	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
121	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
122	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
123	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0850	0.0527
	0	0 0	0	0	0					
124	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1062	0.0658
	0	0 0	0	0	0					
125	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
126	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
127	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
128	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
129	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0935	0.0579
	0	0 0	0	0	0					
130	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0956	0.0593
	0	0 0	0	0	0					
131	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0000	0.0000
	0	0 0	0	0	0					
132	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
133	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0382	0.0237
	0	0 0	0	0	0					
134	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0297	0.0184
	0	0 0	0	0	0					
135	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0213	0.0132
	0	0 0	0	0	0					
136	7	"-----"	1	0	1.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					
137	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0467	0.0290
0	0	0 0	0	0						
138	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0425	0.0263
	0	0 0	0	0	0					
139	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0425	0.0263
	0	0 0	0	0	0					
140	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.1275	0.0790
	0	0 0	0	0	0					
141	0	"-----"	1	0	0.0	0.0	0.0	0.0	0.0638	0.0395
	0	0 0	0	0	0					

Example) Configuration lines code in AMPL programming in 141-bus system, load curve (residential system) and PV curve raised at UFABC and WPG and CG.

All generations deliver active power in MW

Hours	Load	PV	WPG	CG
1	1	0.000	0.45	1
2	0.8	0.000	0.16	1

3	0.76	0.000	0.07	1
4	0.66	0.000	0.00	1
5	0.58	0.000	0.01	1
6	0.6	0.008	0.09	1
7	0.81	0.107	0.32	1
8	0.92	0.306	0.40	1
9	0.83	0.515	0.54	1
10	1.04	0.700	0.49	1
11	1.11	0.873	0.66	1
12	1.03	0.983	0.69	1
13	1.02	1.000	0.68	1
14	0.99	0.873	0.90	1
15	1.02	0.720	1.00	1
16	0.86	0.516	0.95	1
17	0.82	0.303	0.99	1
18	0.84	0.113	0.93	1
19	1.2	0.009	0.83	1
20	1.38	0.000	0.84	1
21	1.48	0.000	0.75	1
22	1.49	0.000	0.65	1
23	1.47	0.000	0.65	1
24	1.32	0.000	0.50	1
25	0	0.000	0.00	0