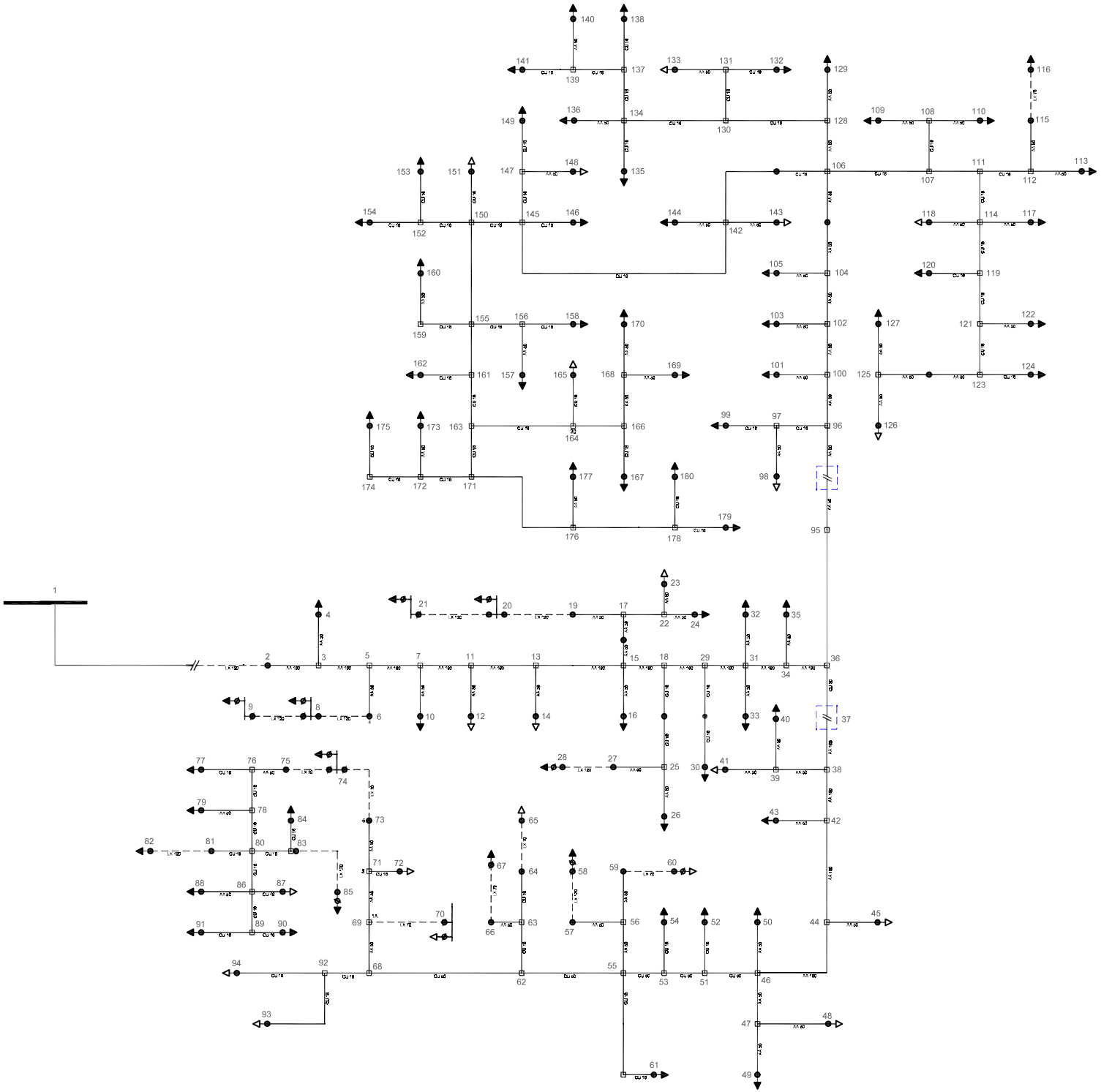
180 Buses Distribution System



Outage Data

Component Number	Bus Out	Bus In	Line/Cable Type	Distance (km)	Average Failure Time (Hours)	Standard Deviation of Failure Time	Number of Failure	Time Period (years)
1	1	2	LX120	0.150	26.13	7.26	17	10
2	2	3	AA160	0.200	11.70	2.65	11	10
3	3	4	AA50	0.250	9.14	2.33	9	10
4	3	5	AA160	0.200	11.89	2.29	21	10
5	5	6	AA50	0.150	9.52	2.34	21	10
6	5	7	AA160	0.300	12.12	1.88	12	10
7	6	8	LX120	0.200	25.58	7.27	14	10
8	7	10	AA50	0.350	8.61	2.27	17	10
9	7	11	AA160	0.150	11.72	1.82	21	10
10	8	9	LX120	0.300	29.28	6.54	11	10
11	11	12	AA50	0.150	9.66	2.59	29	10
12	11	13	AA160	0.150	12.08	2.29	12	10
13	13	14	AA50	0.250	9.16	2.13	26	10
14	13	15	AA160	0.150	12.09	2.22	21	10
15	15	16	AA50	0.300	10.10	2.41	12	10
16	15	17	AA50	0.075	8.32	1.98	8	10
17	15	18	AA160	0.600	13.81	1.29	8	10
18	17	19	AA50	0.200	9.76	2.27	12	10
19	17	22	AA50	0.300	8.91	1.66	30	10
20	18	25	CU16	0.250	20.32	3.63	17	10
21	18	29	AA160	0.700	12.02	2.29	15	10
22	19	20	LX120	0.250	25.53	7.52	14	10
23	20	21	LX120	0.150	25.03	3.97	11	10
24	22	23	AA50	0.250	10.98	2.22	21	10
25	22	24	AA50	0.300	9.41	2.50	17	10
26	25	26	AA50	0.200	9.32	2.03	14	10
27	25	27	AA50	0.100	9.31	2.02	16	10
28	27	28	LX120	0.100	27.04	7.71	21	10
29	29	30	CU16	0.450	20.64	3.67	25	10
30	29	31	AA160	0.600	11.81	2.74	16	10
31	31	32	AA50	0.250	9.53	2.10	26	10
32	31	33	AA50	1.500	9.25	1.92	14	10
33	31	34	AA160	0.750	12.91	2.80	9	10
34	34	35	AA50	0.400	8.88	1.74	20	10
35	34	36	AA160	0.700	12.06	2.70	18	10
36	36	37	CU50	0.600	28.40	3.34	13	10
37	36	95	AA30	0.800	8.20	1.35	17	10
38	37	38	AA160	0.450	11.05	2.08	26	10
39	38	39	AA50	0.450	9.67	2.19	33	10

40	38	42	AA160	0.150	11.02	2.57	17	10
41	39	40	AA50	0.300	9.82	1.61	20	10
42	39	41	AA50	0.300	9.98	2.20	18	10
43	42	43	AA50	0.100	8.67	1.44	11	10
44	42	44	AA160	0.650	12.00	1.92	11	10
45	44	45	AA50	0.100	9.55	1.48	15	10
46	44	46	AA160	0.400	13.27	2.09	11	10
47	46	47	AA50	0.250	10.77	1.23	11	10
48	46	50	AA50	0.150	10.17	1.71	9	10
49	46	51	CU50	0.350	32.08	3.52	35	10
50	47	48	AA50	0.150	9.30	2.39	30	10
51	47	49	AA50	0.200	8.90	2.53	13	10
52	51	52	CU16	0.600	20.96	3.18	21	10
53	51	53	CU50	0.350	33.16	4.60	29	10
54	53	54	CU16	0.250	22.51	3.66	21	10
55	53	55	CU50	0.400	31.46	3.38	14	10
56	55	56	AA50	0.300	9.99	1.94	23	10
57	55	61	CU16	0.600	21.91	2.98	6	10
58	55	62	CU50	0.550	31.73	4.14	14	10
59	56	57	AA50	0.150	8.60	1.73	8	10
60	56	59	AA50	0.350	9.62	2.29	16	10
61	57	58	LX120	0.250	27.15	6.52	14	10
62	59	60	LX70	0.250	15.30	4.40	14	10
63	62	63	CU16	0.400	20.03	2.92	15	10
64	62	68	CU50	0.600	30.42	3.74	14	10
65	63	64	CU16	0.350	20.16	3.19	26	10
66	63	66	AA50	0.250	11.68	1.05	21	10
67	64	65	LX70	0.350	16.27	3.48	17	10
68	66	67	LX70	0.350	18.20	5.23	24	10
69	68	69	AA50	0.400	8.78	2.01	9	10
70	68	92	CU16	0.300	21.31	3.69	14	10
71	69	70	LX70	0.350	16.08	4.52	14	10
72	69	71	AA50	0.350	9.75	2.31	6	10
73	71	72	CU16	0.350	19.52	3.54	21	10
74	71	73	AA50	0.450	9.65	2.44	27	10
75	73	74	LX70	0.800	17.25	4.74	19	10
76	74	75	LX70	0.600	16.81	4.85	21	10
77	75	76	AA50	0.250	10.22	1.89	26	10
78	76	77	CU16	0.200	19.83	4.16	15	10
79	76	78	CU16	0.350	17.68	2.73	21	10
80	78	79	AA50	0.300	9.03	1.86	14	10
81	78	80	CU16	0.350	21.37	2.91	13	10
82	80	81	CU16	0.350	21.20	2.92	20	10

83	80	83	CU16	0.300	21.05	3.85	14	10
84	80	86	CU16	0.250	19.74	3.35	9	10
85	81	82	LX120	0.450	29.24	5.82	14	10
86	83	84	CU16	0.350	22.31	2.41	22	10
87	83	85	LX120	0.300	29.06	4.01	16	10
88	86	87	CU16	0.200	18.82	4.11	11	10
89	86	88	AA50	0.300	8.89	1.63	14	10
90	86	89	CU16	0.400	19.54	2.98	21	10
91	89	90	CU16	0.300	20.03	2.68	17	10
92	89	91	CU16	0.250	19.40	2.83	29	10
93	92	93	CU16	0.350	20.62	3.81	42	10
94	92	94	CU16	0.250	20.80	3.60	11	10
95	95	96	AA50	0.500	9.45	1.96	30	10
96	96	97	CU16	0.200	18.70	1.91	9	10
97	96	100	AA50	0.300	9.61	1.76	14	10
98	97	98	AA50	0.250	8.70	1.80	17	10
99	97	99	CU16	0.150	21.00	3.85	21	10
100	100	101	AA50	0.250	9.13	2.59	17	10
101	100	102	AA50	0.500	9.35	2.38	23	10
102	102	103	AA50	0.250	9.09	2.64	9	10
103	102	104	AA50	0.500	9.41	1.62	30	10
104	104	105	AA50	0.250	10.27	1.76	26	10
105	104	106	AA50	0.750	10.02	1.92	12	10
106	106	107	CU16	0.300	20.29	3.62	30	10
107	106	128	AA50	0.450	9.14	1.99	14	10
108	106	142	CU16	0.750	20.75	3.65	6	10
109	107	108	CU16	0.350	20.40	3.36	42	10
110	107	111	CU16	0.350	21.44	3.01	17	10
111	108	109	AA50	0.200	7.85	1.52	6	10
112	108	110	AA50	0.250	9.68	1.60	23	10
113	111	112	CU16	0.250	21.22	2.90	26	10
114	111	114	CU16	0.350	19.25	2.95	16	10
115	112	113	AA50	0.150	10.31	2.36	23	10
116	112	115	AA50	0.300	9.12	2.12	21	10
117	114	117	AA50	0.200	9.81	2.01	21	10
118	114	118	AA50	0.200	9.13	1.93	15	10
119	114	119	CU16	0.500	20.00	3.96	38	10
120	115	116	LX70	0.350	19.32	4.25	9	10
121	119	120	CU16	0.250	20.15	3.11	26	10
122	119	121	CU16	0.550	21.22	3.35	8	10
123	121	122	AA50	0.250	10.17	1.47	12	10
124	121	123	CU16	0.400	20.88	3.54	18	10
125	123	124	CU16	0.250	20.82	3.34	23	10

126	123	125	AA50	0.650	8.40	1.04	12	10
127	125	126	AA50	0.200	10.06	2.14	26	10
128	125	127	AA50	0.250	9.23	2.06	23	10
129	128	129	AA50	0.350	9.17	2.19	9	10
130	128	130	CU16	0.750	21.14	3.31	21	10
131	130	131	CU16	0.350	21.51	3.15	21	10
132	130	134	CU16	0.550	20.43	3.35	21	10
133	131	132	CU16	0.200	20.65	3.74	14	10
134	131	133	AA50	0.250	9.60	2.05	17	10
135	134	135	CU16	0.250	20.74	3.18	13	10
136	134	136	AA50	0.150	10.02	2.39	17	10
137	134	137	CU16	0.450	21.17	3.94	14	10
138	137	138	CU16	0.200	21.51	3.76	9	10
139	137	139	CU16	0.400	20.45	3.55	20	10
140	139	140	AA50	0.250	8.22	1.55	20	10
141	139	141	CU16	0.200	18.83	2.76	21	10
142	142	143	AA50	0.400	9.03	2.05	18	10
143	142	144	AA50	0.300	9.20	1.93	21	10
144	142	145	CU16	0.800	19.38	3.70	9	10
145	145	146	CU16	0.250	21.41	3.64	33	10
146	145	147	CU16	0.450	20.39	3.24	21	10
147	145	150	CU16	0.550	20.87	2.49	12	10
148	147	148	AA50	0.150	8.92	1.96	38	10
149	147	149	CU16	0.200	20.27	3.57	24	10
150	150	151	CU16	0.200	21.38	3.36	6	10
151	150	152	CU16	0.600	20.67	3.15	26	10
152	150	155	CU16	0.650	20.73	3.06	23	10
153	152	153	CU16	0.200	19.85	3.20	28	10
154	152	154	CU16	0.200	20.85	3.25	14	10
155	155	156	CU16	0.550	20.18	3.75	14	10
156	155	159	CU16	0.450	19.93	4.16	20	10
157	155	161	CU16	0.450	21.44	3.89	23	10
158	156	157	AA50	0.350	10.47	1.70	46	10
159	156	158	CU16	0.250	20.42	3.19	9	10
160	159	160	AA50	0.250	9.24	1.89	18	10
161	161	162	CU16	0.200	20.44	3.68	17	10
162	161	163	CU16	0.400	18.28	1.74	12	10
163	163	164	CU16	0.650	22.90	3.21	39	10
164	163	171	CU16	0.450	21.83	2.69	30	10
165	164	165	CU16	0.250	19.10	2.41	18	10
166	164	166	CU16	0.400	20.22	4.14	11	10
167	166	167	CU16	0.250	21.84	2.93	21	10
168	166	168	AA50	0.350	10.00	2.25	25	10

169	168	169	AA50	0.350	8.57	1.60	11	10
170	168	170	AA50	0.300	9.12	1.91	11	10
171	171	172	CU16	0.350	19.88	3.48	12	10
172	171	176	CU16	0.600	21.41	3.56	25	10
173	172	173	AA50	0.250	9.30	1.81	14	10
174	172	174	CU16	0.400	20.01	4.04	15	10
175	174	175	CU16	0.250	21.13	2.93	15	10
176	176	177	AA50	0.250	9.47	1.99	21	10
177	176	178	CU16	0.550	18.86	3.00	9	10
178	178	179	CU16	0.350	19.17	2.85	18	10
179	178	180	CU16	0.300	21.51	3.07	14	10

Load Data

Load ID	Bus Number	P (p.u.)	Q (p.u.)	S (p.u.)
1	4	0.029	0.010	0.030
2	8	0.208	0.076	0.221
3	9	0.071	0.021	0.074
4	10	0.070	0.024	0.074
5	12	0.053	0.021	0.057
6	14	0.045	0.014	0.047
7	16	0.058	0.018	0.061
8	20	0.082	0.031	0.088
9	21	0.107	0.042	0.115
10	23	0.110	0.036	0.116
11	24	0.053	0.021	0.057
12	26	0.072	0.022	0.075
13	28	0.058	0.019	0.061
14	30	0.033	0.011	0.035
15	32	0.044	0.014	0.046
16	33	0.044	0.015	0.046
17	35	0.054	0.020	0.057
18	40	0.044	0.016	0.047
19	41	0.056	0.022	0.061
20	43	0.133	0.046	0.141
21	45	0.044	0.014	0.046
22	48	0.043	0.017	0.046
23	49	0.054	0.020	0.057
24	50	0.044	0.016	0.047
25	52	0.091	0.034	0.097
26	54	0.083	0.028	0.088

27	58	0.176	0.054	0.184
28	60	0.066	0.021	0.069
29	61	0.344	0.108	0.361
30	65	0.440	0.161	0.469
31	67	0.227	0.088	0.243
32	70	0.083	0.029	0.088
33	72	0.110	0.035	0.115
34	74	0.275	0.096	0.292
35	77	0.054	0.019	0.057
36	79	0.088	0.033	0.094
37	82	0.092	0.032	0.097
38	84	0.132	0.049	0.141
39	85	0.044	0.014	0.046
40	87	0.215	0.085	0.231
41	88	0.086	0.032	0.092
42	90	0.109	0.042	0.117
43	91	0.142	0.053	0.152
44	93	0.033	0.012	0.035
45	94	0.343	0.134	0.369
46	98	0.108	0.042	0.116
47	99	0.110	0.034	0.115
48	101	0.044	0.017	0.047
49	103	0.057	0.020	0.061
50	105	0.054	0.016	0.056
51	109	0.043	0.017	0.046
52	110	0.043	0.017	0.046
53	113	0.134	0.050	0.143
54	116	0.138	0.052	0.148
55	117	0.057	0.020	0.061
56	118	0.033	0.012	0.035
57	120	0.043	0.015	0.046
58	122	0.043	0.017	0.046
59	124	0.054	0.019	0.057
60	126	0.022	0.008	0.023
61	127	0.058	0.018	0.061
62	129	0.083	0.029	0.088
63	132	0.175	0.057	0.184
64	133	0.069	0.027	0.074
65	135	0.108	0.039	0.115
66	136	0.044	0.015	0.047
67	138	0.058	0.019	0.061
68	140	0.033	0.012	0.035
69	141	0.108	0.041	0.115

70	143	0.070	0.024	0.074
71	144	0.055	0.017	0.057
72	146	0.089	0.030	0.094
73	148	0.451	0.180	0.486
74	149	0.066	0.024	0.070
75	151	0.110	0.033	0.115
76	153	0.138	0.048	0.146
77	154	0.053	0.021	0.057
78	157	0.022	0.008	0.023
79	158	0.057	0.021	0.061
80	160	0.016	0.006	0.018
81	162	0.044	0.015	0.046
82	165	0.044	0.014	0.046
83	167	0.219	0.066	0.229
84	169	0.045	0.014	0.047
85	170	0.058	0.019	0.061
86	173	0.033	0.012	0.035
87	175	0.174	0.062	0.184
88	177	0.043	0.016	0.046
89	179	0.069	0.026	0.074
90	180	0.043	0.016	0.046

Unavailability

Unavailability (hours/year)	Desire Unavailability Variation (hours/year) (25%)
45.7994	11.4498
13.4496	3.3624
8.6988	2.1747
25.5294	6.3824
20.4658	5.1165
15.0735	3.7684
37.1716	9.2929
15.0738	3.7685
25.1225	6.2806
33.6535	8.4134
28.5166	7.1292
15.0592	3.7648
24.2698	6.0674
25.9438	6.4860
12.6222	3.1556
7.0824	1.7706

11.5932	2.8983
12.1992	3.0498
27.1399	6.7850
35.4658	8.8665
18.5900	4.6475
37.1263	9.2816
28.6473	7.1618
23.5701	5.8925
16.4829	4.1207
13.5031	3.3758
15.3484	3.8371
58.2231	14.5558
52.5365	13.1341
19.4746	4.8686
25.2244	6.3061
13.3925	3.3481
12.2510	3.0628
18.1803	4.5451
22.2967	5.5742
38.0962	9.5240
14.3098	3.5775
29.2431	7.3108
32.3712	8.0928
19.2704	4.8176
20.0720	5.0180
18.4418	4.6104
9.9215	2.4804
13.7263	3.4316
14.7368	3.6842
15.1858	3.7965
12.2871	3.0718
9.6142	2.4035
113.6165	28.4041
28.3672	7.0918
12.0402	3.0100
44.9349	11.2337
97.5909	24.3977
48.2617	12.0654
45.3240	11.3310
23.4373	5.8593
14.0990	3.5247
45.7638	11.4410
7.2920	1.8230

15.8765	3.9691
39.3720	9.8430
22.2311	5.5578
30.9133	7.7283
43.8511	10.9628
53.3041	13.3260
24.9867	6.2467
28.4436	7.1109
44.6437	11.1609
8.3390	2.0848
30.7958	7.6990
23.3671	5.8418
6.3510	1.5877
41.8922	10.4731
26.5485	6.6371
33.6678	8.4169
36.2008	9.0502
27.0362	6.7591
30.6942	7.6736
37.8924	9.4731
13.0758	3.2690
28.6913	7.1728
43.2966	10.8241
30.4312	7.6078
18.6591	4.6648
42.3214	10.5803
49.9822	12.4956
47.7325	11.9331
21.6198	5.4050
12.8583	3.2146
41.8955	10.4739
34.8958	8.7240
57.1072	14.2768
87.5355	21.8839
23.8235	5.9559
28.7920	7.1980
17.5841	4.3960
13.8920	3.4730
15.2095	3.8024
45.0563	11.2641
16.0047	4.0012
21.9825	5.4956
8.6727	2.1682

28.6473	7.1618
27.1499	6.7875
12.4933	3.1233
61.7839	15.4460
13.2359	3.3090
13.4164	3.3541
86.5974	21.6494
37.3724	9.3431
5.0891	1.2723
22.6809	5.6702
56.0635	14.0159
31.6446	7.9112
24.2133	6.0533
19.6056	4.9014
21.0627	5.2657
14.1381	3.5345
76.9428	19.2357
18.3385	4.5846
53.2768	13.3192
17.9199	4.4800
12.6361	3.1590
38.5204	9.6301
48.7947	12.1987
10.4231	2.6058
26.6354	6.6589
21.6786	5.4196
8.7144	2.1786
45.3239	11.3310
46.1056	11.5264
43.8124	10.9531
29.8546	7.4636
16.7766	4.1942
27.8752	6.9688
17.5289	4.3822
30.6155	7.6539
20.3461	5.0865
41.8304	10.4576
16.8176	4.2044
40.3516	10.0879
16.6929	4.1732
19.7625	4.9406
18.3549	4.5887
71.6186	17.9047

43.7127	10.9282
25.9004	6.4751
34.3276	8.5819
49.5653	12.3913
13.7956	3.4489
54.6337	13.6584
48.5725	12.1431
56.4680	14.1170
30.1047	7.5262
29.1839	7.2960
40.8133	10.2033
50.2965	12.5741
48.6013	12.1503
19.2829	4.8207
17.0740	4.2685
35.6879	8.9220
22.6608	5.6652
90.2991	22.5748
66.3962	16.5990
35.1674	8.7918
23.2059	5.8015
46.7818	11.6955
25.4842	6.3711
9.8184	2.4546
10.4728	2.6182
24.7548	6.1887
54.4694	13.6173
13.4519	3.3630
30.9534	7.7384
32.5979	8.1495
20.3383	5.0846
17.8091	4.4523
35.3394	8.8349
31.0398	7.7599

Actions

Bus Out	Bus In	Repair Reduction Action1 (Hours)	Repair Reduction Action2 (Hours)	Repair Reduction Action3 (Hours)	Cost Action 1 (m.u.)	Cost Action 2 (m.u.)	Cost Action 3 (m.u.)
1	2	0.00	0.00	0.00	0	0	0
2	3	2.34	5.85	8.19	204	459	506
3	4	1.83	4.57	6.40	247	362	649
3	5	2.38	5.95	8.33	183	406	600
5	6	1.90	4.76	6.66	146	333	596
5	7	0.00	0.00	0.00	0	0	0
6	8	5.12	12.79	17.90	155	352	622
7	10	1.72	4.30	6.02	156	431	624
7	11	2.34	5.86	8.20	184	438	672
8	9	5.86	14.64	20.50	106	450	661
11	12	1.93	4.83	6.76	185	390	615
11	13	0.00	0.00	0.00	0	0	0
13	14	1.83	4.58	6.41	288	346	548
13	15	2.42	6.05	8.46	289	483	678
15	16	2.02	5.05	7.07	214	330	505
15	17	1.66	4.16	5.83	254	465	598
15	18	2.76	6.90	9.67	158	408	533
17	19	1.95	4.88	6.83	118	500	696
17	22	1.78	4.46	6.24	275	315	643
18	25	4.06	10.16	14.22	170	388	600
18	29	2.40	6.01	8.42	233	321	594
19	20	5.11	12.77	17.87	172	493	511
20	21	5.01	12.52	17.52	133	300	637
22	23	2.20	5.49	7.69	223	455	508
22	24	1.88	4.71	6.59	116	464	514
25	26	1.86	4.66	6.53	290	474	604
25	27	1.86	4.66	6.52	225	316	519
27	28	5.41	13.52	18.93	156	380	664
29	30	4.13	10.32	14.45	200	352	664
29	31	2.36	5.90	8.27	240	460	645
31	32	1.91	4.76	6.67	259	386	530
31	33	1.85	4.63	6.48	202	483	632
31	34	0.00	0.00	0.00	0	0	0
34	35	1.78	4.44	6.22	234	353	695
34	36	2.41	6.03	8.44	161	329	630
36	37	5.68	14.20	19.88	291	327	660
36	95	1.64	4.10	5.74	208	474	591
37	38	2.21	5.53	7.74	128	416	586

38	39	1.93	4.83	6.77	283	410	665
38	42	2.20	5.51	7.71	111	329	516
39	40	1.96	4.91	6.87	162	471	526
39	41	2.00	4.99	6.98	145	425	534
42	43	1.73	4.33	6.07	274	370	578
42	44	2.40	6.00	8.40	275	403	667
44	45	1.91	4.77	6.68	273	380	661
44	46	2.65	6.64	9.29	147	315	512
46	47	2.15	5.39	7.54	172	348	580
46	50	2.03	5.09	7.12	200	324	605
46	51	6.42	16.04	22.46	210	336	583
47	48	1.86	4.65	6.51	196	348	632
47	49	1.78	4.45	6.23	268	383	626
51	52	4.19	10.48	14.67	139	309	558
51	53	6.63	16.58	23.21	127	481	586
53	54	4.50	11.25	15.75	106	489	503
53	55	6.29	15.73	22.02	257	398	697
55	56	2.00	4.99	6.99	259	398	533
55	61	4.38	10.96	15.34	231	367	521
55	62	6.35	15.87	22.21	239	480	574
56	57	1.72	4.30	6.02	108	374	539
56	59	1.92	4.81	6.74	287	322	598
57	58	5.43	13.57	19.00	220	456	568
59	60	3.06	7.65	10.71	128	378	691
62	63	4.01	10.02	14.02	254	348	684
62	68	6.08	15.21	21.29	223	381	510
63	64	4.03	10.08	14.11	216	319	648
63	66	2.34	5.84	8.18	201	326	554
64	65	3.25	8.14	11.39	267	489	584
66	67	3.64	9.10	12.74	168	492	610
68	69	1.76	4.39	6.15	276	415	689
68	92	4.26	10.65	14.92	162	312	583
69	70	3.22	8.04	11.26	237	347	697
69	71	1.95	4.87	6.82	100	370	560
71	72	3.90	9.76	13.67	167	465	640
71	73	1.93	4.83	6.76	191	303	633
73	74	3.45	8.62	12.07	158	308	608
74	75	3.36	8.41	11.77	254	333	640
75	76	2.04	5.11	7.15	127	430	633
76	77	3.97	9.92	13.88	271	447	535
76	78	3.54	8.84	12.37	258	430	525
78	79	1.81	4.52	6.32	237	390	700
78	80	4.27	10.69	14.96	178	409	534

80	81	4.24	10.60	14.84	274	359	506
80	83	4.21	10.52	14.73	136	449	612
80	86	3.95	9.87	13.82	142	337	677
81	82	5.85	14.62	20.47	293	438	634
83	84	4.46	11.15	15.62	187	336	538
83	85	5.81	14.53	20.34	219	374	574
86	87	3.76	9.41	13.17	251	425	592
86	88	1.78	4.45	6.23	239	456	697
86	89	3.91	9.77	13.68	189	316	531
89	90	4.01	10.01	14.02	223	486	671
89	91	3.88	9.70	13.58	133	455	629
92	93	4.12	10.31	14.43	230	397	575
92	94	4.16	10.40	14.56	149	387	538
95	96	0.00	0.00	0.00	0	0	0
96	97	3.74	9.35	13.09	213	361	596
96	100	1.92	4.80	6.73	245	402	524
97	98	1.74	4.35	6.09	166	402	618
97	99	4.20	10.50	14.70	299	464	545
100	101	1.83	4.57	6.39	164	459	577
100	102	1.87	4.68	6.55	134	429	617
102	103	1.82	4.54	6.36	259	376	550
102	104	1.88	4.70	6.59	110	463	558
104	105	2.05	5.13	7.19	259	407	624
104	106	2.00	5.01	7.02	273	370	553
106	107	4.06	10.14	14.20	121	488	665
106	128	1.83	4.57	6.40	134	476	697
106	142	4.15	10.37	14.52	102	410	646
107	108	4.08	10.20	14.28	157	425	569
107	111	4.29	10.72	15.01	101	417	617
108	109	1.57	3.93	5.50	253	341	521
108	110	1.94	4.84	6.77	276	360	682
111	112	4.24	10.61	14.85	259	394	676
111	114	3.85	9.63	13.48	153	346	664
112	113	2.06	5.15	7.22	225	469	552
112	115	1.82	4.56	6.39	110	339	619
114	117	1.96	4.91	6.87	248	345	504
114	118	1.83	4.57	6.39	167	334	585
114	119	4.00	10.00	14.00	237	345	562
115	116	3.86	9.66	13.52	164	387	532
119	120	4.03	10.08	14.11	142	362	535
119	121	4.24	10.61	14.85	233	485	585
121	122	2.03	5.08	7.12	100	386	518
121	123	4.18	10.44	14.62	251	337	620

123	124	4.16	10.41	14.57	248	481	594
123	125	1.68	4.20	5.88	211	496	639
125	126	2.01	5.03	7.04	300	388	640
125	127	1.85	4.62	6.46	176	322	628
128	129	1.83	4.58	6.42	271	351	506
128	130	4.23	10.57	14.80	292	382	513
130	131	4.30	10.76	15.06	137	419	564
130	134	4.09	10.22	14.30	155	352	606
131	132	4.13	10.32	14.45	136	421	631
131	133	1.92	4.80	6.72	288	442	581
134	135	4.15	10.37	14.52	236	344	664
134	136	2.00	5.01	7.01	169	323	644
134	137	4.23	10.59	14.82	196	359	694
137	138	4.30	10.76	15.06	199	364	606
137	139	4.09	10.23	14.32	175	385	565
139	140	1.64	4.11	5.75	187	402	521
139	141	3.77	9.41	13.18	280	317	622
142	143	1.81	4.51	6.32	163	352	656
142	144	1.84	4.60	6.44	242	461	585
142	145	3.88	9.69	13.57	260	305	518
145	146	4.28	10.71	14.99	294	486	553
145	147	4.08	10.19	14.27	206	446	530
145	150	4.17	10.43	14.61	180	398	556
147	148	1.78	4.46	6.24	268	416	588
147	149	4.05	10.14	14.19	133	347	605
150	151	4.28	10.69	14.97	195	392	591
150	152	4.13	10.33	14.47	133	493	675
150	155	4.15	10.36	14.51	142	409	604
152	153	3.97	9.93	13.90	189	404	689
152	154	4.17	10.42	14.59	198	346	628
155	156	4.04	10.09	14.13	295	398	692
155	159	3.99	9.97	13.95	229	425	548
155	161	4.29	10.72	15.01	293	436	635
156	157	2.09	5.23	7.33	255	379	558
156	158	4.08	10.21	14.29	281	373	635
159	160	1.85	4.62	6.47	104	498	639
161	162	4.09	10.22	14.31	287	307	513
161	163	3.66	9.14	12.80	148	477	551
163	164	4.58	11.45	16.03	132	483	545
163	171	4.37	10.91	15.28	293	460	634
164	165	3.82	9.55	13.37	193	319	669
164	166	4.04	10.11	14.15	116	352	569
166	167	4.37	10.92	15.29	273	367	656

166	168	2.00	5.00	7.00	105	436	635
168	169	1.71	4.28	6.00	278	327	501
168	170	1.82	4.56	6.39	261	444	621
171	172	3.98	9.94	13.91	177	321	577
171	176	4.28	10.70	14.98	232	431	684
172	173	1.86	4.65	6.51	168	399	500
172	174	4.00	10.00	14.00	143	456	592
174	175	4.23	10.57	14.79	270	443	585
176	177	1.89	4.74	6.63	117	481	592
176	178	3.77	9.43	13.20	281	479	654
178	179	3.83	9.59	13.42	233	367	564
178	180	4.30	10.76	15.06	175	440	657

Action 1 Increase the Operation Personal
Action 2 Communications Upgrade
Action 3 Automation System Upgrade