Table I Market Price

Hour	Energy Price ($/MWh)	Spinning reserve ($/MWh)	Non-spinning reserve ($/MWh)
1	29.225	2	1.2
2	26.397	1.7	0.9
3	22.47	1.27	0.47
4	21.07	1.12	0.32
5	23.163	1.35	0.55
6	30.863	2.18	1.38
7	31.556	2.17	1.37
8	47.39	2.34	1.54
9	49.7	2.51	1.71
10	52.1	2.69	1.89
11	55.35	2.94	2.14
12	55.5	2.95	2.15
13	57.01	2.77	1.97
14	54.42	2.87	2.07
15	63.12	2.92	2.12
16	65.59	3.32	2.52
17	67.24	3.23	2.43
18	63.87	2.97	2.17
19	55.61	2.96	2.16
20	52.55	2.73	1.93
21	47.55	2.35	1.55
22	39.69	1.76	0.96
23	37	1.57	0.77
24	30.51	1.16	0.36

Table II Fossil Unit Data

Unit	Bus No	Pmin (MW)	Pmax (MW)	Qmin (MW)	Qmax (MW)	Min ON (Hour)	Min OFF (Hour)	Ramp Up (MW/Hour)	Ramp Down (MW/Hour)	qsc (MW)	MSR (MW/min)	IniT (Hour)	St Mbtu	Fuel Type	Fuel Price ($/Mbtu)	Ems Coef (lbs/Mbtu)	af (Mbtu/MW^{2}h)	bf (Mbtu/MWh)	cf (Mbtu/h)
1001	4	5	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0	0.06966	26.2438	31.67
1002	6	5	30	-13	50	1	1	15	15	30	1	1	40	Gas	1	0	0.06966	26.2438	31.67
1003	8	5	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0	0.06966	26.2438	31.67
1004	10	150	300	-147	200	8	8	150	150	0	3	8	440	Coal	1	0	0.01088	12.8875	6.78
1005	12	100	300	-35	120	8	8	150	150	0	3	8	110	Coal	1	0	0.01088	12.8875	6.78
1006	15	10	30	-10	30	1	1	15	15	30	1	1	40	Gas	1	0	0.06966	26.2438	31.67
1007	18	25	100	-16	50	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1008	19	5	30	-8	24	1	1	15	15	30	1	1	40	Gas	1	0.35	0.06966	26.2438	31.67
1009	24	5	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0.35	0.06966	26.2438	31.67
1010	25	100	300	-47	140	8	8	150	150	0	3	8	100	Coal	1	0.35	0.01088	12.8875	6.78
1011	26	100	350	-1000	1000	8	8	175	175	0	3.5	8	100	Coal	1	0.35	0.00300	10.7600	32.96
1012	27	8	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0	0.06966	26.2438	31.67
1013	31	8	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0	0.06966	26.2438	31.67
1014	32	25	100	-14	42	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1015	34	8	30	-8	24	1	1	15	15	30	1	1	40	Gas	1	0.3	0.06966	26.2438	31.67
1016	36	25	100	-8	24	5	5	50	50	0	1	5	50	Coal	1	0.3	0.01280	17.8200	10.15
1017	40	8	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0.3	0.06966	26.2438	31.67
1018	42	8	30	-300	300	1	1	15	15	30	1	1	40	Gas	1	0.3	0.06966	26.2438	31.67
1019	46	25	100	-100	100	5	5	50	50	0	1	5	59	Coal	1	0	0.01280	17.8200	10.15
1020	49	50	250	-85	210	8	8	125	125	0	2.5	8	100	Coal	1	0	0.00240	12.3299	28.00
1021	54	50	250	-300	300	8	8	125	125	0	1	8	100	Coal	1	0.25	0.00240	12.3299	28.00
1022	55	25	100	-8	23	5	5	50	50	0	1	5	50	Coal	1	0.25	0.01280	17.8200	10.15
1023	56	25	100	-8	15	5	5	50	50	0	1	5	50	Coal	1	0.25	0.01280	17.8200	10.15
1024	59	50	200	-60	180	8	8	100	100	0	2	10	100	Coal	1	0.25	0.00440	13.2900	39.00
1025	61	50	200	-100	300	8	8	100	100	0	2	10	100	Coal	1	0	0.00440	13.2900	39.00
1026	62	25	100	-20	20	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1027	65	100	420	-67	200	10	10	210	210	0	4.2	10	250	Coal	1	0	0.01059	8.3391	64.16
1028	66	100	420	-67	200	10	10	210	210	0	4.2	10	250	Coal	1	0.2	0.01059	8.3391	64.16
1029	69	80	300	-9999	9999	8	8	150	150	0	3	10	100	Coal	1	0.2	0.01088	12.8875	6.78
1030	70	30	80	-10	32	4	4	40	40	0	1	4	45	Coal	1	0.2	0.04592	15.4708	74.33
1031	72	10	30	-100	100	1	1	15	15	30	1	1	40	Oil	1	0.2	0.06966	26.2438	31.67
1032	73	5	30	-100	100	1	1	15	15	30	1	1	40	Oil	1	0.15	0.06966	26.2438	31.67

1033	74	5	20	-6	9	1	1	10	10	20	1	1	30	Oil	1	0.15	0.02830	37.6968	17.95
1034	76	25	100	-8	23	5	5	50	50	0	1	5	50	Coal	1	0.15	0.01280	17.8200	10.15
1035	77	25	100	-20	70	5	5	50	50	0	1	5	50	Coal	1	0.15	0.01280	17.8200	10.15
1036	80	150	300	-165	280	8	8	150	150	0	3	10	440	Coal	1	0.15	0.01088	12.8875	6.78
1037	82	25	100	-900	900	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1038	85	10	30	-8	23	1	1	15	15	30	1	1	40	Oil	1	0	0.06966	26.2438	31.67
1039	87	100	300	-100	1000	8	8	150	150	0	3	10	440	Coal	1	0	0.00300	10.7600	32.96
1040	89	50	200	-210	300	8	8	100	100	0	2	10	400	Coal	1	0	0.01088	12.8875	6.78
1041	90	8	20	-300	300	1	1	10	10	20	1	1	30	Oil	1	0	0.02830	37.6968	17.95
1042	91	20	50	-100	100	1	1	25	25	50	1	1	45	Oil	1	0	0.00977	22.9423	58.81
1043	92	100	300	-3	9	8	8	150	150	0	3	8	100	Coal	1	0	0.01088	12.8875	6.78
1044	99	100	300	-100	100	8	8	150	150	0	3	8	100	Coal	1	0	0.01088	12.8875	6.78
1045	100	100	300	-50	155	8	8	150	150	0	3	8	110	Coal	1	0	0.01088	12.8875	6.78
1046	103	8	20	-15	40	1	1	10	10	20	1	1	30	Oil	1	0	0.02830	37.6968	17.95
1047	104	25	100	-8	23	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1048	105	25	100	-8	23	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1049	107	8	20	-200	200	1	1	10	10	20	1	1	30	Oil	1	0	0.02830	37.6968	17.95
1050	110	25	50	-8	23	2	2	25	25	50	1	2	45	Oil	1	0	0.00977	22.9423	58.81
1051	111	25	100	-100	1000	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1052	112	25	100	-100	1000	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1053	113	25	100	-100	200	5	5	50	50	0	1	5	50	Coal	1	0	0.01280	17.8200	10.15
1054	116	25	50	-1000	1000	2	2	25	25	50	1	2	45	Oil	1	0	0.00977	22.9423	58.81

Table III Combined Cycle Unit Data

Unit	Bus No	Total # of CT	Total # of ST	Total # Config	qsc (MW)	MSR (MW/min)	CT St Mbtu	ST St Mbtu	Ems Coef (lbs/Mbtu)	Init Config	IniT (Hour)
4001	12	2	1	5	50	4	30	15	0.1	0	3
4002	61	2	1	5	50	4	120	60	0.1	0	3
4003	62	2	1	5	50	4	320	160	0.1	0	3
4004	66	2	1	5	70	5	40	20	0.1	0	3
4005	49	2	1	5	50	4	80	40	0.1	0	3
4006	49	2	1	5	50	4	200	100	0.1	0	3
4007	59	2	1	5	70	5	120	60	0.1	0	3
4008	61	2	1	5	70	5	120	60	0.1	0	3
4009	80	2	1	5	70	5	120	60	0.1	0	3
4010	111	2	1	5	70	5	40	20	0.1	0	3
4011	100	2	1	5	70	5	40	20	0.1	0	3
4012	89	2	1	5	70	5	200	100	0.1	0	3

Table IV Combined Cycle Unit Configuration Data

Unit	Config #	CT	ST	Pmin (MW)	Pmax (MW)	Qmin (MW)	Qmax (MW)	Tmin (Hour)	Ramp Up (MW/Hour)	Ramp Down (MW/Hour)	af ($(Mbtu/MW^2h)$)	bf (Mbtu/MWh)	cf (Mbtu/h)
4001	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.02533	16.5420	34.3891
4001	1	1	0	5.0	25.0	-4.0	20.0	2	25.0	25.0	0.02533	16.5420	34.3891
4001	2	2	0	10.0	50.0	-8.0	40.0	2	50.0	50.0	0.01266	16.5420	68.7782
4001	3	1	1	7.5	37.5	-6.0	30.0	2	37.5	37.5	0.01359	14.3272	61.2980
4001	4	2	1	15.0	75.0	-12.0	60.0	2	75.0	75.0	0.00962	13.5073	134.1259
4002	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01059	13.1083	70.0288
4002	1	1	0	5.0	25.0	-4.0	20.0	2	25.0	25.0	0.01059	13.1083	70.0288
4002	2	2	0	10.0	50.0	-8.0	40.0	2	50.0	50.0	0.00530	13.1083	140.0576
4002	3	1	1	7.5	37.5	-6.0	30.0	2	37.5	37.5	0.00876	10.8416	112.3179
4002	4	2	1	15.0	75.0	-12.0	60.0	2	75.0	75.0	0.00267	9.3016	189.6272
4003	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.00505	10.6121	130.0021
4003	1	1	0	5.0	25.0	-4.0	20.0	2	25.0	25.0	0.00505	10.6121	130.0021
4003	2	2	0	10.0	50.0	-8.0	40.0	2	50.0	50.0	0.00253	10.6121	260.0042
4003	3	1	1	7.5	37.5	-6.0	30.0	2	37.5	37.5	0.00278	9.8416	190.1760
4003	4	2	1	15.0	75.0	-12.0	60.0	2	75.0	75.0	0.00143	7.5121	406.9102
4004	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01736	14.4921	58.1310
4004	1	1	0	8.0	35.0	-6.4	28.0	2	35.0	35.0	0.01736	14.4921	58.1310
4004	2	2	0	16.0	70.0	-12.8	56.0	2	70.0	70.0	0.00866	14.4921	116.2620
4004	3	1	1	12.0	50.0	-9.6	40.0	2	50.0	50.0	0.01328	12.5752	72.6481
4004	4	2	1	25.0	100.0	-20.0	80.0	2	100.0	100.0	0.00588	11.0800	129.7552
4005	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01288	13.7154	55.5959
4005	1	1	0	5.0	25.0	-4.0	20.0	2	25.0	25.0	0.01288	13.7154	55.5959

4005	2	2	0	10.0	50.0	-8.0	40.0	2	50.0	50.0	0.00644	13.7154	111.1918
4005	3	1	1	7.5	37.5	-6.0	30.0	2	37.5	37.5	0.00823	11.9637	98.6485
4005	4	2	1	15.0	75.0	-12.0	60.0	2	75.0	75.0	0.00473	10.7367	184.3879
4006	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.00528	11.4073	122.0021
4006	1	1	0	5.0	25.0	-4.0	20.0	2	25.0	25.0	0.00528	11.4073	122.0021
4006	2	2	0	10.0	50.0	-8.0	40.0	2	50.0	50.0	0.00264	11.4073	244.0042
4006	3	1	1	7.5	37.5	-6.0	30.0	2	37.5	37.5	0.00343	10.0031	200.3179
4006	4	2	1	15.0	75.0	-12.0	60.0	2	75.0	75.0	0.00199	8.8616	323.5475
4007	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01059	13.1083	70.0288
4007	1	1	0	8.0	35.0	-6.4	28.0	3	35.0	35.0	0.01059	13.1083	70.0288
4007	2	2	0	16.0	70.0	-12.8	56.0	3	70.0	70.0	0.00530	13.1083	140.0576
4007	3	1	1	12.0	50.0	-9.6	40.0	3	50.0	50.0	0.00876	10.8416	112.3179
4007	4	2	1	25.0	100.0	-20.0	80.0	3	100.0	100.0	0.00267	9.3016	189.6272
4008	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01059	13.1083	70.0288
4008	1	1	0	8.0	35.0	-6.4	28.0	3	35.0	35.0	0.01059	13.1083	70.0288
4008	2	2	0	16.0	70.0	-12.8	56.0	3	70.0	70.0	0.00530	13.1083	140.0576
4008	3	1	1	12.0	50.0	-9.6	40.0	3	50.0	50.0	0.00876	10.8416	112.3179
4008	4	2	1	25.0	100.0	-20.0	80.0	3	100.0	100.0	0.00267	9.3016	189.6272
4009	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01059	13.1083	70.0288
4009	1	1	0	8.0	35.0	-6.4	28.0	3	35.0	35.0	0.01059	13.1083	70.0288
4009	2	2	0	16.0	70.0	-12.8	56.0	3	70.0	70.0	0.00530	13.1083	140.0576
4009	3	1	1	12.0	50.0	-9.6	40.0	3	50.0	50.0	0.00876	10.8416	112.3179
4009	4	2	1	25.0	100.0	-20.0	80.0	3	100.0	100.0	0.00267	9.3016	189.6272
4010	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01736	14.4921	58.1310
4010	1	1	0	8.0	35.0	-6.4	28.0	2	35.0	35.0	0.01736	14.4921	58.1310
4010	2	2	0	16.0	70.0	-12.8	56.0	2	70.0	70.0	0.00866	14.4921	116.2620
4010	3	1	1	12.0	50.0	-9.6	40.0	2	50.0	50.0	0.01328	12.5752	72.6481
4010	4	2	1	25.0	100.0	-20.0	80.0	2	100.0	100.0	0.00588	11.2800	129.7552
4011	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.01736	14.4921	58.1310
4011	1	1	0	8.0	35.0	-6.4	28.0	2	35.0	35.0	0.01736	14.4921	58.1310
4011	2	2	0	16.0	70.0	-12.8	56.0	2	70.0	70.0	0.00866	14.4921	116.2620
4011	3	1	1	12.0	50.0	-9.6	40.0	2	50.0	50.0	0.01328	12.5752	72.6481
4011	4	2	1	25.0	100.0	-20.0	80.0	2	100.0	100.0	0.00588	11.2800	129.7552
4012	0	0	0	0.0	0.0	0.0	0.0	3	0.0	0.0	0.00528	11.4073	122.0021
4012	1	1	0	8.0	35.0	-6.4	28.0	4	35.0	35.0	0.00528	11.4073	122.0021
4012	2	2	0	16.0	70.0	-12.8	56.0	4	70.0	70.0	0.00264	11.4073	244.0042
4012	3	1	1	12.0	50.0	-9.6	40.0	4	50.0	50.0	0.00343	10.0031	200.3179
4012	4	2	1	25.0	100.0	-20.0	80.0	4	100.0	100.0	0.00199	8.8616	323.5475

Note: Gas price is set to be $1/MBtu.

Table V Total QF and Bilateral load MW and Price

Hour	QF (MW)	QF Price ($/MWh)	Bilateral (MW)	Bilateral Price ($/MWh)
1	55.3	23.38	420	28.06
2	52.14	21.12	396	25.34
3	45.82	17.98	348	21.57
4	31.6	16.86	240	20.23
5	39.5	18.53	300	22.24
6	47.4	24.69	360	29.63
7	55.3	25.24	420	30.29
8	61.62	37.91	468	45.49
9	64.78	39.76	492	47.71
10	69.52	41.68	528	50.02
11	70.31	44.28	534	53.14
12	66.36	44.4	504	53.28
13	63.2	45.61	480	54.73
14	60.04	43.54	456	52.24
15	69.52	50.5	528	60.6
16	71.1	52.47	540	62.97
17	67.15	53.79	510	64.55
18	70.31	51.1	534	61.32
19	74.26	44.49	564	53.39
20	77.42	42.04	588	50.45
21	79	38.04	600	45.65
22	71.1	31.75	540	38.1

23	68.73	29.6	522	35.52
24	64.78	24.41	492	29.29

Table VI Upper limit on the total generation offered a GENCO

Hour	(MW)
1	5544
2	5227
3	4594
4	3168
5	3960
6	4752
7	5544
8	6178
9	6494
10	6970
11	7049
12	6653
13	6336
14	6019
15	6970
16	7128
17	6732
18	7049
19	7445
20	7762
21	7920
22	7128
23	6890
24	6494