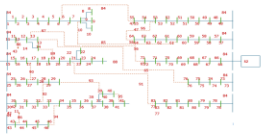
Inputs

The IEEE 84-bus topology



The IEEE switch status (open/close)

Switch Number	Status	Connecting Buses	Switch Number	Status	Connecting Buses	Switch Number	Status	Connecting Buses
1	Closed	connection near S1	**33**	Closed	32 – 33	**65**	Closed	connection near S2
2	Closed	1 – 2	**34**	Closed	33 – 34	**66**	Closed	65 – 66
3	Closed	2 – 3	**35**	Closed	34 – 35	**67**	Closed	66 – 67
4	Closed	3 – 4	**36**	Closed	35 – 36	**68**	Closed	67 – 68
5	Closed	4 – 5	**37**	Closed	36 – 37	**69**	Closed	68 – 69
6	Closed	5 – 6	**38**	Closed	37 – 38	**70**	Closed	69 – 70
7	Closed	6 – 7	**39**	Closed	38 – 39	**71**	Closed	70 – 71
8	Open	7 - Branching	**40**	Closed	39 – 40	**72**	Closed	71 – 72
9	Closed	Branching from 8 – 9	**41**	Closed	40 – 41	**73**	Closed	connection near S2

Bus data (impedance, power)

Buses From	Buses To	R (Ω)	X(Ω)	P (kW)	Q (kVar)	A	Buses From	Buses To	R (Ω)	X(Ω)	P (kW)	Q (kVar)	A	Buses From	Buses To	Buses	X(Ω)	P (kW)	Q (kVar)	A
1	2	0.2164	0.6624	0	0	1	**32**	**34**	0.0202	0.0538	0	0	1	**66**	0.0480	0.1095	0	0	1
2	3	0.2096	0.4564	0	0	1	**34**	**35**	0.1789	0.5407	0	0	1	**66**	0.1785	0.5407	0	0	1
3	4	0.2155	0.4692	0	0	1	**35**	**36**	0.0470	0.1425	0	0	1	**67**	0.0202	0.0538	0	0	1
4	5	0.0775	0.1665	0	0	1	**36**	**37**	0.4078	0.1175	0	0	1	**67**	0.1215	0.3543	0	0	1
5	6	0.2080	0.4504	0	0	1	**37**	**38**	0.0595	0.0867	0	0	1	**69**	0.0480	0.1095	0	0	1
6	7	0.0595	0.0867	0	0	1	**38**	**39**	0.0595	0.0867	0	0	1	**70**	0.0720	0.2484	0	0	1
7	8	0.0485	0.130	0	0	1	**39**	**40**	0.0750	0.1814	0	0	1	**71**	0.0567	0.1032	0	0	1
8	9	0.1068	0.2172	0	0	1	**40**	**41**	0.2094	0.4504	0	0	1	**72**	0.0202	0.0538	0	0	1
9	10	0.2258	0.4842	0	0	1	**41**	**42**	0.1905	0.4035	0	0	1	**74**	0.324	1.104	0	0	1
9	11	0.2798	0.5172	0	0	1	**42**	**43**	0.2096	0.4504	0	0	1	**74**	0.0525	0.1191	0	0	1
11	12	0.1068	0.2172	0	0	1	**43**	**44**	0.0595	0.0867	0	0	1	**75**	0.0480	0.1095	0	0	1
12	13	0.2080	0.4504	0	0	1	**44**	**45**	0.0595	0.0867	0	0	1	**76**	0.0480	0.1095	0	0	1
12	14	0.0262	0.0558	0	0	1	**45**	**46**	0.131	0.304	0	0	1	**78**	0.2551	0.6956	0	0	1
13	15	0.0786	0.1614	0	0	1	**46**	**47**	0.2298	0.4842	0	0	1	**79**	0.1296	0.4416	0	0	1
1	16	0.1574	0.3964	0	0	1	**46**	**48**	0.245	0.828	0	0	1	**79**	**80**	0.9480	0.1095	0	1

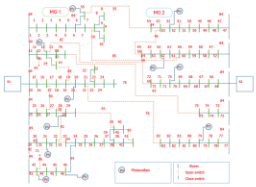
Processing

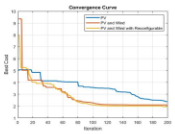
Multi operation scenarios

- **Scenario 3** — PV and WT, with reconfiguration
- **Scenario 2** — PV and WT, No Reconfiguration
- **Scenario 1: baseline** — PV sources

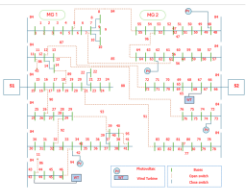
Results

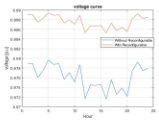
Network topology with PV and WT reconfiguration

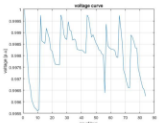
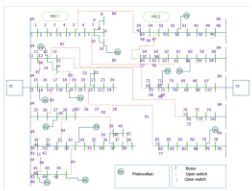
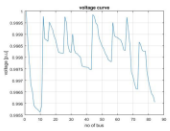




Network topology with PV and WT No reconfiguration







Network topology under the baseline