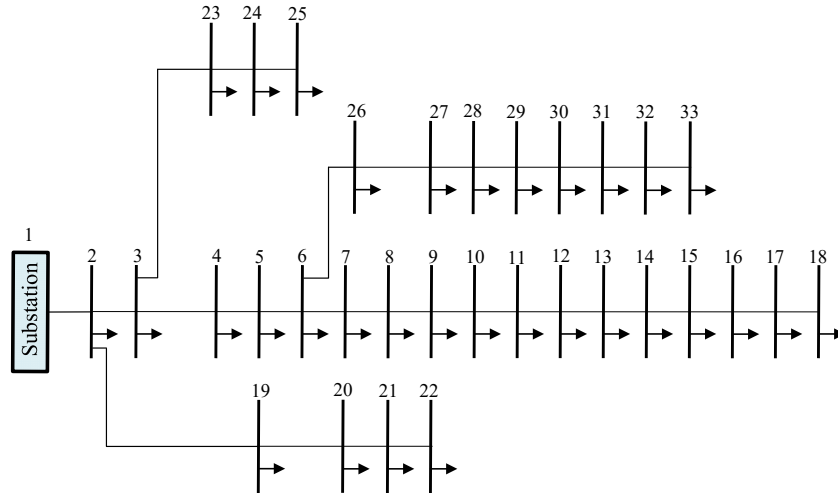


33-Bus Distribution System for Wildfire Arc-Ignition Analysis



Peak load of busses

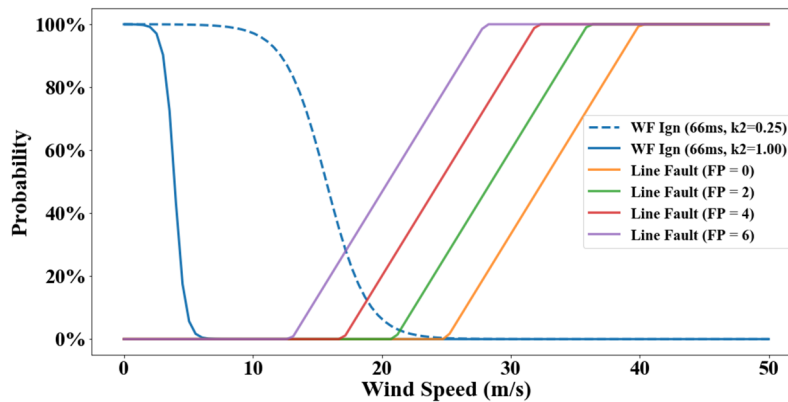
Bus No.	P (kW)	Q (kVar)
2	100	60
3	90	40
4	120	80
5	60	30
6	60	20
7	200	100
8	200	100
9	60	20
10	60	20
11	45	30
12	60	35
13	60	35
14	120	80
15	60	10
16	60	20
17	60	20

Bus No.	P (kW)	Q (kVar)
18	90	40
19	90	40
20	90	40
21	90	40
22	90	40
23	90	50
24	420	200
25	420	200
26	60	25
27	60	25
28	60	20
29	120	70
30	200	600
31	150	70
32	210	100
33	60	40

Daily Load profile

Hour	Load variation to peak Load	Hour	Load variation to peak Load
1	71.3%	13	81.5%
2	68.9%	14	81.3%
3	68.3%	15	80.8%
4	69.3%	16	80.8%
5	71.4%	17	84.2%
6	77.6%	18	94.5%
7	87.1%	19	100.0%
8	92.4%	20	97.3%
9	90.2%	21	94.8%
10	87.4%	22	89.7%
11	85.5%	23	82.1%
12	82.9%	24	75.1%

Parameters Used to Generate Ignition Probability Curves



	Air Temperature (°C)	Moisture Content (%)	Arc Duration (ms)	Reclose Count	Reclose Time Delay	k2
Solid Line	40	5%	66ms	1.00	30 sec	1
Dashed Line	40	5%	66ms	1.00	30 sec	0.25

HRRR Data Collection Location

	Latitude	Longitude
HRRR 1	39.9062	-121.4008
HRRR 2	39.9131	-121.3668
HRRR 3	39.9461	-121.3419
HRRR 4	39.9791	-121.3169

HRRR Weather Data

	Wind Speed (m/s)				Air Temperature (°C)				Relative Humidity (%)				Wind Gust (m/s)			
	HRRR 1	HRRR 2	HRRR 3	HRRR 4	HRRR 1	HRRR 2	HRRR 3	HRRR 4	HRRR 1	HRRR 2	HRRR 3	HRRR 4	HRRR 1	HRRR 2	HRRR 3	HRRR 4
0:00	7.038259	9.947224	12.83628	7.988025	5.701074	7.763574	4.013574	2.138574	31.4	29.5	33.6	36	17.16856	18.41856	18.29356	12.79356
1:00	6.241188	9.154541	12.69351	8.046953	4.87832	7.00332	3.37832	1.37832	29.2	27.5	31.4	35.3	14.87464	17.43714	18.31214	11.99964
2:00	5.297903	8.631169	12.83256	7.516558	4.705774	6.955774	3.268274	1.205774	27.1	25.6	29.5	33.9	14.21726	17.27976	18.21726	11.59226
3:00	5.7742	9.423306	13.05118	7.332952	4.604547	6.792047	2.979547	0.792047	26.7	25.5	30	34.9	15.40957	18.47207	18.65957	11.84707
4:00	6.404249	9.655458	12.70123	7.492985	4.723901	6.723901	2.848901	0.786401	26.4	25.6	31	35.5	15.96198	18.52448	18.39948	12.21198
5:00	5.151684	8.458154	12.11722	6.661099	4.67428	6.86178	3.04928	0.86178	28.3	27.1	32.3	37.3	14.73528	17.61028	17.79778	11.23528
6:00	6.11683	9.648653	13.06732	7.255001	4.998834	6.998834	3.061334	0.936334	26.9	26.2	31.6	36.2	16.61185	19.42435	19.36185	12.36185
7:00	7.557392	11.26243	14.4003	7.956279	4.872339	6.809839	2.809839	0.684839	26.3	25.8	31	35.7	18.57067	23.19567	21.63317	14.32067
8:00	10.07584	13.49444	15.81125	9.585113	5.598779	7.098779	2.911279	0.973779	26.1	26	31.6	36.6	23.91426	25.10176	23.28926	15.72675
9:00	10.38188	13.78017	15.78456	10.73238	6.799646	8.049646	3.674646	1.737146	22.5	22.5	27.5	32.7	23.39523	24.89523	23.45773	17.08273
10:00	10.6741	13.84862	15.67713	11.13764	7.647241	8.834741	4.334741	2.584741	19.2	19.5	23.9	28.4	23.9822	25.3572	23.8572	17.4197
11:00	8.328108	11.16199	12.70313	8.590867	10.87985	12.00485	7.379846	5.629846	14	14.4	18.3	22	20.85426	22.04176	20.66676	15.41676
12:00	6.922349	9.71665	12.20004	8.226626	12.8605	14.173	9.297998	7.735498	11.3	11.5	14.9	17.9	18.20443	19.64193	19.26693	14.26693
13:00	6.983612	9.294159	12.09311	8.71804	13.33337	14.77087	9.833368	8.270868	9.7	9.6	12.3	14.5	16.06682	17.69182	18.31682	13.37932
14:00	6.034564	8.164361	10.8429	7.892292	13.90042	15.40042	10.52542	8.837915	7.7	7.6	9.900001	11.9	14.24055	16.05305	16.61555	11.92805
15:00	6.31029	8.152621	10.7876	7.933924	13.51211	15.13711	10.44961	8.762109	7.5	7.3	9.5	11.3	14.59286	15.84286	16.65536	12.40536
16:00	6.975356	9.229303	12.69758	8.756262	11.55828	13.37078	8.870782	7.183282	9.5	9	11.1	12.8	16.52611	17.90111	18.77611	13.65111
17:00	6.038816	8.981875	12.7728	7.846889	10.16534	12.35284	8.227838	6.227838	12.4	11.6	13.8	15.8	16.7462	18.1837	18.6837	13.18371
18:00	5.622809	8.903524	12.73033	6.871475	9.333643	11.52114	7.708643	5.458643	11.9	11.5	13	15.1	16.95707	18.51957	18.33207	12.01957
19:00	5.503479	8.959056	12.28986	5.785862	8.921777	11.17178	7.671777	5.171777	11.3	10.9	11.9	14	16.80846	17.18346	17.37096	10.24596
20:00	6.341385	9.703392	12.02576	5.250923	8.053247	10.17825	6.865747	4.365747	11.6	11.1	11.6	13.6	15.36259	14.61259	15.23759	8.300087
21:00	6.013843	9.658838	11.59678	4.397798	7.935144	10.12264	6.935144	4.247644	11.3	11.1	11.6	13.7	15.168	17.2305	16.293	7.417999
22:00	5.809976	9.70593	11.69386	5.135744	7.426721	9.551721	6.301721	3.676721	11.3	11.2	11.6	13.9	15.4335	17.80849	16.80849	8.183496
23:00	6.591189	10.77217	12.00873	5.071904	6.952783	8.952783	5.827783	3.077783	11.4	11.5	11.9	14.6	12.47143	15.40893	15.15893	8.346425

Line Fault Propensities and HRRR Point Map

Line ID	Bus to Bus	HRRR Point	C ^{veg}	C ^{trim}	C ^{Str}	C ^{insp}	a ^{OH}	FP
1	('b1', 'b2')	1	0	0	0	0	0	1
2	('b2', 'b3')	1	0	0	0	0	0	1
3	('b2', 'b19')	1	3	0	0	0	0	3
4	('b3', 'b4')	1	0	0	0	0	0	1
5	('b3', 'b23')	1	3	1	0	1	1	5
6	('b4', 'b5')	1	1	1	1	1	1	4
7	('b5', 'b6')	1	1	0	0	0	0	1
8	('b6', 'b7')	1	1	0	0	0	0	1
9	('b6', 'b26')	2	3	1	1	1	1	6
10	('b7', 'b8')	2	1	1	1	1	1	4
11	('b8', 'b9')	2	1	0	0	0	0	1
12	('b9', 'b10')	2	1	1	1	1	0	3
13	('b10', 'b11')	2	1	1	1	1	0	3
14	('b11', 'b12')	2	1	0	0	0	0	1
15	('b12', 'b13')	2	1	0	0	0	0	1
16	('b13', 'b14')	2	1	1	1	1	1	4
17	('b14', 'b15')	3	2	0	0	0	0	2
18	('b15', 'b16')	3	2	0	0	0	0	2
19	('b16', 'b17')	3	2	1	1	1	1	5
20	('b17', 'b18')	3	2	1	1	1	1	5
21	('b19', 'b20')	3	2	0	0	0	0	2
22	('b20', 'b21')	3	2	0	0	0	0	2
23	('b21', 'b22')	3	2	0	0	0	0	2
24	('b23', 'b24')	3	2	0	0	0	0	2
25	('b24', 'b25')	4	2	0	0	0	0	2
26	('b26', 'b27')	4	2	0	0	0	0	2
27	('b27', 'b28')	4	3	0	0	0	0	3
28	('b28', 'b29')	4	3	0	0	0	0	3
29	('b29', 'b30')	4	3	1	0	0	0	4
30	('b30', 'b31')	4	3	1	1	1	1	6
31	('b31', 'b32')	4	3	1	1	1	1	0
32	('b32', 'b33')	4	3	0	1	1	1	5