

DAFTAR PUSTAKA

- [1] H. Berahim, Teknik Tenaga Listrik Dasar, Yogyakarta: Graha Ilmu, 2011.
- [2] D. Marsudi, Pembangkitan Energi Listrik, Jakarta: Erlangga, 2011.
- [3] P. Kundur, Power System Stability and Control, New York: MCGraw-Hill, 1994.
- [4] P. Kundur, J. Paserba, V. Ajjarapu, G. Andersson, A. Bose, C. Canizares, N. Hatziargyriou, D. Hill, A. Stankovic, C. Taylor, T. V. Cutsem and V. Vittal, "Defenition and Classification of Power System Stability," *IEEE TRANSACTIONS ON POWER SYSTEMS*, 2004.
- [5] L. L. Grigsby, Electric Power Engineering Handbook, Boca Raton: Taylor & Francis Group, 2007.
- [6] K. E. d. S. D. M. (KESDM), 30 December 2020. [Online]. Available: <https://jdih.esdm.go.id/index.php/web/result/2120/detail>. [Accessed 15 March 2020].
- [7] D. Marsudi, Operasi Sistem Tenaga Listrik, Yogyakarta: Graha Ilmu, 2006.
- [8] T. Burton, D. Sharpe, N. Jenkins and E. Bossanyi, Wind Energy Handbook, Chichester: John Wiley & Sons, 2001.
- [9] T. Ackermann, Wind Power in Power Systems, Chichester: John Wiley & Sons, 2005.
- [10] NASA, "Power Data Access NASA". [Online]. Available: <https://power.larc.nasa.gov/data-access-viewer>. [Accessed 23 June 2020].

LAMPIRAN 1 DATA SULBAGSEL

Data Sistem Sulbagsel

Tabel 6. 1 *Data transmisi sistem Sulbagsel*

Nama	Tegangan (kV)	KHA (A)
Tello - Tallo Lama	150	1129
Tello - Sungguminasa	150	1836
Sungguminasa - Tallasa	150	1836
Sungguminasa - Tanjung Bunga	150	1836
Tello - Borongloe	70	409
Sungguminasa - Maros	150	1836
Sungguminasa - Bolangi	150	1836
Bolangi - Maros	150	1836
Pangkep -Tello	150	638
Pangkep - Mandai	70	775
Mandai - Daya	70	775
Daya - Tello	70	775
Pare-pare - Sidrap	150	638
Sidrap - Soppeng	150	638
Soppeng - Bone	150	638
Soppeng - Sengkang	150	785
Sidrap - Makale	150	918
Makale - Palopo	150	638
Sengkang - Sidrap	150	1836
Maros - PLTB Sidrap	150	1836
PLTB Sidrap - Sidrap	150	1836
Sengkang - Siwa	150	1276
Siwa Palopo	150	1276
Wotu - Malili	150	1276
Malili - Lasusua	150	1276
Bone - Bulukumba	150	638
Bone - Sinjai	150	638
Sinjai - Bulukumba	150	638
Bulukumba - Jeneponto	150	638
Tallasa - PLTU Jeneponto	150	1836
Jeneponto - Bantaeng New	150	638
Bantaeng New - Bantaeng Switching	150	638
Bantaeng Switching - Bulukumba	150	638
Polmas - Majene	150	638
Majene - Mamuju	150	638

Tabel 6. 2 *Data transmisi sistem Sulbagsel*

Nama	R'	X'	RO'	XO'
Tello - Tallo Lama	0.084	0.346	0.262	0.809
Tello - Sungguminasa	0.0345	0.2875	0.2371	1.2176
Sungguminasa - Tallasa	0.0345	0.2875	0.2371	1.2176
Sungguminasa - Tanjung Bunga	0.0345	0.2875	0.2371	1.2176
Tello - Borongloe	0.236	0.433	0.268	1.272
Sungguminasa - Maros	0.0345	0.2875	0.2371	1.2176
Sungguminasa - Bolangi	0.0345	0.2875	0.2371	1.2176
Bolangi - Maros	0.0345	0.2875	0.2371	1.2176
Pangkep - Tello	0.111	0.35	0.246	0.875
Pangkep - Mandai	0.263	0.3	0.632	1.56
Mandai - Daya	0.263	0.3	0.632	1.56
Daya - Tello	0.263	0.3	0.632	1.56
Pinrang - Pare-pare	0.123	0.404	0.313	0.993
Pare-pare - Balusu	0.123	0.404	0.266	0.923
Barru - Pangkep	0.123	0.404	0.266	0.923
Balusu - Barru	0.123	0.404	0.266	0.923
Pare-pare - Sidrap	0.122	0.399	0.285	1.028
Sidrap - Soppeng	0.121	0.4	0.233	0.861
Soppeng - Bone	0.119	0.386	0.259	0.973
Soppeng - Sengkang	0.072	0.372	0.151	0.502
Sidrap - Makale	0.073	0.394	0.189	0.931
Makale - Palopo	0.073	0.394	0.189	0.931
Sengkang - Sidrap	0.0345	0.2875	0.2371	1.2176
Maros - PLTB Sidrap	0.0345	0.2875	0.2371	1.2176
PLTB Sidrap - Sidrap	0.0345	0.2875	0.2371	1.2176
Sidrap - Enrekang	0.073	0.394	0.189	0.931
Enrekang - Makale	0.073	0.394	0.189	0.931
Bone - Bulukumba	0.122	0.408	0.258	0.933
Bone - Sinjai	0.116	0.391	0.286	0.915
Sinjai - Bulukumba	0.134	0.44	0.317	1.089
Bulukumba - Jeneponto	0.134	0.44	0.317	1.089
Tallasa - PLTU Jeneponto	0.0345	0.2875	0.2371	1.2176
Jeneponto - Bantaeng New	0.134	0.44	0.317	1.089
Bantaeng New - Bantaeng Switchin	0.134	0.44	0.317	1.089
Bantaeng Switching - Bulukumba	0.134	0.44	0.317	1.089
Polmas - Majene	0.121	0.396	0.272	0.99
Majene - Mamuju	0.129	0.396	0.28	0.953

Tabel 6. 3 Data pembangkit sistem Sulbagesel

Nama Pembangkit	Act. Pow.	React. Pow.	Act. Pow.	React. Pow.
	MW	Mvar	MW	Mvar
PLTA BAKARU 1	63	-1.2	63	-1.1
PLTA BAKARU 2	63	-2.5	63	-2.4
PLTA BILI-BILI 1	0	0	0	0
PLTA BILI-BILI 2	9	-2.5	9	-2
PLTM SAWITTO	0.81	0	0.81	0
PLTM BALLA	0.55	0.11	0.53	0.11
PLTM KAKUKU	0.42		0.35	0
PLTM BONEHAU	0	0	0	0
PLTM BUDONG	0	0	0	0
PLTU BARRU 1	39.11	5.68	40.13	5.57
PLTU BARRU 2	11.43	4.98	11.4	2.06
PLTU PUNAGAYA 1	99.34	11.54	100.95	10.6
PLTU PUNAGAYA 2	99.49	8.67	99.98	8.47
PLTA POSO 1 UNIT 1	0	0	0	0
PLTA POSO 1 UNIT 2	0	0	26.5	0
PLTA POSO 1 UNIT 3	28.6	7	26.4	0
PLTA POSO 1 UNIT 4	0	0	0	0
PLTA POSO 2 UNIT 1	0	0	50	0
PLTA POSO 2 UNIT 2	43.7	2.56	50.5	0
PLTA POSO 2 UNIT 3	38.6	3.73	52.7	0
PLTM PONGBATIK 1	0	0	2.41	0
PLTM PONGBATIK 2	0	0	0	0
PLTA TANGKA MANIPI 1	0	0	0	0
PLTA TANGKA MANIPI 2	2	0.18	2	0.22
PLTA MALEA 1	0	0	0	0
PLTA MALEA 2	0	0	0	0
PLTA MALEA 3	1.63	0.61	2.64	0.53
PLTA MALEA 4	2.68	0.54	2.64	0.52
PLTM SIMBUANG	0.6	0.02	0.8	0.04
PLTM SITEBA	2.25	1.23	2.33	1.21
PLTM TOMBOLO 1	0	0	0	0
PLTMH TOMBOLO 2	0.5	0	0.5	0
PLTM BUNGIN	0	0.15	0	0
PLTM BANTAENG 1	0	0	0	0
PLTM BANTAENG 2	0.88	0.1	0.72	0.11
PLTM SALUNOA	0.23	0.03	0.2	0.01
PLTG SENGKANG GT 11	29.76	0	26.09	0
PLTG SENGKANG GT 12	29.53	0	26.06	0
PLTGU SENGKANG ST 18	33.94	0	31.78	0
PLTG SENGKANG GT 21	34.52	5.95	34.32	5.4

Nama Pembangkit	Act. Pow.	React. Pow.	Act. Pow.	React. Pow.
	MW	Mvar	MW	Mvar
PLTG SENGKANG GT 22	0	0	0	0.12
PLTGU SENGKANG ST 28	17.62	-2.99	17.58	-3.73
PLTU JENEPONTO 1	57.57	23.67	57.59	23.82
PLTU JENEPONTO 2	55.35	25.44	55.97	25.65
PLTU JENEPONTO EXP 3	100.29	18.23	95.39	16.16
PLTU JENEPONTO EXP 4	100.52	17.9	95.76	16.96
PLTU MAMUJU 1	20.06	7.73	24.81	8.85
PLTU MAMUJU 2	20.44	8.33	25.14	9.5
PLTB SIDRAP	15.54	0.12	26.42	-1.8
PLTB TOLO	3.4	1.47	11.9	-1.8
PLTM BAMBALO	1.2	0	1.2	0
PLTM SAWIDAGO	0.07	0	0.06	0
PLTM TOMASA	3.06	0	2.55	0
PLTU NII TANASA 1	9.1	0	9.8	0
PLTU NII TANASA 2	4.7	0	4.6	0
PLTU NII TANASA 3	10.6	0	11.1	0
PLTMG NII TANASA 1	5.5	0	0	0
PLTMG NII TANASA 2	0	0	0	0
PLTMG NII TANASA 3	0	0	5.49	0
PLTMG NII TANASA 4	0	0	0	0
PLTMG NII TANASA 5	0	0	0	0
PLTMG NII TANASA 6	0	0	0	0
PLTU MORAMO 1	39.81	0	50	0
PLTU MORAMO 2	41.47	0	50	0
PLTM SABILAMBO	0.9	0	1.95	0
PLTM MIKUASI	0.38	0	0.38	0

Tabel 6. 4 *Data trafo distribusi sistem Sulbagsel*

NAMA	RTD. POW.	NOM. FREQ.	HV- RTD VOLT.	LV - RTD VOLT.
	MVA	Hz	kV	kV
TRAFO DISTRIBUSI BONTOALA	60	50	150	20
TRAFO DISTRIBUSI PANAKUKANG 1	60	50	150	20
TRAFO DISTRIBUSI PANAKUKANG 2	60	50	150	20
TRAFO DISTRIBUSI BOLANGI	60	50	150	20
TRAFO DISTRIBUSI TALLASA 1	60	50	150	20
TRAFO DISTRIBUSI TALLASA 2	30	50	150	20
TRAFO DISTRIBUSI SUNGGUMINASA 1	60	50	150	20
TRAFO DISTRIBUSI SUNGGUMINASA 2	60	50	150	20
TRAFO DISTRIBUSI TANJUNGBUNGA 1	60	50	150	20
TRAFO DISTRIBUSI TANJUNGBUNGA 2	60	50	150	20
TRAFO DISTRIBUSI TELLO 1	60	50	150	20
TRAFO DISTRIBUSI TELLO 2	60	50	150	20
TRAFO DISTRIBUSI BORONGLOE	20	50	69	20
TRAFO DISTRIBUSI DAYA 1	20	50	69	20
TRAFO DISTRIBUSI DAYA 2	20	50	69	20
TRAFO DISTRIBUSI TALLO LAMA 1	30	50	150	20
TRAFO DISTRIBUSI TALLO LAMA 2	30	50	150	20
TRAFO DISTRIBUSI TALLO LAMA 3	60	50	150	20
TRAFO DISTRIBUSI MANDAI 1	20	50	69	20
TRAFO DISTRIBUSI MANDAI 2	20	50	69	20
TRAFO DISTRIBUSI MAROS 1	30	50	150	20
TRAFO DISTRIBUSI MAROS 2	30	50	150	20
TRAFO DISTRIBUSI KIMA 1	30	50	150	20
TRAFO DISTRIBUSI KIMA 2	60	50	150	20
TRAFO DISTRIBUSI PANGKEP 1	30	50	150	20
TRAFO DISTRIBUSI PANGKEP 2	30	50	150	20
TRAFO DISTRIBUSI BALUSU	6.3	50	150	20
TRAFO DISTRIBUSI BARRU	20	50	150	20
TRAFO DISTRIBUSI PARE-PARE 1	30	50	150	20
TRAFO DISTRIBUSI PARE-PARE 2	16	50	150	20
TRAFO DISTRIBUSI SOPPENG 1	30	50	150	20
TRAFO DISTRIBUSI SOPPENG 2	60	50	150	20
TRAFO DISTRIBUSI SIDRAP 1	20	50	150	20
TRAFO DISTRIBUSI SIDRAP 2	30	50	150	20
TRAFO DISTRIBUSI PINRANG 1	30	50	150	20
TRAFO DISTRIBUSI PINRANG 2	16	50	150	20
TRAFO DISTRIBUSI BAKARU	20	50	150	20
TRAFO DISTRIBUSI POLEWALI 1	20	50	150	20
TRAFO DISTRIBUSI POLEWALI 2	30	50	150	20

NAMA	RTD. POW.	NOM. FREQ.	HV- RTD VOLT.	LV - RTD VOLT.
	MVA	Hz	kV	kV
TRAFO DISTRIBUSI MAJENE	20	50	150	20
TRAFO DISTRIBUSI MAMUJU 1	20	50	150	20
TRAFO DISTRIBUSI MAMUJU 2	30	50	150	20
TRAFO DISTRIBUSI MAMUJU BARU	20	50	150	20
TRAFO DISTRIBUSI SENGKANG 1	20	50	150	20
TRAFO DISTRIBUSI SENGKANG 2	30	50	150	20
TRAFO DISTRIBUSI SIWA	20	50	150	20
TRAFO DISTRIBUSI BONE 1	20	50	150	20
TRAFO DISTRIBUSI BONE 2	30	50	150	20
TRAFO DISTRIBUSI SINJAI 1	20	50	150	20
TRAFO DISTRIBUSI SINJAI 2	30	50	150	20
TRAFO DISTRIBUSI PUNAGAYA	30	50	150	20
TRAFO DISTRIBUSI BANTAENG	30	50	150	20
TRAFO DISTRIBUSI BULUKUMBA 1	20	50	150	20
TRAFO DISTRIBUSI BULUKUMBA 2	30	50	150	20
TRAFO DISTRIBUSI BULUKUMBA 3	60	50	150	20
TRAFO DISTRIBUSI JENEPONTO 1	20	50	150	20
TRAFO DISTRIBUSI JENEPONTO 2	30	50	150	20
TRAFO DISTRIBUSI ENREKANG	30	50	150	20
TRAFO DISTRIBUSI MAKALE 1	20	50	150	20
TRAFO DISTRIBUSI MAKALE 2	30	50	150	20
TRAFO DISTRIBUSI PALOPO 1	20	50	150	20
TRAFO DISTRIBUSI PALOPO 2	20	50	150	20
TRAFO DISTRIBUSI PALOPO 3	30	50	150	20
TRAFO DISTRIBUSI PALOPO 4	30	50	150	20
TRAFO DISTRIBUSI WOTU	30	50	150	20
TRAFO DISTRIBUSI MALILI	30	50	150	20
TRAFO DISTRIBUSI PAMONA	10	50	150	20
TRAFO DISTRIBUSI POSO	30	50	150	20
TRAFO DISTRIBUSI SIDERA	30	50	150	20
TRAFO DISTRIBUSI SILAE 1	30	50	150	20
TRAFO DISTRIBUSI SILAE 2	60	50	150	20
TRAFO DISTRIBUSI TALLISE 1	30	50	70	20
TRAFO DISTRIBUSI TALLISE 2	30	50	70	20
TRAFO DISTRIBUSI PARIGI 1	20	50	70	20
TRAFO DISTRIBUSI PARIGI 2	20	50	70	20
TRAFO DISTRIBUSI PASANG KAYU	30	50	150	20
TRAFO DISTRIBUSI TANASA	10	50	70	20
TRAFO DISTRIBUSI KENDARI	60	50	150	20
TRAFO DISTRIBUSI KOLAKA	30	50	150	20
TRAFO DISTRIBUSI MORAMO	60	50	150	20
TRAFO DISTRIBUSI LASUSUA	30	50	150	20
TRAFO DISTRIBUSI UNAAHA	30	50	150	20

NAMA	RTD. POW.	NOM. FREQ.	HV- RTD VOLT.	LV - RTD VOLT.
	MVA	Hz	kV	kV
TRAFO DISTRIBUSI PUJWATU 1	20	50	150	20
TRAFO DISTRIBUSI PUJWATU 2	30	50	150	20
TRAFO HUADI	40	50	150	30

Tabel 6. 5 *Data trafo IBT sistem Subagsel*

NAMA	RTD. POW.	NOM. FREQ.	HV- RTD. VOLT.	LV- RTD VOLT.
	MVA	HZ	KV	KV
TRAFO IBT 1 TALLO LAMA	31.5	50	150	69
TRAFO IBT 2 TALLO LAMA	31.5	50	150	69
TRAFO IBT 1 TELLO	20	50	150	30
TRAFO IBT 2 TELLO	31.5	50	150	69
TRAFO IBT 3 TELLO	31.5	50	150	69
TRAFO IBT 1 PANGKEP	31.5	50	150	69
TRAFO IBT 2 PANGKEP	31.5	50	150	69
TRAFO IBT 3 PANGKEP	31.5	50	150	69
TRAFO IBT 1 WOTU	90	50	275	150

Tabel 6. 6 *Data beban sistem Subagsel*

NAMA BEBAN	ACT. POW.	REACT. POW	ACT. POW.	REACT. POW.
	MW	MVAR	MW	MVAR
GIS BONTOALA	48.2	13.8	45.5	12.2
PANAKUKANG 1	34.9	9.3	34.8	8.8
PANAKUKANG 2	39.9	9.7	40	9.6
BOLANGI	21	7.6	23.6	6.4
TALLASA 1	6	2.4	4.8	0.8
TALLASA 2	9.5	3	14.6	2.8
SUNGGUMINASA 1	20.2	6.2	27	7
SUNGGUMINASA 2	19.6	4.3	25.5	4.5
TANJUNG BUNGA 1	23.2	6.2	28.3	7.4
TANJUNG BUNGA 2	26.8	6.6	27.9	8.2
TELLO 1	19.6	4.8	19.2	4.6
TELLO 2	32.5	8.4	35.9	7.5
BORONGLOE	-0.1	0	0.9	0
DAYA 1	11	0	11.3	0
DAYA 2	12.9	3.3	13.7	3.3
TALLO LAMA 1	3.1	0	0	0
TALLO LAMA 2	15.4	4	12	3.5
TALLO LAMA 3	29.7	10.1	29.6	7.8
MANDAI 1	10.3	3.7	11.6	2.8
MANDAI 2	13.1	0	15.6	0
MAROS 1	9.6	3.6	12.3	2.3
MAROS 2	8.4	2.5	9.2	2.2
KIMA 1	20.9	7.1	14.8	4.3
KIMA 2	8.5	3.9	6.3	2.4
PANGKEP 1	8.9	3	10.4	2.2
PANGKEP 2	10.6	4.8	10.2	2.2
BALUSU	2.5	0.9	3.3	0.6
BARRU	7.2	2.5	9.3	1.7
PARE-PARE 1	13.9	3.7	14.5	5.2
PARE-PARE 2	4.9	1.4	5.8	-0.5
SOPPENG 1	9.8	2.4	9.7	1.9
SOPPENG 2	5.8	2.1	6.8	1.4
SIDRAP 1	9.3	3	10	2.3
SIDRAP 2	16.7	7.3	19.3	5.6
PINRANG 1	16.4	9.2	20.1	0
PINRANG 2	7.9	2.3	9.5	0
BAKARU	0	0	0.1	0
POLEWALI 1	8.4	3.1	10.8	3
POLEWALI 2	4.6	0.7	7.2	0.2
MAJENE	11.1	2.7	15.6	1.6
MAMUJU 1	12.8	3	12.8	2.6
MAMUJU 2	2.2	0.2	2.9	0.1
MAMUJU BARU	7.1	0.76	11.1	1.6
SENGKANG 1	7.3	2.4	8.5	2.1
SENGKANG 2	13.8	5	18.9	4.1
SIWA	6.1	2	8.6	1.3

NAMA BEBAN	ACT. POW.	REACT. POW	ACT. POW.	REACT. POW.
	MW	MVAR	MW	MVAR
BONE 1	12.9	4.6	15.6	3.5
BONE 2	10.5	4.6	16.7	3.8
SINJAI 1	7.2	1.6	11.2	0.4
SINJAI 2	6.1	4.3	10.8	1.5
PUNAGAYA	2.37	0.69	3.91	0.54
BANTAENG	7.3	2.5	11.7	0.9
BULUKUMBA 1	8	3.8	12.3	3.3
BULUKUMBA 2	9.1	3.9	12.9	3.3
BULUKUMBA 3	5.9	1.9	6.2	1.5
JENEPONTO 1	5.7	1.9	8.8	1.7
JENEPONTO 2	8.3	2.6	13.8	2.4
ENREKANG	8.2	2.4	11.9	1.7
MAKALE 1	4.9	2.9	4.7	1.9
MAKALE 2	4.3	1.3	6.6	0.7
PALOPO 1	11.1	3.3	11.9	3.3
PALOPO 2	4.8	1.4	5.3	1.3
PALOPO 3	11.2	5	15.1	5.8
PALOPO 4	4.1	2	5.5	1.2
WOTU	12.59	4.92	16.57	3.46
MALILI	4.52	1.32	5.37	1.01
PAMONA	0.6	0.38	1.61	0
POSO	9.69	3.1	12.55	2.79
SIDERA	16.5	4.5	21.7	3.7
SILAE 1	13.2	3.3	18.7	3.2
SILAE 2	28.3	8.4	27.9	6.5
TALLISE 1	23.7	7.5	25.3	6.3
TALLISE 2	3.8	0.9	4.1	0.9
PARIGI 1	5.9	2.1	7.7	2.1
PARIGI 2	5.3	1.8	8.4	2.4
PASANG KAYU	10.7	2.1	14	2.5
TANASA	4.3	0.2	6.2	0.4
KENDARI	39.32	15.07	41.3	38.4
KOLAKA	15.59	5	19.24	5
MORAMO	11.02	0	12.05	3.34
LASUSUA	5.27	1.6	7.17	1.4
UNAAHA	13.58	5.83	19.66	4.78
PUUWATU 1	4.9	1.8	5.2	1.7
PUUWATU 2	16.8	6.4	17.2	6.2
TONASA	22.7	4.7	22.3	0
BOSOWA	6.1	6	9.9	0
HUADI	30.1	11.5	29.5	11.2

LAMPIRAN 2 PERMEN ESDM NO. 20 TAHUN 2020



MENTERI ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

PERATURAN MENTERI ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA
NOMOR 20 TAHUN 2020
TENTANG
ATURAN JARINGAN SISTEM TENAGA LISTRIK (*GRID CODE*)

DENGAN RAHMAT TUHAN YANG MAHA ESA

MENTERI ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA,

- Menimbang : a. bahwa untuk menjamin peningkatan pemenuhan kebutuhan penyediaan tenaga listrik yang aman, andal, dan efisien, perlu penyesuaian aturan jaringan sistem tenaga listrik (*grid code*);
- b. bahwa untuk mendorong peran pembangkit energi baru dan terbarukan dalam jaringan sistem tenaga listrik, perlu mengatur pembangkit energi baru dan terbarukan dalam aturan jaringan sistem tenaga listrik (*grid code*);
- c. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a dan huruf b, perlu menetapkan Peraturan Menteri Energi dan Sumber Daya Mineral tentang Aturan Jaringan Sistem Tenaga Listrik (*Grid Code*);

- Mengingat : 1. Pasal 17 ayat (3) Undang-Undang Dasar Negara Republik Indonesia Tahun 1945;

CC 3.1 Variasi pada Frekuensi

Frekuensi nominal di jaringan yaitu 50,00 (lima puluh koma nol nol) Hz. Frekuensi sistem dapat naik sampai dengan 52,00 (lima puluh dua koma nol nol) Hz dan turun sampai dengan 47,00 (empat puluh tujuh koma nol nol) Hz pada keadaan luar biasa. Desain unit pembangkit dan peralatan harus dapat beroperasi sesuai batas rentang frekuensi operasi berikut ini:

Tabel 1. Batas Rentang Frekuensi Operasi

Rentang Frekuensi	Rentang Waktu Operasi
51,50 Hz < f ≤ 52,00 Hz	Beroperasi selama paling singkat 15 menit
51,00 Hz < f ≤ 51,50 Hz	Beroperasi selama paling singkat 90 menit
49,00 Hz ≤ f ≤ 51,00 Hz	Beroperasi secara terus-menerus
47,50 Hz < f < 49,00 Hz	Beroperasi selama paling singkat 90 menit
47,00 Hz < f ≤ 47,50 Hz	Beroperasi selama paling singkat 6 detik

*f: frekuensi pada jaringan

CC 3.2 Variasi pada Tegangan Sistem

Perubahan tegangan pada jaringan harus dipertahankan dalam batas rentang variasi tegangan sebagai berikut:

Tabel 2. Batas Rentang Variasi Tegangan

Tegangan Nominal	Kondisi Normal
500 kV	+5%, -5%
275 kV	+5%, -5%
150 kV	+5%, -10%
66 kV*	+5%, -10%

Tegangan maksimum di setiap level tegangan pada kondisi tidak normal dibatasi sebagai berikut:

LAMPIRAN 3 HASIL SIMULASI PLTB

A. Beban Puncak Siang dengan Output PLTB yang Berubah-ubah

Tabel 6. 7 Simulasi frekuensi sistem Subagsel dengan menggunakan data beban puncak siang dan output PLTB Sidrap dan PLTB Tolo yang berubah-ubah

WAKTU	KECEPATAN ANGIN PLTB SIDRAP (m/s)	KECEPATAN ANGIN PLTB TOLO (m/s)	OUTPUT PLTB SIDRAP (MW)	OUTPUT PLTB TOLO (MW)	FREKUENSI BEBAN PUNCAK SIANG (Hz)
1/3/2021 0:00	4.04	5.64	3.56	9.67	49.9
1/3/2021 0:15	3.97	5.47	3.02	8.73	49.9
1/3/2021 0:30	4.27	5.11	3.08	7.09	49.9
1/3/2021 0:45	4.31	5.08	3.84	6.73	49.9
1/3/2021 1:00	4.75	5.11	6.05	7.11	49.9
1/3/2021 1:15	5.08	4.97	7.56	6.62	49.9
1/3/2021 1:30	5.33	4.92	8.81	6.51	49.9
1/3/2021 1:45	5.13	5.04	7.84	6.98	49.9
1/3/2021 2:00	4.92	5.42	6.57	9.09	49.9
1/3/2021 2:15	4.94	5.06	6.98	7.34	49.9
1/3/2021 2:30	4.76	4.59	6.53	4.86	49.9
1/3/2021 2:45	4.38	5.37	4.7	0	49.9
1/3/2021 3:00	4.55	5.41	5.72	0	49.9
1/3/2021 3:15	4.72	5.4	6.78	0	49.9
1/3/2021 3:30	4.62	5.12	5.88	0	49.9
1/3/2021 3:45	4.68	5.11	6.35	0	49.9
1/3/2021 4:00	4.96	5.1	7.3	0	49.9
1/3/2021 4:15	5.17	5.09	8.49	0	49.9
1/3/2021 4:30	5.47	5.08	10.69	0	49.9
1/3/2021 4:45	5.92	5.07	14.12	0	49.9
1/3/2021 5:00	6.04	4.12	14.67	2.86	49.9
1/3/2021 5:15	6.11	4.6	15.53	4.66	49.9
1/3/2021 5:30	5.81	4.67	12.89	4.85	49.9
1/3/2021 5:45	5.99	4.66	13.95	5.04	49.9
1/3/2021 6:00	5.75	4.53	12.97	4.62	49.9
1/3/2021 6:15	5.43	4.17	10.71	2.95	49.9
1/3/2021 6:30	5.51	4.13	10.64	2.78	49.9
1/3/2021 6:45	5.33	4.26	9.71	3.39	49.9

1/3/2021 7:00	5.02	4.08	8.51	2.74	49.9
1/3/2021 7:15	4.56	3.65	6.19	1.71	49.9
1/3/2021 7:30	4.42	2.69	5.74	0	49.9
1/3/2021 7:45	4.81	2.96	7.5	0	49.9
1/3/2021 8:00	5.06	2.97	9.22	0	49.9
1/3/2021 8:15	5.38	2.92	11.05	0	49.9
1/3/2021 8:30	5.36	3.35	11.12	0	49.9
1/3/2021 8:45	5.65	3.76	12.67	0.66	49.9
1/3/2021 9:00	6.15	5.15	17.24	8.15	49.9
1/3/2021 9:15	6.39	5.31	19.64	8.93	49.9
1/3/2021 9:30	6.37	4.9	18.77	6.79	49.9
1/3/2021 9:45	6.39	5.02	19.75	7.08	49.9
1/3/2021 10:00	5.61	4.52	12.62	4.62	49.9
1/3/2021 10:15	5.54	4.88	12.4	6.34	49.9
1/3/2021 10:30	6.03	5.31	16.18	8.33	49.9
1/3/2021 10:45	5.73	5.04	13.54	7.2	49.9
1/3/2021 11:00	6.07	5.48	16.77	9.66	49.9
1/3/2021 11:15	6.61	6.41	22.23	17.06	49.9
1/3/2021 11:30	6.65	6.23	21.41	15.21	49.9
1/3/2021 11:45	6.89	5.83	25.53	12.05	49.9
1/3/2021 12:00	6.51	5.47	22.12	10.14	49.9
1/3/2021 12:15	6.4	5.53	20.11	10.36	49.9
1/3/2021 12:30	6.54	5.34	22.05	9.37	49.9
1/3/2021 12:45	6.7	5.48	23.77	10.17	49.9
1/3/2021 13:00	6.85	6.47	24.79	17.79	49.9
1/3/2021 13:15	6.92	6.84	25.93	21.29	49.9
1/3/2021 13:30	6.78	7.18	22.08	24.15	49.9
1/3/2021 13:45	6.76	7.54	24.27	27.4	49.9
1/3/2021 14:00	6.89	7.57	25.23	28.66	49.9
1/3/2021 14:15	6.78	7.28	24.14	24.79	49.9
1/3/2021 14:30	6.94	7.15	26.01	23.27	49.9
1/3/2021 14:45	7.08	7.2	27.72	24.23	49.9
1/3/2021 15:00	7.49	7.76	33.25	30.79	49.9
1/3/2021 15:15	7.73	8.08	35.8	33.95	49.92
1/3/2021 15:30	7.68	7.74	35.76	30.21	49.9
1/3/2021 15:45	7.57	7.82	34.21	31.72	49.9
1/3/2021 16:00	7.49	8.04	32.53	33.68	49.9
1/3/2021 16:15	7.6	8.11	34.51	34.57	49.91
1/3/2021 16:30	7.85	7.91	37.72	31.88	49.92

1/3/2021 16:45	7.87	7.84	38.67	30.91	49.92
1/3/2021 17:00	7.49	8.17	33.57	35.47	49.91
1/3/2021 17:15	7.36	7.82	31.87	30.98	49.9
1/3/2021 17:30	7.06	6.67	28.11	18.73	49.9
1/3/2021 17:45	6.86	5.39	23.27	9.18	49.9
1/3/2021 18:00	6.94	5.04	25.1	7.35	49.9
1/3/2021 18:15	6.52	4.81	20.43	6.82	49.9
1/3/2021 18:30	6.38	4.75	18.02	6.77	49.9
1/3/2021 18:45	6.53	4.29	19.71	4.56	49.9
1/3/2021 19:00	6.46	4.78	18.78	6.08	49.9
1/3/2021 19:15	6.28	4.98	16.77	7.03	49.9
1/3/2021 19:30	6.25	5.22	16.71	8.46	49.9
1/3/2021 19:45	6.2	5.37	16.47	9.02	49.9
1/3/2021 20:00	6.57	5.3	19.56	8.78	49.9
1/3/2021 20:15	6.71	5.64	21.32	11.2	49.9
1/3/2021 20:30	7.13	5.95	23.89	12.9	49.9
1/3/2021 20:45	6.89	6.37	23.4	16.11	49.9
1/3/2021 21:00	6.9	6.37	24.17	16.29	49.9
1/3/2021 21:15	6.85	5.91	24.38	12.75	49.9
1/3/2021 21:30	6.45	6.67	20.53	18.38	49.9
1/3/2021 21:45	6.32	6.78	19.3	19.53	49.9
1/3/2021 22:00	6.49	6.39	19.68	16.49	49.9
1/3/2021 22:15	6.47	6.17	19.84	14.92	49.9
1/3/2021 22:30	6.22	6.25	18.12	15.93	49.9
1/3/2021 22:45	6.04	6.46	15.88	17.39	49.9
1/3/2021 23:00	5.92	6.08	14.93	13.67	49.9
1/3/2021 23:15	5.68	5.74	12.9	11.13	49.9
1/3/2021 23:30	5.36	4.93	10.48	6.95	49.9
1/3/2021 23:45	4.83	3.34	7.56	1.3	49.9
1/4/2021 0:00	4.45	2.72	5.52	0.04	49.9
1/4/2021 0:15	4.23	2.58	4.37	0	49.9
1/4/2021 0:30	3.91	2.76	2.76	0	49.9
1/4/2021 0:45	3.62	2.89	1.99	0	49.9
1/4/2021 1:00	3.26	3	1.06	0	49.9
1/4/2021 1:15	3.14	3.4	0.73	0.6	49.9
1/4/2021 1:30	2.56	3.47	0.18	1.95	49.9
1/4/2021 1:45	2.25	2.94	0	1.36	49.9
1/4/2021 2:00	2.13	2.74	0	0.42	49.9
1/4/2021 2:15	2.29	2.05	0	0.01	49.9

1/4/2021 2:30	2.55	2.01	0	0	49.9
1/4/2021 2:45	2.72	2.4	0	0	49.9
1/4/2021 3:00	2.75	3.93	0.09	0	49.9
1/4/2021 3:15	2.71	3.93	0.04	0	49.9
1/4/2021 3:30	2.86	4.18	0.16	0	49.9
1/4/2021 3:45	3.3	4.17	0.83	0	49.9
1/4/2021 4:00	3.39	4.17	1.06	0	49.9
1/4/2021 4:15	3.47	4.16	1.23	0	49.9
1/4/2021 4:30	3.64	4.16	1.62	0	49.9
1/4/2021 4:45	3.69	4.16	1.88	0	49.9
1/4/2021 5:00	3.77	1.95	2.32	0	49.9
1/4/2021 5:15	3.83	1.48	2.58	0	49.9
1/4/2021 5:30	3.52	1.1	1.98	0	49.9
1/4/2021 5:45	3.6	1.08	2.07	0	49.9
1/4/2021 6:00	4.04	1.13	3.19	0	49.9
1/4/2021 6:15	4.26	1.16	3.98	0	49.9
1/4/2021 6:30	4.39	1.27	4.64	0	49.9
1/4/2021 6:45	4.21	1.19	3.73	0	49.9
1/4/2021 7:00	3.77	1.2	2.44	0	49.9
1/4/2021 7:15	3.67	1.52	2.19	0	49.9
1/4/2021 7:30	3.5	1.67	2.05	0	49.9
1/4/2021 7:45	3.4	2.04	1.82	0	49.9
1/4/2021 8:00	3.87	1.86	3.34	0	49.9
1/4/2021 8:15	4.22	1.68	4.68	0	49.9
1/4/2021 8:30	4.55	1.71	5.93	0	49.9
1/4/2021 8:45	4.89	1.37	7.68	0	49.9
1/4/2021 9:00	4.88	1.51	7.61	0	49.9
1/4/2021 9:15	4.54	1.62	5.98	0	49.9
1/4/2021 9:30	4.25	1.4	4.32	0	49.9
1/4/2021 9:45	4.69	1.73	6.79	0	49.9
1/4/2021 10:00	4.78	2.47	6.92	0	49.9
1/4/2021 10:15	5.01	2.74	8.03	0	49.9
1/4/2021 10:30	5.72	2.7	11.15	0	49.9
1/4/2021 10:45	5.91	2.78	14.62	0	49.9
1/4/2021 11:00	6.35	2.83	18.64	0.06	49.9
1/4/2021 11:15	6.64	2.42	22.11	0.09	49.9
1/4/2021 11:30	7.09	3.63	26.23	4.14	49.9
1/4/2021 11:45	7	6.44	26.46	15.6	49.9
1/4/2021 12:00	7.16	7.33	28.24	25.04	49.9

1/4/2021 12:15	7.4	5.08	31.83	9.44	49.9
1/4/2021 12:30	7.41	4.21	31.94	4.54	49.9
1/4/2021 12:45	7.78	4.06	36.17	4.41	49.9
1/4/2021 13:00	8.48	3.43	45.91	2.75	49.9
1/4/2021 13:15	8.89	3.34	51.11	3.67	49.9
1/4/2021 13:30	8.47	3.89	43.15	7	49.9
1/4/2021 13:45	8.44	4.29	45.08	6.33	49.9
1/4/2021 14:00	8.82	5.84	50.31	12.86	49.9
1/4/2021 14:15	8.79	6.21	49.87	15.09	49.9
1/4/2021 14:30	8.53	5.54	40.82	10.78	49.9
1/4/2021 14:45	9.04	5.6	52.95	10.71	49.9
1/4/2021 15:00	8.92	6.55	51.1	17.79	49.91
1/4/2021 15:15	8.96	6.39	51.69	17.66	49.91
1/4/2021 15:30	8.74	6.88	49.38	20.53	49.92
1/4/2021 15:45	9.12	7.95	54.31	30.73	49.97
1/4/2021 16:00	9.18	8.01	55.4	31.59	49.98
1/4/2021 16:15	8.76	8.25	49.92	33.73	49.97
1/4/2021 16:30	8.49	8.74	41.54	40.12	49.96
1/4/2021 16:45	8.59	7.4	49.87	27.28	49.94
1/4/2021 17:00	9.07	6.75	54.45	18.92	49.93
1/4/2021 17:15	8.72	6.53	50.85	17.1	49.91
1/4/2021 17:30	9.36	6.54	57.43	16.55	49.93
1/4/2021 17:45	9.79	6.95	62.83	19.61	49.96
1/4/2021 18:00	9.31	7.26	58.91	23.52	49.96
1/4/2021 18:15	8.88	6.74	53.39	20.07	49.93
1/4/2021 18:30	8.6	6.18	41.88	15.27	49.9
1/4/2021 18:45	8.67	6.66	49.45	18.8	49.91
1/4/2021 19:00	8.7	6.65	49.1	18.64	49.91
1/4/2021 19:15	8.14	5.77	42.71	12.18	49.9
1/4/2021 19:30	7.57	4.9	36.44	6.92	49.9
1/4/2021 19:45	7.84	4.13	39.99	3.35	49.9
1/4/2021 20:00	7.99	4.8	44.56	5.89	49.9
1/4/2021 20:15	7.74	5.34	38.13	8.66	49.9
1/4/2021 20:30	6.97	5.44	27.51	9.9	49.9
1/4/2021 20:45	7.39	5.74	32.57	12.49	49.9
1/4/2021 21:00	7.56	5.33	35.52	9.18	49.9
1/4/2021 21:15	7	4.84	27.19	5.67	49.9
1/4/2021 21:30	6.34	4.5	18.85	4.35	49.9
1/4/2021 21:45	5.67	4.05	12.98	2.87	49.9

1/4/2021 22:00	4.7	3.28	6.45	0.65	49.9
1/4/2021 22:15	4.65	3.14	6.15	0.55	49.9
1/4/2021 22:30	4.76	2.84	6.88	0.01	49.9
1/4/2021 22:45	4.37	2.75	4.9	0	49.9
1/4/2021 23:00	4.98	2.96	7.69	0	49.9
1/4/2021 23:15	4.74	3.28	6.41	0	49.9
1/4/2021 23:30	5.23	4.02	9.05	1.64	49.9
1/4/2021 23:45	5.29	5.2	9.94	7.03	49.9
1/5/2021 0:00	4.94	5.55	7.53	9.7	49.9
1/5/2021 0:15	4.71	6.43	6.35	15.82	49.9
1/5/2021 0:30	4.13	6.91	3.86	20.12	49.9
1/5/2021 0:45	4.13	6.79	3.8	19.42	49.9
1/5/2021 1:00	4.71	6.69	6.07	18.83	49.9
1/5/2021 1:15	5.08	6.22	7.8	14.82	49.9
1/5/2021 1:30	4.72	6.18	6.25	14.29	49.9
1/5/2021 1:45	4.65	5.28	6.05	8.41	49.9
1/5/2021 2:00	4.75	4.91	6.63	6.29	49.9
1/5/2021 2:15	5.05	5.07	8.36	7.26	49.9
1/5/2021 2:30	4.91	5.07	7.01	7.63	49.9
1/5/2021 2:45	4.94	5.3	7.91	0	49.9
1/5/2021 3:00	4.61	5.2	5.93	0	49.9
1/5/2021 3:15	4.27	5.2	4.3	0	49.9
1/5/2021 3:30	4.23	5.21	4.11	0	49.9
1/5/2021 3:45	4.53	5.21	5.13	0	49.9
1/5/2021 4:00	4.93	5.2	7.61	0	49.9
1/5/2021 4:15	5.35	5.2	10.89	0	49.9
1/5/2021 4:30	5.38	5.2	9.46	0	49.9
1/5/2021 4:45	5.38	5.2	11.67	0	49.9
1/5/2021 5:00	4.97	3.65	8.83	0.43	49.9
1/5/2021 5:15	4.81	3.73	7.72	0.5	49.9
1/5/2021 5:30	4.49	3.56	5.13	0.5	49.9
1/5/2021 5:45	4.42	3.81	5.79	0.56	49.9
1/5/2021 6:00	4.53	3.59	6.44	0.23	49.9
1/5/2021 6:15	4.4	3.47	5.78	0.2	49.9
1/5/2021 6:30	4.03	3.71	3.97	0.48	49.9
1/5/2021 6:45	3.75	4.77	2.56	2.83	49.9
1/5/2021 7:00	3.03	5.18	1.24	6.65	49.9
1/5/2021 7:15	2.35	5.51	0	9.04	49.9
1/5/2021 7:30	2.63	5.87	0.38	11.09	49.9

1/5/2021 7:45	2.53	5.73	0.24	11.13	49.9
1/5/2021 8:00	3.14	4.78	1.44	6.15	49.9
1/5/2021 8:15	3.98	5.76	3.3	11.31	49.9
1/5/2021 8:30	5.24	5.61	7.25	10.88	49.9
1/5/2021 8:45	5.57	4.77	12.62	6.32	49.9
1/5/2021 9:00	4.88	5.08	7.56	7.69	49.9
1/5/2021 9:15	4.45	5.33	5.59	8.85	49.9
1/5/2021 9:30	3.73	5.55	2.8	9.85	49.9
1/5/2021 9:45	3.94	6.64	3.72	17.96	49.9
1/5/2021 10:00	4.6	7.78	6.74	28.69	49.9
1/5/2021 10:15	5.17	12.38	9.67	64.55	49.93
1/5/2021 10:30	5.8	10.37	11.47	61.23	49.93
1/5/2021 10:45	6.43	8.72	20.89	45.51	49.9
1/5/2021 11:00	7.17	8.12	28.64	36.56	49.9
1/5/2021 11:15	7.77	8.02	38.4	32.94	49.92
1/5/2021 11:30	8.04	7.96	30.96	31.71	49.9
1/5/2021 11:45	8.98	7.26	53.99	24.06	49.95
1/5/2021 12:00	9.65	7.05	61.46	21.17	49.97
1/5/2021 12:15	9.92	6.27	63.95	15.3	49.95
1/5/2021 12:30	9.96	6.11	64.77	14.11	49.95
1/5/2021 12:45	9.91	6.68	63.95	19.31	49.97
1/5/2021 13:00	10.41	6.99	67.02	21.89	49.99
1/5/2021 13:15	10.94	6.66	69.68	19.58	49.99
1/5/2021 13:30	11.07	5.58	68.84	10.77	49.95
1/5/2021 13:45	12.57	5.56	74.42	10.09	49.97
1/5/2021 14:00	11.84	5.35	72.57	9.38	49.96
1/5/2021 14:15	10.38	6	66.23	13.1	49.95
1/5/2021 14:30	10.28	6.71	58.3	19.31	49.95
1/5/2021 14:45	9.64	7.91	59.98	31.1	49.99
1/5/2021 15:00	10.08	8.28	62.17	35.82	50.01
1/5/2021 15:15	11.31	7.29	70.11	26.42	50.01
1/5/2021 15:30	11.47	6.99	72.38	20.14	50
1/5/2021 15:45	11.6	6.87	72.45	19.84	49.99
1/5/2021 16:00	10.75	7.02	69.46	21.3	49.99
1/5/2021 16:15	10.24	7.44	66.69	24.56	49.99
1/5/2021 16:30	9.32	7.87	52.42	30.34	49.97
1/5/2021 16:45	9.14	8.69	56.37	40.89	50.01
1/5/2021 17:00	8.7	9.39	50.85	50.59	50.02
1/5/2021 17:15	8.69	8.25	50.53	34.56	49.97

1/5/2021 17:30	9.57	7.52	61.37	25.51	49.98
1/5/2021 17:45	9.57	6.81	62.81	19.36	49.96
1/5/2021 18:00	9.53	6.93	62.43	20.54	49.97
1/5/2021 18:15	9.63	6.61	63.4	18.23	49.96
1/5/2021 18:30	9.82	7.38	64.02	24.83	49.99
1/5/2021 18:45	9.59	7.42	62.83	24.92	49.98
1/5/2021 19:00	9.85	6.86	66.5	19.68	49.98
1/5/2021 19:15	9.63	6.87	64.85	19.32	49.97
1/5/2021 19:30	9.02	6.9	57.65	19.51	49.94
1/5/2021 19:45	8.35	6.81	48.64	19.18	49.91
1/5/2021 20:00	8.3	6.45	46.97	16.09	49.9
1/5/2021 20:15	8.46	6.62	50.31	17.25	49.91
1/5/2021 20:30	8.22	7.15	46.58	22.25	49.91
1/5/2021 20:45	7.85	7.47	40.69	25.3	49.9
1/5/2021 21:00	7.25	7.43	30.3	24.8	49.9
1/5/2021 21:15	7.14	7.16	29.06	21.44	49.9
1/5/2021 21:30	7.05	7.21	26.97	22.22	49.9
1/5/2021 21:45	7.21	6.93	30.87	19.62	49.9
1/5/2021 22:00	7.32	7.54	32.91	25.89	49.9
1/5/2021 22:15	7.24	7.32	31.67	23.54	49.9
1/5/2021 22:30	7.17	8.05	30.41	31.07	49.9
1/5/2021 22:45	7.06	8.04	28.67	31.76	49.9
1/5/2021 23:00	6.9	7.18	26.14	22.38	49.9
1/5/2021 23:15	6.68	6.37	23.25	14.85	49.9
1/5/2021 23:30	6.62	5.67	22.1	10.5	49.9
1/5/2021 23:45	6.56	5.32	20.44	8.42	49.9
1/6/2021 0:00	6.51	6.11	18.75	12.99	49.9
1/6/2021 0:15	6.29	6.79	16.49	18.08	49.9
1/6/2021 0:30	6.13	6.84	13.49	18.08	49.9
1/6/2021 0:45	6.15	6.95	15.05	19.53	49.9
1/6/2021 1:00	6.18	7.03	16.25	20.37	49.9
1/6/2021 1:15	5.84	6.73	13.99	17.64	49.9
1/6/2021 1:30	4.68	6.97	5.11	19.3	49.9
1/6/2021 1:45	4.43	6.88	5.47	19.35	49.9
1/6/2021 2:00	4.45	7.08	5.47	15.01	49.9
1/6/2021 2:15	4.38	7.06	5.13	15.01	49.9
1/6/2021 2:30	4.13	6.28	3.82	7.78	49.9
1/6/2021 2:45	3.76	6	2.72	5.21	49.9
1/6/2021 3:00	3.46	6.09	1.98	5.12	49.9

1/6/2021 3:15	3.37	6.07	1.59	5.1	49.9
1/6/2021 3:30	3.12	6.14	0.77	5.09	49.9
1/6/2021 3:45	3.48	6.62	1.69	5.15	49.9
1/6/2021 4:00	3.54	6.34	1.91	5.15	49.9
1/6/2021 4:15	3.48	5.85	1.54	5.18	49.9
1/6/2021 4:30	3.52	5.74	1.61	5.15	49.9
1/6/2021 4:45	3.41	5.43	1.49	5.09	49.9
1/6/2021 5:00	2.98	5.28	0.57	5.1	49.9
1/6/2021 5:15	2.7	5.76	0.23	5.1	49.9
1/6/2021 5:30	2.71	6.09	0.29	5.09	49.9
1/6/2021 5:45	2.94	5.69	0.77	5.07	49.9
1/6/2021 6:00	3.37	5.34	1.51	5.06	49.9
1/6/2021 6:15	3.38	4.9	1.44	5.06	49.9
1/6/2021 6:30	3.42	5.09	1.23	5.04	49.9
1/6/2021 6:45	3.53	4.8	1.75	4.94	49.9
1/6/2021 7:00	3.55	4.84	1.79	5	49.9
1/6/2021 7:15	3.65	4.76	1.98	4.95	49.9
1/6/2021 7:30	4.2	4.54	2.97	4.88	49.9
1/6/2021 7:45	4.24	4.33	3.88	4.03	49.9
1/6/2021 8:00	4.09	4.19	3.94	3.7	49.9
1/6/2021 8:15	4.09	4.64	3.92	5.63	49.9
1/6/2021 8:30	4.22	4.85	3.89	6.18	49.9
1/6/2021 8:45	4.39	3.92	5.32	2.46	49.9
1/6/2021 9:00	4.53	3.32	5.9	1.3	49.9
1/6/2021 9:15	4.75	3.03	6.99	1.29	49.9
1/6/2021 9:30	4.39	3.02	5.75	1.54	49.9
1/6/2021 9:45	3.93	3.2	3.78	1.78	49.9
1/6/2021 10:00	4.31	3.51	5.12	2.5	49.9
1/6/2021 10:15	4.17	4.18	4.7	3.96	49.9
1/6/2021 10:30	4.79	5.02	7.19	6.99	49.9
1/6/2021 10:45	5.21	5.34	9.65	8.98	49.9
1/6/2021 11:00	5.33	5.4	10.58	9.29	49.9
1/6/2021 11:15	5.34	6.13	10.47	13.95	49.9
1/6/2021 11:30	5.27	6.51	10.3	16.97	49.9
1/6/2021 11:45	5.66	6.2	12.89	14.85	49.9
1/6/2021 12:00	5.57	5.22	12.43	8.44	49.9
1/6/2021 12:15	5.47	4.7	11.69	5.83	49.9
1/6/2021 12:30	5.76	5.88	13.94	14.14	49.9
1/6/2021 12:45	6.21	7.4	18.47	27.24	49.9

1/6/2021 13:00	6.25	7.67	18.47	30.12	49.9
1/6/2021 13:15	6.29	7.8	18.75	31.34	49.9
1/6/2021 13:30	6.59	7.08	21.99	23.31	49.9
1/6/2021 13:45	6.66	7.01	22.75	22.46	49.9
1/6/2021 14:00	7.05	8.62	27.44	40.8	49.91
1/6/2021 14:15	7.14	8.97	28.01	45.1	49.93
1/6/2021 14:30	7.38	8.39	32.1	37.59	49.92
1/6/2021 14:45	7.34	7.7	31.1	29.6	49.9
1/6/2021 15:00	6.7	7.92	23.8	31.81	49.9
1/6/2021 15:15	6.17	7.48	17.41	26.42	49.9
1/6/2021 15:30	6.13	7.29	16.21	24.96	49.9
1/6/2021 15:45	5.72	7.3	12.92	24.49	49.9
1/6/2021 16:00	5.43	7.37	10.9	25.09	49.9
1/6/2021 16:15	5.49	7.15	11.26	23.29	49.9
1/6/2021 16:30	5.34	6.98	10.57	21.93	49.9
1/6/2021 16:45	5.26	7.07	10.1	23.21	49.9
1/6/2021 17:00	5.68	7.71	12.4	30.02	49.9
1/6/2021 17:15	5.75	8.45	13.24	38.27	49.9
1/6/2021 17:30	5.83	7.62	12.87	29.03	49.9
1/6/2021 17:45	6.03	7.02	14.15	22.54	49.9
1/6/2021 18:00	6.09	6.72	14.5	19.18	49.9
1/6/2021 18:15	6.24	6.4	15.6	16.34	49.9
1/6/2021 18:30	6.68	6.77	19.07	18.92	49.9
1/6/2021 18:45	7.39	7.45	29.7	25.41	49.9
1/6/2021 19:00	7.37	7.68	29.99	27.71	49.9
1/6/2021 19:15	7.27	7.61	27.91	27.65	49.9
1/6/2021 19:30	7.49	7.36	28.22	24.77	49.9
1/6/2021 19:45	7.04	7.71	24.94	27.77	49.9
1/6/2021 20:00	6.49	8.5	18.97	39.42	49.9
1/6/2021 20:15	6.39	8.8	17.91	43.54	49.9
1/6/2021 20:30	6	9.46	13.18	52.15	49.9
1/6/2021 20:45	5.96	8.46	14.06	39.89	49.9
1/6/2021 21:00	5.94	9.52	14.37	53	49.91
1/6/2021 21:15	5.82	9.18	13.35	47.23	49.9
1/6/2021 21:30	5.81	8.29	12.02	38.31	49.9
1/6/2021 21:45	5.76	7.91	12.5	32.3	49.9
1/6/2021 22:00	5.76	7.84	12.34	30.55	49.9
1/6/2021 22:15	5.89	7.52	13.12	27.33	49.9
1/6/2021 22:30	6.08	7.61	14.7	26.72	49.9

1/6/2021 22:45	6.18	7.2	15.56	22.03	49.9
1/6/2021 23:00	6.25	6.85	15.84	18.87	49.9
1/6/2021 23:15	6.42	6.32	17.44	14.28	49.9
1/6/2021 23:30	6.38	6.06	15.68	12.42	49.9
1/6/2021 23:45	6.17	6.68	15.47	16.85	49.9
1/7/2021 0:00	5.66	7.34	11.56	23.9	49.9
1/7/2021 0:15	5.47	7.34	10.24	24.77	49.9
1/7/2021 0:30	5.05	7.44	6.72	25.02	49.9
1/7/2021 0:45	4.74	7.02	6.35	20.8	49.9
1/7/2021 1:00	4.29	6.99	4.3	20.71	49.9
1/7/2021 1:15	4	7.15	3.14	22.96	49.9
1/7/2021 1:30	4.53	6.67	5.09	18.59	49.9
1/7/2021 1:45	4.61	6.41	5.41	15.84	49.9
1/7/2021 2:00	4.6	6.53	5.32	16.89	49.9
1/7/2021 2:15	4.57	6.14	5.16	14.23	49.9
1/7/2021 2:30	4.34	5.9	3.67	12.39	49.9
1/7/2021 2:45	4.48	5.91	4.43	0	49.9
1/7/2021 3:00	4.39	5.85	4.22	0	49.9
1/7/2021 3:15	4.49	5.85	4.93	0	49.9
1/7/2021 3:30	4.44	5.66	4.55	0	49.9
1/7/2021 3:45	4.3	5.65	3.92	0	49.9
1/7/2021 4:00	3.61	5.64	1.91	0	49.9
1/7/2021 4:15	3.92	5.64	3	0	49.9
1/7/2021 4:30	3.95	5.63	2.8	0	49.9
1/7/2021 4:45	4.12	5.63	3.77	0	49.9
1/7/2021 5:00	4.77	3.36	6.07	0.78	49.9
1/7/2021 5:15	4.67	3.04	6.04	0.35	49.9
1/7/2021 5:30	3.78	2.98	3	0.22	49.9
1/7/2021 5:45	3.43	3.08	1.89	0.52	49.9
1/7/2021 6:00	3.46	3.34	1.83	0.87	49.9
1/7/2021 6:15	3.14	3.74	0.96	1.13	49.9
1/7/2021 6:30	3.11	4.09	0.79	1.96	49.9
1/7/2021 6:45	3.23	4.31	1.08	2.24	49.9
1/7/2021 7:00	3.44	4.93	1.57	5.09	49.9
1/7/2021 7:15	3.62	5.32	1.88	8.09	49.9
1/7/2021 7:30	3.34	5.53	1.39	9.62	49.9
1/7/2021 7:45	2.97	5.73	0.54	10.78	49.9
1/7/2021 8:00	3.52	7.65	1.59	29.17	49.9
1/7/2021 8:15	3.9	7.93	3.28	34.25	49.9

1/7/2021 8:30	4.22	6.87	3.79	21.53	49.9
1/7/2021 8:45	4.64	7.01	6.56	21.9	49.9
1/7/2021 9:00	4.61	7	5.9	21.7	49.9
1/7/2021 9:15	4.42	6.23	5.95	15.26	49.9
1/7/2021 9:30	3.39	6.05	2.11	13.7	49.9
1/7/2021 9:45	2.98	5.7	0.7	11.19	49.9
1/7/2021 10:00	3.45	5.89	1.87	12.44	49.9
1/7/2021 10:15	3.71	6.52	2.58	17.73	49.9
1/7/2021 10:30	3.56	6.83	2.24	21.11	49.9
1/7/2021 10:45	3.89	7.82	3.29	30.7	49.9
1/7/2021 11:00	4.45	7.87	5.43	31.09	49.9
1/7/2021 11:15	4.99	7.97	8.18	31.13	49.9
1/7/2021 11:30	5.61	7.94	12.06	31.11	49.9
1/7/2021 11:45	5.68	7.15	12.66	23.39	49.9
1/7/2021 12:00	5.96	7.38	14.84	25.92	49.9
1/7/2021 12:15	6.03	7.41	15.68	25.88	49.9
1/7/2021 12:30	5.83	7.66	13.81	28.2	49.9
1/7/2021 12:45	5.93	7.93	14.58	33.38	49.9
1/7/2021 13:00	6.15	8.16	17.01	36.52	49.9
1/7/2021 13:15	6.31	9	18.68	45.84	49.9
1/7/2021 13:30	6.06	8.68	16.09	42.05	49.9
1/7/2021 13:45	6.08	8.07	16.44	35.13	49.9
1/7/2021 14:00	6.14	8.85	17.1	43.93	49.9
1/7/2021 14:15	5.88	8.71	14.36	42.38	49.9
1/7/2021 14:30	6.12	8.09	16.48	35.06	49.9
1/7/2021 14:45	6	8.15	15.41	36.11	49.9
1/7/2021 15:00	5.86	8.16	14.39	35.47	49.9
1/7/2021 15:15	6.16	8.32	17.06	37.4	49.9
1/7/2021 15:30	6.42	8.12	19.67	34.91	49.9
1/7/2021 15:45	6.06	8.15	16.47	34.82	49.9
1/7/2021 16:00	5.6	7.7	12.83	29.98	49.9
1/7/2021 16:15	5.15	6.88	9.48	21.27	49.9
1/7/2021 16:30	4.59	6.08	6.29	14.21	49.9
1/7/2021 16:45	4.18	5.33	4.65	9.1	49.9
1/7/2021 17:00	3.64	5.8	2.54	11.83	49.9
1/7/2021 17:15	3.35	6.19	1.61	14.98	49.9
1/7/2021 17:30	4.07	6.53	3	17.99	49.9
1/7/2021 17:45	4.46	6.63	5.19	19.03	49.9
1/7/2021 18:00	4.61	7.38	5.8	26.02	49.9

1/7/2021 18:15	4.51	7.44	5.22	26.53	49.9
1/7/2021 18:30	4.64	7.53	6.13	26.91	49.9
1/7/2021 18:45	5.41	7.1	10.77	22.54	49.9
1/7/2021 19:00	5.63	6.69	12.83	18.62	49.9
1/7/2021 19:15	5.05	6.19	9.48	14.24	49.9
1/7/2021 19:30	6.49	5.72	24.39	10.66	49.9
1/7/2021 19:45	6.73	5.21	28.4	7.94	49.9
1/7/2021 20:00	5.15	5.29	13.44	8.89	49.9
1/7/2021 20:15	3.48	5.17	3.37	8.03	49.9
1/7/2021 20:30	3.16	5.58	0.99	10.02	49.9
1/7/2021 20:45	3.29	6.26	1.74	14.19	49.9
1/7/2021 21:00	3.7	6.17	1.83	14.11	49.9
1/7/2021 21:15	4.64	7.12	5.78	22.29	49.9
1/7/2021 21:30	4.82	6.66	5.49	18.09	49.9
1/7/2021 21:45	4.13	6.44	4.07	15.87	49.9
1/7/2021 22:00	3.87	6.7	2.7	17.94	49.9
1/7/2021 22:15	4.38	6.56	5.12	17.2	49.9
1/7/2021 22:30	4.87	6.47	6.14	16.26	49.9
1/7/2021 22:45	5.13	6.93	8.29	20.41	49.9
1/7/2021 23:00	4.21	7.26	3.85	23.64	49.9
1/7/2021 23:15	4.28	7.27	4.26	22.44	49.9
1/7/2021 23:30	4.83	7.12	5.19	20.43	49.9
1/7/2021 23:45	6.28	7	18.07	18.46	49.9
1/8/2021 0:00	6.45	7.15	20.18	19.5	49.9
1/8/2021 0:15	6.16	7.19	17.37	20.2	49.9
1/8/2021 0:30	5.97	6.93	14.85	17.88	49.9
1/8/2021 0:45	5.45	6.59	10.84	15.72	49.9
1/8/2021 1:00	5.5	6.72	11.95	16.68	49.9
1/8/2021 1:15	6.25	6.52	19.62	15.31	49.9
1/8/2021 1:30	8.6	6.99	48.83	18.4	49.91
1/8/2021 1:45	9.02	7.63	50.56	24.51	49.94
1/8/2021 2:00	8.52	7.66	40.07	24.45	49.9
1/8/2021 2:15	8.43	6.84	36.18	17.48	49.9
1/8/2021 2:30	9.28	5.68	36.23	9.65	49.9
1/8/2021 2:45	9.47	5.43	36.21	7.87	49.9
1/8/2021 3:00	10.46	5.32	36.2	7.78	49.9
1/8/2021 3:15	9.81	4.73	36.21	5.26	49.9
1/8/2021 3:30	10.43	4.86	36.21	5.85	49.9
1/8/2021 3:45	9.9	5.57	36.22	9.8	49.9

1/8/2021 4:00	8.44	6.17	36.19	12.65	49.9
1/8/2021 4:15	7.64	6.07	37.18	11.99	49.9
1/8/2021 4:30	7.81	5.52	40.35	9.18	49.9
1/8/2021 4:45	7.75	5.24	39.66	7.97	49.9
1/8/2021 5:00	7.16	5.64	27	10.66	49.9
1/8/2021 5:15	6.77	7.17	24.51	22.61	49.9
1/8/2021 5:30	6.62	9.77	15.36	47.66	49.9
1/8/2021 5:45	6.89	9.95	25.39	47.24	49.93
1/8/2021 6:00	6.18	7.41	17.9	22.44	49.9
1/8/2021 6:15	6.01	6.72	16.41	18.02	49.9
1/8/2021 6:30	5.99	7.6	16.48	26.61	49.9
1/8/2021 6:45	5.95	7.6	15.96	27.22	49.9
1/8/2021 7:00	6.39	7.55	20.91	25.76	49.9
1/8/2021 7:15	6.57	7.75	21.91	27.27	49.9
1/8/2021 7:30	6.89	7.15	20.82	22.3	49.9
1/8/2021 7:45	6.19	6.19	10.4	14.12	49.9
1/8/2021 8:00	5.74	5.57	3.64	9.63	49.9
1/8/2021 8:15	5.74	5.23	3.72	8.62	49.9
1/8/2021 8:30	5.91	4.29	4.34	4.51	49.9
1/8/2021 8:45	5.85	4.63	4.01	5.74	49.9
1/8/2021 9:00	5.63	4.74	3.65	7.14	49.9
1/8/2021 9:15	6	5.65	15.73	11.89	49.9
1/8/2021 9:30	6.22	6.85	13.33	21.26	49.9
1/8/2021 9:45	6.58	7.18	20.43	24.03	49.9
1/8/2021 10:00	6.6	6.79	22.44	19.96	49.9
1/8/2021 10:15	6.6	7.57	22.71	27.3	49.9
1/8/2021 10:30	6.91	7.93	26.28	32.13	49.9
1/8/2021 10:45	7.08	8.16	28.14	33.38	49.9
1/8/2021 11:00	6.8	7.78	25.2	29.63	49.9
1/8/2021 11:15	6.57	7.29	22.05	24.21	49.9
1/8/2021 11:30	6.87	7.07	25.61	21.87	49.9
1/8/2021 11:45	6.89	7.18	25.76	24.7	49.9
1/8/2021 12:00	6.53	8.63	21.16	40.3	49.9
1/8/2021 12:15	6.32	7.49	18.94	28.09	49.9
1/8/2021 12:30	6.4	7.52	20.21	28.03	49.9
1/8/2021 12:45	6.19	7.94	17.75	32.29	49.9
1/8/2021 13:00	6.17	8.15	17.69	34.71	49.9
1/8/2021 13:15	7.22	7.17	30.3	24.66	49.9
1/8/2021 13:30	8.17	7.39	35.07	25.79	49.9

1/8/2021 13:45	7.56	8.31	33.19	36.59	49.92
1/8/2021 14:00	7.5	8.04	32.83	33.46	49.9
1/8/2021 14:15	7.3	8.39	30.92	37.22	49.91
1/8/2021 14:30	7.71	8.41	29.47	37.57	49.91
1/8/2021 14:45	8.07	11.22	42.7	58.09	50.02
1/8/2021 15:00	7.57	10.22	36.49	57.4	50
1/8/2021 15:15	7.13	8.83	30.57	44.01	49.94
1/8/2021 15:30	6.53	8.04	22.41	34.65	49.9
1/8/2021 15:45	6.08	7.19	17.02	24.85	49.9
1/8/2021 16:00	5.54	7.05	13	23	49.9
1/8/2021 16:15	4.6	6.57	6.99	18.21	49.9
1/8/2021 16:30	4.58	5.87	6.56	12.71	49.9
1/8/2021 16:45	4.07	5.83	4.4	12.23	49.9
1/8/2021 17:00	4.53	5.6	6.35	10.3	49.9
1/8/2021 17:15	4.92	5.09	8.38	7.92	49.9
1/8/2021 17:30	5.65	4.78	13.16	6.3	49.9
1/8/2021 17:45	5.89	4.48	15.54	4.72	49.9
1/8/2021 18:00	5.3	3.79	11.2	2.24	49.9
1/8/2021 18:15	5.27	3.9	10.12	2.58	49.9
1/8/2021 18:30	6.07	3.96	16.04	2.63	49.9
1/8/2021 18:45	6.13	3.91	9.96	2.87	49.9
1/8/2021 19:00	5.81	3.95	14.63	3	49.9
1/8/2021 19:15	4.63	4.36	7.42	4.47	49.9
1/8/2021 19:30	5.42	5.35	11.02	8.69	49.9
1/8/2021 19:45	5.69	5.89	12.93	11.94	49.9
1/8/2021 20:00	5.71	5.78	13.17	11.26	49.9
1/8/2021 20:15	5.51	5.65	12	10.81	49.9
1/8/2021 20:30	4.75	5.86	6.78	11.34	49.9
1/8/2021 20:45	5.05	5.4	8.49	9.05	49.9
1/8/2021 21:00	5.77	5.13	13.31	7.65	49.9
1/8/2021 21:15	5.39	4.85	10.57	6.17	49.9
1/8/2021 21:30	5.03	5.02	7.45	7.23	49.9
1/8/2021 21:45	4.8	5.21	6.94	8.14	49.9
1/8/2021 22:00	5.01	5.26	8.21	8.7	49.9
1/8/2021 22:15	4.81	5.08	7.23	7.63	49.9
1/8/2021 22:30	4.44	4.94	5.51	6.75	49.9
1/8/2021 22:45	4.96	4.92	7.55	6.67	49.9
1/8/2021 23:00	4.72	4.72	6.85	6	49.9
1/8/2021 23:15	5.18	4.89	9.16	6.53	49.9

1/8/2021 23:30	5.2	5.04	8.95	7.17	49.9
1/8/2021 23:45	4.51	5.06	5.56	7.09	49.9
1/9/2021 0:00	4.36	4.74	5	5.49	49.9
1/9/2021 0:15	4.54	3.86	5.64	2.38	49.9
1/9/2021 0:30	5.27	3.47	9.4	1.42	49.9
1/9/2021 0:45	5.27	3.27	9.02	0.79	49.9
1/9/2021 1:00	5.63	3.51	11.01	1.34	49.9
1/9/2021 1:15	5.64	3.86	10.98	2.01	49.9
1/9/2021 1:30	5.4	3.67	7.63	1.68	49.9
1/9/2021 1:45	5.53	3.44	10.38	0.98	49.9
1/9/2021 2:00	5.42	2.93	10.69	0.06	49.9
1/9/2021 2:15	5.08	2.86	8.6	0	49.9
1/9/2021 2:30	4.79	2.9	7.17	0	49.9
1/9/2021 2:45	4.73	3	6.73	0	49.9
1/9/2021 3:00	4.64	2.84	6.19	0	49.9
1/9/2021 3:15	4.14	3.15	4.36	0	49.9
1/9/2021 3:30	3.87	3.01	3.08	0	49.9
1/9/2021 3:45	3.83	3.03	3.22	0	49.9
1/9/2021 4:00	4	2.78	3.83	0	49.9
1/9/2021 4:15	3.7	2.58	2.88	0	49.9
1/9/2021 4:30	3.83	2.13	3.32	0	49.9
1/9/2021 4:45	4.12	2.11	4.22	0	49.9
1/9/2021 5:00	4.51	1.84	5.85	0	49.9
1/9/2021 5:15	4.65	1.68	6.29	0	49.9
1/9/2021 5:30	4.41	1.29	5.33	0	49.9
1/9/2021 5:45	3.9	1.34	3.51	0	49.9
1/9/2021 6:00	3.55	1.17	2.22	0	49.9
1/9/2021 6:15	3.43	1.36	1.82	0	49.9
1/9/2021 6:30	3.19	1.39	1.26	0	49.9
1/9/2021 6:45	3.11	1.3	1.13	0	49.9
1/9/2021 7:00	2.85	1.32	0.78	0	49.9
1/9/2021 7:15	2.71	1.13	0.31	0	49.9
1/9/2021 7:30	2.8	1.27	0.24	0	49.9
1/9/2021 7:45	3.26	0.63	1.42	0	49.9
1/9/2021 8:00	3.31	0.64	1.67	0	49.9
1/9/2021 8:15	3.3	1.06	1.61	0	49.9
1/9/2021 8:30	3.46	1.38	1.95	0	49.9
1/9/2021 8:45	3.5	1.28	2.05	0	49.9
1/9/2021 9:00	3.03	1.42	0.94	0	49.9

1/9/2021 9:15	2.94	1.1	0.58	0	49.9
1/9/2021 9:30	3.55	1.59	1.55	0	49.9
1/9/2021 9:45	3.79	1.06	2.88	0	49.9
1/9/2021 10:00	3.69	1.12	2.44	0	49.9
1/9/2021 10:15	3.38	1.16	1.48	0	49.9
1/9/2021 10:30	3.37	1.45	1.4	0	49.9
1/9/2021 10:45	3.57	3.23	1.99	0.72	49.9
1/9/2021 11:00	3.88	3.94	2.84	1.34	49.9
1/9/2021 11:15	4.31	3.53	4.56	0.8	49.9
1/9/2021 11:30	4.46	3.53	3.73	0.92	49.9
1/9/2021 11:45	5.05	3.9	7.96	1.53	49.9
1/9/2021 12:00	5.19	3.63	8.92	0.93	49.9
1/9/2021 12:15	5.13	3.23	8.82	0.3	49.9
1/9/2021 12:30	5.01	3.37	7.97	0.32	49.9
1/9/2021 12:45	5.18	3.36	8.76	0.26	49.9
1/9/2021 13:00	5.47	3.4	11.13	0.53	49.9
1/9/2021 13:15	5.67	3.63	12.46	1.19	49.9
1/9/2021 13:30	6.09	3.79	11.49	2.06	49.9
1/9/2021 13:45	6.02	4.33	15.45	4.07	49.9
1/9/2021 14:00	6.26	4.08	17.37	3.28	49.9
1/9/2021 14:15	6.29	4.56	17.73	3	49.9
1/9/2021 14:30	6.18	5.58	12.55	11.63	49.9
1/9/2021 14:45	6.55	4.71	20.8	6.57	49.9
1/9/2021 15:00	6.5	3.62	20.6	1.95	49.9
1/9/2021 15:15	7.06	3.14	26.84	0.07	49.9
1/9/2021 15:30	7.27	4.02	29.72	1.77	49.9
1/9/2021 15:45	7.29	2.88	29.59	0.07	49.9
1/9/2021 16:00	7.15	2.92	28.14	0	49.9
1/9/2021 16:15	7.05	2.99	26.94	0	49.9
1/9/2021 16:30	7.12	3.38	28.19	0	49.9
1/9/2021 16:45	7.32	4.17	30.4	2.05	49.9
1/9/2021 17:00	7.36	5.31	31.19	7.97	49.9
1/9/2021 17:15	7.28	4.54	30.05	4.59	49.9
1/9/2021 17:30	6.99	4.15	26.85	3.59	49.9
1/9/2021 17:45	6.97	4.43	26.04	4.43	49.9
1/9/2021 18:00	6.86	4.78	23.74	5.82	49.9
1/9/2021 18:15	6.55	4.54	20.41	4.76	49.9
1/9/2021 18:30	6.28	5.13	13.37	7.24	49.9
1/9/2021 18:45	5.82	4.08	12.93	3.68	49.9

1/9/2021 19:00	5.95	4.19	13.6	3.44	49.9
1/9/2021 19:15	5.9	4.5	13.62	4.31	49.9
1/9/2021 19:30	6.11	3.75	15.44	2.17	49.9
1/9/2021 19:45	5.6	2.93	11.21	0.14	49.9
1/9/2021 20:00	5.58	2.94	10.83	0	49.9
1/9/2021 20:15	5.35	2.93	9.56	0	49.9
1/9/2021 20:30	5.39	2.76	8.86	0	49.9
1/9/2021 20:45	4.86	3.02	7.18	0	49.9
1/9/2021 21:00	4.51	3.81	5.61	0.22	49.9
1/9/2021 21:15	4.06	4.37	3.75	1.47	49.9
1/9/2021 21:30	4.06	5.03	3.29	5.79	49.9
1/9/2021 21:45	4.15	4.01	3.54	2.5	49.9
1/9/2021 22:00	4.07	2.94	3.39	0.23	49.9
1/9/2021 22:15	3.53	2.41	1.93	0	49.9
1/9/2021 22:30	3.59	2.35	2.11	0	49.9
1/9/2021 22:45	3.29	2.67	1.47	0	49.9
1/9/2021 23:00	3.51	2.83	2	0	49.9
1/9/2021 23:15	3.5	3.24	2	0	49.9
1/9/2021 23:30	3.14	3.42	1.27	0	49.9
1/9/2021 23:45	2.53	2.87	0.07	0	49.9
1/10/2021 0:00	2.05	2.28	0	0	49.9
1/10/2021 0:15	2.31	2.14	0	0	49.9
1/10/2021 0:30	2.47	2.24	0	0	49.9
1/10/2021 0:45	2.49	1.98	0	0	49.9
1/10/2021 1:00	2.01	2.71	0	0	49.9
1/10/2021 1:15	1.21	2.9	0	0	49.9
1/10/2021 1:30	1.35	2.43	0	0	49.9
1/10/2021 1:45	1.47	2.01	0	0	49.9
1/10/2021 2:00	1.77	1.3	0	0	49.9
1/10/2021 2:15	1.83	0.73	0	0	49.9
1/10/2021 2:30	1.37	1.12	0	0	49.9
1/10/2021 2:45	1.46	0.76	0	0	49.9
1/10/2021 3:00	1.94	0.67	0	0	49.9
1/10/2021 3:15	1.59	1.96	0	0	49.9
1/10/2021 3:30	1.16	2.73	0	0	49.9
1/10/2021 3:45	0.87	2.94	0	0	49.9
1/10/2021 4:00	0.81	2.79	0	0	49.9
1/10/2021 4:15	1.53	2.63	0	0	49.9
1/10/2021 4:30	1.2	2.86	0	0	49.9

1/10/2021 4:45	1.35	3.26	0	0	49.9
1/10/2021 5:00	1.1	3.49	0	0	49.9
1/10/2021 5:15	1.48	3.07	0	0	49.9
1/10/2021 5:30	2.94	2.99	0	0	49.9
1/10/2021 5:45	3.09	2.92	0.17	0	49.9
1/10/2021 6:00	3	2.82	0.27	0	49.9
1/10/2021 6:15	3.38	2.91	0.91	0	49.9
1/10/2021 6:30	3.02	3.02	0.42	0	49.9
1/10/2021 6:45	2.79	2.89	0.1	0	49.9
1/10/2021 7:00	2.43	2.95	0	0	49.9
1/10/2021 7:15	2.54	3.04	0	0	49.9
1/10/2021 7:30	2.64	3.21	0.08	0	49.9
1/10/2021 7:45	2.57	2.65	0.04	0	49.9
1/10/2021 8:00	2.4	2.54	0	0	49.9
1/10/2021 8:15	2.29	2.37	0	0	49.9
1/10/2021 8:30	2.26	2.37	0	0	49.9
1/10/2021 8:45	2.19	2.68	0	0	49.9
1/10/2021 9:00	2.11	2.9	0	0	49.9
1/10/2021 9:15	1.99	2.88	0	0	49.9
1/10/2021 9:30	2.73	2.88	0	0	49.9
1/10/2021 9:45	2.9	2.88	0.19	0	49.9
1/10/2021 10:00	2.57	3	0	0	49.9
1/10/2021 10:15	2.04	3.22	0	0	49.9
1/10/2021 10:30	2.11	3.18	0	0	49.9
1/10/2021 10:45	2.68	3.09	0	0.1	49.9
1/10/2021 11:00	3.04	2.88	0	0	49.9
1/10/2021 11:15	3.05	2.91	0.13	0	49.9
1/10/2021 11:30	3.36	2.99	1	0	49.9
1/10/2021 11:45	3.27	3.07	1.09	0	49.9
1/10/2021 12:00	3.4	3.33	1.54	0	49.9
1/10/2021 12:15	3.82	3.26	2.72	0	49.9

1/10/2021 12:30	3.86	3.48	2.83	0	49.9
1/10/2021 12:45	4.06	3.63	3.48	0	49.9
1/10/2021 13:00	5.07	3.9	7.96	0.14	49.9
1/10/2021 13:15	5.52	3.27	10.61	0.82	49.9
1/10/2021 13:30	5.78	2.18	11.65	0.07	49.9
1/10/2021 13:45	5.89	2.29	9.44	0	49.9
1/10/2021 14:00	6.63	2.15	14.12	0	49.9
1/10/2021 14:15	6.72	2.6	15.07	0	49.9
1/10/2021 14:30	6.51	2.78	13.39	0	49.9
1/10/2021 14:45	6.38	2.25	18.43	0	49.9
1/10/2021 15:00	6.87	1.93	25.06	0	49.9
1/10/2021 15:15	6.98	2.12	26.51	0	49.9
1/10/2021 15:30	6.66	2.58	22.42	0	49.9
1/10/2021 15:45	6.71	2.58	22.58	0	49.9
1/10/2021 16:00	6.42	2.89	19.25	0	49.9
1/10/2021 16:15	6.27	3.41	17.96	0	49.9
1/10/2021 16:30	6.04	4.7	14.8	3.84	49.9
1/10/2021 16:45	5.78	5.62	13.34	9.5	49.9
1/10/2021 17:00	5.82	6.48	13.44	16.61	49.9
1/10/2021 17:15	5.97	6.03	14.53	13.41	49.9
1/10/2021 17:30	5.97	5.54	14.34	9.46	49.9
1/10/2021 17:45	5.75	5.6	12.57	9.75	49.9

1/10/2021 18:00	5.48	3.96	10.86	2.45	49.9
1/10/2021 18:15	5.77	3.28	12.73	0.55	49.9
1/10/2021 18:30	6.34	2.88	16.45	0.2	49.9
1/10/2021 18:45	6.52	2.97	18.56	0.12	49.9
1/10/2021 19:00	6.3	3.05	17.45	0.01	49.9
1/10/2021 19:15	5.66	3.07	12.09	0	49.9
1/10/2021 19:30	5.6	2.91	7.99	0	49.9
1/10/2021 19:45	6	3.21	14.06	0	49.9
1/10/2021 20:00	5.26	3.41	9.21	0	49.9
1/10/2021 20:15	4.72	2.93	6.14	0	49.9
1/10/2021 20:30	4.88	2.68	6.84	0	49.9
1/10/2021 20:45	5.02	2.35	7.04	0	49.9
1/10/2021 21:00	4.91	2.31	6.73	0	49.9
1/10/2021 21:15	4.93	2.69	7.04	0	49.9
1/10/2021 21:30	4.92	2.77	6.8	0	49.9
1/10/2021 21:45	4.64	2.78	6.34	0	49.9
1/10/2021 22:00	5.12	2.72	8.14	0	49.9
1/10/2021 22:15	5.24	2.93	8.41	0	49.9
1/10/2021 22:30	5.06	2.94	6.67	0	49.9
1/10/2021 22:45	4.86	3.27	6.66	0	49.9
1/10/2021 23:00	4.69	2.95	6.66	0	49.9
1/10/2021 23:15	4.4	2.66	5.45	0	49.9

1/10/2021 23:30	3.8	3.35	2.75	0.2	49.9
1/10/2021 23:45	4.2	3.69	3.39	1.38	49.9

B. Beban Puncak Malam dengan Output PLTB yang Berubah-ubah

Tabel 6. 8 Simulasi frekuensi sistem Sulbagsel dengan menggunakan data beban puncak malam dan output PLTB Sidrap dan PLTB Tolo yang berubah-ubah

WAKTU	KECEPATAN ANGIN PLTB SIDRAP (m/s)	KECEPATAN ANGIN PLTB TOLO (m/s)	OUTPUT PLTB SIDRAP (MW)	OUTPUT PLTB TOLO (MW)	FREKUENSI BEBAN PUNCAK MALAM (Hz)
1/3/2021 0:00	4.04	5.64	3.56	9.67	49.8
1/3/2021 0:15	3.97	5.47	3.02	8.73	49.8
1/3/2021 0:30	4.27	5.11	3.08	7.09	49.8
1/3/2021 0:45	4.31	5.08	3.84	6.73	49.8
1/3/2021 1:00	4.75	5.11	6.05	7.11	49.8
1/3/2021 1:15	5.08	4.97	7.56	6.62	49.8
1/3/2021 1:30	5.33	4.92	8.81	6.51	49.8
1/3/2021 1:45	5.13	5.04	7.84	6.98	49.8
1/3/2021 2:00	4.92	5.42	6.57	9.09	49.8
1/3/2021 2:15	4.94	5.06	6.98	7.34	49.8
1/3/2021 2:30	4.76	4.59	6.53	4.86	49.8
1/3/2021 2:45	4.38	5.37	4.7	0	49.79
1/3/2021 3:00	4.55	5.41	5.72	0	49.8
1/3/2021 3:15	4.72	5.4	6.78	0	49.8
1/3/2021 3:30	4.62	5.12	5.88	0	49.8
1/3/2021 3:45	4.68	5.11	6.35	0	49.8
1/3/2021 4:00	4.96	5.1	7.3	0	49.8
1/3/2021 4:15	5.17	5.09	8.49	0	49.8
1/3/2021 4:30	5.47	5.08	10.69	0	49.8
1/3/2021 4:45	5.92	5.07	14.12	0	49.8
1/3/2021 5:00	6.04	4.12	14.67	2.86	49.8
1/3/2021 5:15	6.11	4.6	15.53	4.66	49.8
1/3/2021 5:30	5.81	4.67	12.89	4.85	49.8
1/3/2021 5:45	5.99	4.66	13.95	5.04	49.8

1/3/2021 6:00	5.75	4.53	12.97	4.62	49.8
1/3/2021 6:15	5.43	4.17	10.71	2.95	49.8
1/3/2021 6:30	5.51	4.13	10.64	2.78	49.8
1/3/2021 6:45	5.33	4.26	9.71	3.39	49.8
1/3/2021 7:00	5.02	4.08	8.51	2.74	49.8
1/3/2021 7:15	4.56	3.65	6.19	1.71	49.8
1/3/2021 7:30	4.42	2.69	5.74	0	49.8
1/3/2021 7:45	4.81	2.96	7.5	0	49.8
1/3/2021 8:00	5.06	2.97	9.22	0	49.8
1/3/2021 8:15	5.38	2.92	11.05	0	49.8
1/3/2021 8:30	5.36	3.35	11.12	0	49.8
1/3/2021 8:45	5.65	3.76	12.67	0.66	49.8
1/3/2021 9:00	6.15	5.15	17.24	8.15	49.8
1/3/2021 9:15	6.39	5.31	19.64	8.93	49.8
1/3/2021 9:30	6.37	4.9	18.77	6.79	49.8
1/3/2021 9:45	6.39	5.02	19.75	7.08	49.8
1/3/2021 10:00	5.61	4.52	12.62	4.62	49.8
1/3/2021 10:15	5.54	4.88	12.4	6.34	49.8
1/3/2021 10:30	6.03	5.31	16.18	8.33	49.8
1/3/2021 10:45	5.73	5.04	13.54	7.2	49.8
1/3/2021 11:00	6.07	5.48	16.77	9.66	49.8
1/3/2021 11:15	6.61	6.41	22.23	17.06	49.8
1/3/2021 11:30	6.65	6.23	21.41	15.21	49.8
1/3/2021 11:45	6.89	5.83	25.53	12.05	49.8
1/3/2021 12:00	6.51	5.47	22.12	10.14	49.8
1/3/2021 12:15	6.4	5.53	20.11	10.36	49.8
1/3/2021 12:30	6.54	5.34	22.05	9.37	49.8
1/3/2021 12:45	6.7	5.48	23.77	10.17	49.8
1/3/2021 13:00	6.85	6.47	24.79	17.79	49.8
1/3/2021 13:15	6.92	6.84	25.93	21.29	49.8
1/3/2021 13:30	6.78	7.18	22.08	24.15	49.8
1/3/2021 13:45	6.76	7.54	24.27	27.4	49.8
1/3/2021 14:00	6.89	7.57	25.23	28.66	49.8
1/3/2021 14:15	6.78	7.28	24.14	24.79	49.8
1/3/2021 14:30	6.94	7.15	26.01	23.27	49.8
1/3/2021 14:45	7.08	7.2	27.72	24.23	49.8
1/3/2021 15:00	7.49	7.76	33.25	30.79	49.8
1/3/2021 15:15	7.73	8.08	35.8	33.95	49.8
1/3/2021 15:30	7.68	7.74	35.76	30.21	49.8

1/3/2021 15:45	7.57	7.82	34.21	31.72	49.8
1/3/2021 16:00	7.49	8.04	32.53	33.68	49.8
1/3/2021 16:15	7.6	8.11	34.51	34.57	49.8
1/3/2021 16:30	7.85	7.91	37.72	31.88	49.8
1/3/2021 16:45	7.87	7.84	38.67	30.91	49.8
1/3/2021 17:00	7.49	8.17	33.57	35.47	49.8
1/3/2021 17:15	7.36	7.82	31.87	30.98	49.8
1/3/2021 17:30	7.06	6.67	28.11	18.73	49.8
1/3/2021 17:45	6.86	5.39	23.27	9.18	49.8
1/3/2021 18:00	6.94	5.04	25.1	7.35	49.8
1/3/2021 18:15	6.52	4.81	20.43	6.82	49.8
1/3/2021 18:30	6.38	4.75	18.02	6.77	49.8
1/3/2021 18:45	6.53	4.29	19.71	4.56	49.8
1/3/2021 19:00	6.46	4.78	18.78	6.08	49.8
1/3/2021 19:15	6.28	4.98	16.77	7.03	49.8
1/3/2021 19:30	6.25	5.22	16.71	8.46	49.8
1/3/2021 19:45	6.2	5.37	16.47	9.02	49.8
1/3/2021 20:00	6.57	5.3	19.56	8.78	49.8
1/3/2021 20:15	6.71	5.64	21.32	11.2	49.8
1/3/2021 20:30	7.13	5.95	23.89	12.9	49.8
1/3/2021 20:45	6.89	6.37	23.4	16.11	49.8
1/3/2021 21:00	6.9	6.37	24.17	16.29	49.8
1/3/2021 21:15	6.85	5.91	24.38	12.75	49.8
1/3/2021 21:30	6.45	6.67	20.53	18.38	49.8
1/3/2021 21:45	6.32	6.78	19.3	19.53	49.8
1/3/2021 22:00	6.49	6.39	19.68	16.49	49.8
1/3/2021 22:15	6.47	6.17	19.84	14.92	49.8
1/3/2021 22:30	6.22	6.25	18.12	15.93	49.8
1/3/2021 22:45	6.04	6.46	15.88	17.39	49.8
1/3/2021 23:00	5.92	6.08	14.93	13.67	49.8
1/3/2021 23:15	5.68	5.74	12.9	11.13	49.8
1/3/2021 23:30	5.36	4.93	10.48	6.95	49.8
1/3/2021 23:45	4.83	3.34	7.56	1.3	49.8
1/4/2021 0:00	4.45	2.72	5.52	0.04	49.8
1/4/2021 0:15	4.23	2.58	4.37	0	49.79
1/4/2021 0:30	3.91	2.76	2.76	0	49.79
1/4/2021 0:45	3.62	2.89	1.99	0	49.78
1/4/2021 1:00	3.26	3	1.06	0	49.78
1/4/2021 1:15	3.14	3.4	0.73	0.6	49.78

1/4/2021 1:30	2.56	3.47	0.18	1.95	49.78
1/4/2021 1:45	2.25	2.94	0	1.36	49.78
1/4/2021 2:00	2.13	2.74	0	0.42	49.78
1/4/2021 2:15	2.29	2.05	0	0.01	49.78
1/4/2021 2:30	2.55	2.01	0	0	49.78
1/4/2021 2:45	2.72	2.4	0	0	49.78
1/4/2021 3:00	2.75	3.93	0.09	0	49.78
1/4/2021 3:15	2.71	3.93	0.04	0	49.78
1/4/2021 3:30	2.86	4.18	0.16	0	49.78
1/4/2021 3:45	3.3	4.17	0.83	0	49.78
1/4/2021 4:00	3.39	4.17	1.06	0	49.78
1/4/2021 4:15	3.47	4.16	1.23	0	49.78
1/4/2021 4:30	3.64	4.16	1.62	0	49.78
1/4/2021 4:45	3.69	4.16	1.88	0	49.78
1/4/2021 5:00	3.77	1.95	2.32	0	49.79
1/4/2021 5:15	3.83	1.48	2.58	0	49.79
1/4/2021 5:30	3.52	1.1	1.98	0	49.78
1/4/2021 5:45	3.6	1.08	2.07	0	49.78
1/4/2021 6:00	4.04	1.13	3.19	0	49.79
1/4/2021 6:15	4.26	1.16	3.98	0	49.79
1/4/2021 6:30	4.39	1.27	4.64	0	49.79
1/4/2021 6:45	4.21	1.19	3.73	0	49.79
1/4/2021 7:00	3.77	1.2	2.44	0	49.79
1/4/2021 7:15	3.67	1.52	2.19	0	49.78
1/4/2021 7:30	3.5	1.67	2.05	0	49.78
1/4/2021 7:45	3.4	2.04	1.82	0	49.78
1/4/2021 8:00	3.87	1.86	3.34	0	49.79
1/4/2021 8:15	4.22	1.68	4.68	0	49.79
1/4/2021 8:30	4.55	1.71	5.93	0	49.8
1/4/2021 8:45	4.89	1.37	7.68	0	49.8
1/4/2021 9:00	4.88	1.51	7.61	0	49.8
1/4/2021 9:15	4.54	1.62	5.98	0	49.8
1/4/2021 9:30	4.25	1.4	4.32	0	49.79
1/4/2021 9:45	4.69	1.73	6.79	0	49.8
1/4/2021 10:00	4.78	2.47	6.92	0	49.8
1/4/2021 10:15	5.01	2.74	8.03	0	49.8
1/4/2021 10:30	5.72	2.7	11.15	0	49.8
1/4/2021 10:45	5.91	2.78	14.62	0	49.8
1/4/2021 11:00	6.35	2.83	18.64	0.06	49.8

1/4/2021 11:15	6.64	2.42	22.11	0.09	49.8
1/4/2021 11:30	7.09	3.63	26.23	4.14	49.8
1/4/2021 11:45	7	6.44	26.46	15.6	49.8
1/4/2021 12:00	7.16	7.33	28.24	25.04	49.8
1/4/2021 12:15	7.4	5.08	31.83	9.44	49.8
1/4/2021 12:30	7.41	4.21	31.94	4.54	49.8
1/4/2021 12:45	7.78	4.06	36.17	4.41	49.8
1/4/2021 13:00	8.48	3.43	45.91	2.75	49.8
1/4/2021 13:15	8.89	3.34	51.11	3.67	49.8
1/4/2021 13:30	8.47	3.89	43.15	7	49.8
1/4/2021 13:45	8.44	4.29	45.08	6.33	49.8
1/4/2021 14:00	8.82	5.84	50.31	12.86	49.8
1/4/2021 14:15	8.79	6.21	49.87	15.09	49.8
1/4/2021 14:30	8.53	5.54	40.82	10.78	49.8
1/4/2021 14:45	9.04	5.6	52.95	10.71	49.8
1/4/2021 15:00	8.92	6.55	51.1	17.79	49.8
1/4/2021 15:15	8.96	6.39	51.69	17.66	49.8
1/4/2021 15:30	8.74	6.88	49.38	20.53	49.8
1/4/2021 15:45	9.12	7.95	54.31	30.73	49.8
1/4/2021 16:00	9.18	8.01	55.4	31.59	49.8
1/4/2021 16:15	8.76	8.25	49.92	33.73	49.8
1/4/2021 16:30	8.49	8.74	41.54	40.12	49.8
1/4/2021 16:45	8.59	7.4	49.87	27.28	49.8
1/4/2021 17:00	9.07	6.75	54.45	18.92	49.8
1/4/2021 17:15	8.72	6.53	50.85	17.1	49.8
1/4/2021 17:30	9.36	6.54	57.43	16.55	49.8
1/4/2021 17:45	9.79	6.95	62.83	19.61	49.8
1/4/2021 18:00	9.31	7.26	58.91	23.52	49.8
1/4/2021 18:15	8.88	6.74	53.39	20.07	49.8
1/4/2021 18:30	8.6	6.18	41.88	15.27	49.8
1/4/2021 18:45	8.67	6.66	49.45	18.8	49.8
1/4/2021 19:00	8.7	6.65	49.1	18.64	49.8
1/4/2021 19:15	8.14	5.77	42.71	12.18	49.8
1/4/2021 19:30	7.57	4.9	36.44	6.92	49.8
1/4/2021 19:45	7.84	4.13	39.99	3.35	49.8
1/4/2021 20:00	7.99	4.8	44.56	5.89	49.8
1/4/2021 20:15	7.74	5.34	38.13	8.66	49.8
1/4/2021 20:30	6.97	5.44	27.51	9.9	49.8
1/4/2021 20:45	7.39	5.74	32.57	12.49	49.8

1/4/2021 21:00	7.56	5.33	35.52	9.18	49.8
1/4/2021 21:15	7	4.84	27.19	5.67	49.8
1/4/2021 21:30	6.34	4.5	18.85	4.35	49.8
1/4/2021 21:45	5.67	4.05	12.98	2.87	49.8
1/4/2021 22:00	4.7	3.28	6.45	0.65	49.8
1/4/2021 22:15	4.65	3.14	6.15	0.55	49.8
1/4/2021 22:30	4.76	2.84	6.88	0.01	49.8
1/4/2021 22:45	4.37	2.75	4.9	0	49.8
1/4/2021 23:00	4.98	2.96	7.69	0	49.8
1/4/2021 23:15	4.74	3.28	6.41	0	49.8
1/4/2021 23:30	5.23	4.02	9.05	1.64	49.8
1/4/2021 23:45	5.29	5.2	9.94	7.03	49.8
1/5/2021 0:00	4.94	5.55	7.53	9.7	49.8
1/5/2021 0:15	4.71	6.43	6.35	15.82	49.8
1/5/2021 0:30	4.13	6.91	3.86	20.12	49.8
1/5/2021 0:45	4.13	6.79	3.8	19.42	49.8
1/5/2021 1:00	4.71	6.69	6.07	18.83	49.8
1/5/2021 1:15	5.08	6.22	7.8	14.82	49.8
1/5/2021 1:30	4.72	6.18	6.25	14.29	49.8
1/5/2021 1:45	4.65	5.28	6.05	8.41	49.8
1/5/2021 2:00	4.75	4.91	6.63	6.29	49.8
1/5/2021 2:15	5.05	5.07	8.36	7.26	49.8
1/5/2021 2:30	4.91	5.07	7.01	7.63	49.8
1/5/2021 2:45	4.94	5.3	7.91	0	49.8
1/5/2021 3:00	4.61	5.2	5.93	0	49.8
1/5/2021 3:15	4.27	5.2	4.3	0	49.79
1/5/2021 3:30	4.23	5.21	4.11	0	49.79
1/5/2021 3:45	4.53	5.21	5.13	0	49.8
1/5/2021 4:00	4.93	5.2	7.61	0	49.8
1/5/2021 4:15	5.35	5.2	10.89	0	49.8
1/5/2021 4:30	5.38	5.2	9.46	0	49.8
1/5/2021 4:45	5.38	5.2	11.67	0	49.8
1/5/2021 5:00	4.97	3.65	8.83	0.43	49.8
1/5/2021 5:15	4.81	3.73	7.72	0.5	49.8
1/5/2021 5:30	4.49	3.56	5.13	0.5	49.8
1/5/2021 5:45	4.42	3.81	5.79	0.56	49.8
1/5/2021 6:00	4.53	3.59	6.44	0.23	49.8
1/5/2021 6:15	4.4	3.47	5.78	0.2	49.8
1/5/2021 6:30	4.03	3.71	3.97	0.48	49.79

1/5/2021 6:45	3.75	4.77	2.56	2.83	49.8
1/5/2021 7:00	3.03	5.18	1.24	6.65	49.8
1/5/2021 7:15	2.35	5.51	0	9.04	49.8
1/5/2021 7:30	2.63	5.87	0.38	11.09	49.8
1/5/2021 7:45	2.53	5.73	0.24	11.13	49.8
1/5/2021 8:00	3.14	4.78	1.44	6.15	49.8
1/5/2021 8:15	3.98	5.76	3.3	11.31	49.8
1/5/2021 8:30	5.24	5.61	7.25	10.88	49.8
1/5/2021 8:45	5.57	4.77	12.62	6.32	49.8
1/5/2021 9:00	4.88	5.08	7.56	7.69	49.8
1/5/2021 9:15	4.45	5.33	5.59	8.85	49.8
1/5/2021 9:30	3.73	5.55	2.8	9.85	49.8
1/5/2021 9:45	3.94	6.64	3.72	17.96	49.8
1/5/2021 10:00	4.6	7.78	6.74	28.69	49.8
1/5/2021 10:15	5.17	12.38	9.67	64.55	49.8
1/5/2021 10:30	5.8	10.37	11.47	61.23	49.8
1/5/2021 10:45	6.43	8.72	20.89	45.51	49.8
1/5/2021 11:00	7.17	8.12	28.64	36.56	49.8
1/5/2021 11:15	7.77	8.02	38.4	32.94	49.8
1/5/2021 11:30	8.04	7.96	30.96	31.71	49.8
1/5/2021 11:45	8.98	7.26	53.99	24.06	49.8
1/5/2021 12:00	9.65	7.05	61.46	21.17	49.8
1/5/2021 12:15	9.92	6.27	63.95	15.3	49.8
1/5/2021 12:30	9.96	6.11	64.77	14.11	49.8
1/5/2021 12:45	9.91	6.68	63.95	19.31	49.8
1/5/2021 13:00	10.41	6.99	67.02	21.89	49.8
1/5/2021 13:15	10.94	6.66	69.68	19.58	49.8
1/5/2021 13:30	11.07	5.58	68.84	10.77	49.8
1/5/2021 13:45	12.57	5.56	74.42	10.09	49.8
1/5/2021 14:00	11.84	5.35	72.57	9.38	49.8
1/5/2021 14:15	10.38	6	66.23	13.1	49.8
1/5/2021 14:30	10.28	6.71	58.3	19.31	49.8
1/5/2021 14:45	9.64	7.91	59.98	31.1	49.8
1/5/2021 15:00	10.08	8.28	62.17	35.82	49.8
1/5/2021 15:15	11.31	7.29	70.11	26.42	49.8
1/5/2021 15:30	11.47	6.99	72.38	20.14	49.8
1/5/2021 15:45	11.6	6.87	72.45	19.84	49.8
1/5/2021 16:00	10.75	7.02	69.46	21.3	49.8
1/5/2021 16:15	10.24	7.44	66.69	24.56	49.8

1/5/2021 16:30	9.32	7.87	52.42	30.34	49.8
1/5/2021 16:45	9.14	8.69	56.37	40.89	49.8
1/5/2021 17:00	8.7	9.39	50.85	50.59	49.8
1/5/2021 17:15	8.69	8.25	50.53	34.56	49.8
1/5/2021 17:30	9.57	7.52	61.37	25.51	49.8
1/5/2021 17:45	9.57	6.81	62.81	19.36	49.8
1/5/2021 18:00	9.53	6.93	62.43	20.54	49.8
1/5/2021 18:15	9.63	6.61	63.4	18.23	49.8
1/5/2021 18:30	9.82	7.38	64.02	24.83	49.8
1/5/2021 18:45	9.59	7.42	62.83	24.92	49.8
1/5/2021 19:00	9.85	6.86	66.5	19.68	49.8
1/5/2021 19:15	9.63	6.87	64.85	19.32	49.8
1/5/2021 19:30	9.02	6.9	57.65	19.51	49.8
1/5/2021 19:45	8.35	6.81	48.64	19.18	49.8
1/5/2021 20:00	8.3	6.45	46.97	16.09	49.8
1/5/2021 20:15	8.46	6.62	50.31	17.25	49.8
1/5/2021 20:30	8.22	7.15	46.58	22.25	49.8
1/5/2021 20:45	7.85	7.47	40.69	25.3	49.8
1/5/2021 21:00	7.25	7.43	30.3	24.8	49.8
1/5/2021 21:15	7.14	7.16	29.06	21.44	49.8
1/5/2021 21:30	7.05	7.21	26.97	22.22	49.8
1/5/2021 21:45	7.21	6.93	30.87	19.62	49.8
1/5/2021 22:00	7.32	7.54	32.91	25.89	49.8
1/5/2021 22:15	7.24	7.32	31.67	23.54	49.8
1/5/2021 22:30	7.17	8.05	30.41	31.07	49.8
1/5/2021 22:45	7.06	8.04	28.67	31.76	49.8
1/5/2021 23:00	6.9	7.18	26.14	22.38	49.8
1/5/2021 23:15	6.68	6.37	23.25	14.85	49.8
1/5/2021 23:30	6.62	5.67	22.1	10.5	49.8
1/5/2021 23:45	6.56	5.32	20.44	8.42	49.8
1/6/2021 0:00	6.51	6.11	18.75	12.99	49.8
1/6/2021 0:15	6.29	6.79	16.49	18.08	49.8
1/6/2021 0:30	6.13	6.84	13.49	18.08	49.8
1/6/2021 0:45	6.15	6.95	15.05	19.53	49.8
1/6/2021 1:00	6.18	7.03	16.25	20.37	49.8
1/6/2021 1:15	5.84	6.73	13.99	17.64	49.8
1/6/2021 1:30	4.68	6.97	5.11	19.3	49.8
1/6/2021 1:45	4.43	6.88	5.47	19.35	49.8
1/6/2021 2:00	4.45	7.08	5.47	15.01	49.8

1/6/2021 2:15	4.38	7.06	5.13	15.01	49.8
1/6/2021 2:30	4.13	6.28	3.82	7.78	49.8
1/6/2021 2:45	3.76	6	2.72	5.21	49.8
1/6/2021 3:00	3.46	6.09	1.98	5.12	49.8
1/6/2021 3:15	3.37	6.07	1.59	5.1	49.8
1/6/2021 3:30	3.12	6.14	0.77	5.09	49.8
1/6/2021 3:45	3.48	6.62	1.69	5.15	49.8
1/6/2021 4:00	3.54	6.34	1.91	5.15	49.8
1/6/2021 4:15	3.48	5.85	1.54	5.18	49.8
1/6/2021 4:30	3.52	5.74	1.61	5.15	49.8
1/6/2021 4:45	3.41	5.43	1.49	5.09	49.8
1/6/2021 5:00	2.98	5.28	0.57	5.1	49.8
1/6/2021 5:15	2.7	5.76	0.23	5.1	49.8
1/6/2021 5:30	2.71	6.09	0.29	5.09	49.8
1/6/2021 5:45	2.94	5.69	0.77	5.07	49.8
1/6/2021 6:00	3.37	5.34	1.51	5.06	49.8
1/6/2021 6:15	3.38	4.9	1.44	5.06	49.8
1/6/2021 6:30	3.42	5.09	1.23	5.04	49.8
1/6/2021 6:45	3.53	4.8	1.75	4.94	49.8
1/6/2021 7:00	3.55	4.84	1.79	5	49.8
1/6/2021 7:15	3.65	4.76	1.98	4.95	49.8
1/6/2021 7:30	4.2	4.54	2.97	4.88	49.8
1/6/2021 7:45	4.24	4.33	3.88	4.03	49.8
1/6/2021 8:00	4.09	4.19	3.94	3.7	49.8
1/6/2021 8:15	4.09	4.64	3.92	5.63	49.8
1/6/2021 8:30	4.22	4.85	3.89	6.18	49.8
1/6/2021 8:45	4.39	3.92	5.32	2.46	49.8
1/6/2021 9:00	4.53	3.32	5.9	1.3	49.8
1/6/2021 9:15	4.75	3.03	6.99	1.29	49.8
1/6/2021 9:30	4.39	3.02	5.75	1.54	49.8
1/6/2021 9:45	3.93	3.2	3.78	1.78	49.8
1/6/2021 10:00	4.31	3.51	5.12	2.5	49.8
1/6/2021 10:15	4.17	4.18	4.7	3.96	49.8
1/6/2021 10:30	4.79	5.02	7.19	6.99	49.8
1/6/2021 10:45	5.21	5.34	9.65	8.98	49.8
1/6/2021 11:00	5.33	5.4	10.58	9.29	49.8
1/6/2021 11:15	5.34	6.13	10.47	13.95	49.8
1/6/2021 11:30	5.27	6.51	10.3	16.97	49.8
1/6/2021 11:45	5.66	6.2	12.89	14.85	49.8

1/6/2021 12:00	5.57	5.22	12.43	8.44	49.8
1/6/2021 12:15	5.47	4.7	11.69	5.83	49.8
1/6/2021 12:30	5.76	5.88	13.94	14.14	49.8
1/6/2021 12:45	6.21	7.4	18.47	27.24	49.8
1/6/2021 13:00	6.25	7.67	18.47	30.12	49.8
1/6/2021 13:15	6.29	7.8	18.75	31.34	49.8
1/6/2021 13:30	6.59	7.08	21.99	23.31	49.8
1/6/2021 13:45	6.66	7.01	22.75	22.46	49.8
1/6/2021 14:00	7.05	8.62	27.44	40.8	49.8
1/6/2021 14:15	7.14	8.97	28.01	45.1	49.8
1/6/2021 14:30	7.38	8.39	32.1	37.59	49.8
1/6/2021 14:45	7.34	7.7	31.1	29.6	49.8
1/6/2021 15:00	6.7	7.92	23.8	31.81	49.8
1/6/2021 15:15	6.17	7.48	17.41	26.42	49.8
1/6/2021 15:30	6.13	7.29	16.21	24.96	49.8
1/6/2021 15:45	5.72	7.3	12.92	24.49	49.8
1/6/2021 16:00	5.43	7.37	10.9	25.09	49.8
1/6/2021 16:15	5.49	7.15	11.26	23.29	49.8
1/6/2021 16:30	5.34	6.98	10.57	21.93	49.8
1/6/2021 16:45	5.26	7.07	10.1	23.21	49.8
1/6/2021 17:00	5.68	7.71	12.4	30.02	49.8
1/6/2021 17:15	5.75	8.45	13.24	38.27	49.8
1/6/2021 17:30	5.83	7.62	12.87	29.03	49.8
1/6/2021 17:45	6.03	7.02	14.15	22.54	49.8
1/6/2021 18:00	6.09	6.72	14.5	19.18	49.8
1/6/2021 18:15	6.24	6.4	15.6	16.34	49.8
1/6/2021 18:30	6.68	6.77	19.07	18.92	49.8
1/6/2021 18:45	7.39	7.45	29.7	25.41	49.8
1/6/2021 19:00	7.37	7.68	29.99	27.71	49.8
1/6/2021 19:15	7.27	7.61	27.91	27.65	49.8
1/6/2021 19:30	7.49	7.36	28.22	24.77	49.8
1/6/2021 19:45	7.04	7.71	24.94	27.77	49.8
1/6/2021 20:00	6.49	8.5	18.97	39.42	49.8
1/6/2021 20:15	6.39	8.8	17.91	43.54	49.8
1/6/2021 20:30	6	9.46	13.18	52.15	49.8
1/6/2021 20:45	5.96	8.46	14.06	39.89	49.8
1/6/2021 21:00	5.94	9.52	14.37	53	49.8
1/6/2021 21:15	5.82	9.18	13.35	47.23	49.8
1/6/2021 21:30	5.81	8.29	12.02	38.31	49.8

1/6/2021 21:45	5.76	7.91	12.5	32.3	49.8
1/6/2021 22:00	5.76	7.84	12.34	30.55	49.8
1/6/2021 22:15	5.89	7.52	13.12	27.33	49.8
1/6/2021 22:30	6.08	7.61	14.7	26.72	49.8
1/6/2021 22:45	6.18	7.2	15.56	22.03	49.8
1/6/2021 23:00	6.25	6.85	15.84	18.87	49.8
1/6/2021 23:15	6.42	6.32	17.44	14.28	49.8
1/6/2021 23:30	6.38	6.06	15.68	12.42	49.8
1/6/2021 23:45	6.17	6.68	15.47	16.85	49.8
1/7/2021 0:00	5.66	7.34	11.56	23.9	49.8
1/7/2021 0:15	5.47	7.34	10.24	24.77	49.8
1/7/2021 0:30	5.05	7.44	6.72	25.02	49.8
1/7/2021 0:45	4.74	7.02	6.35	20.8	49.8
1/7/2021 1:00	4.29	6.99	4.3	20.71	49.8
1/7/2021 1:15	4	7.15	3.14	22.96	49.8
1/7/2021 1:30	4.53	6.67	5.09	18.59	49.8
1/7/2021 1:45	4.61	6.41	5.41	15.84	49.8
1/7/2021 2:00	4.6	6.53	5.32	16.89	49.8
1/7/2021 2:15	4.57	6.14	5.16	14.23	49.8
1/7/2021 2:30	4.34	5.9	3.67	12.39	49.8
1/7/2021 2:45	4.48	5.91	4.43	0	49.79
1/7/2021 3:00	4.39	5.85	4.22	0	49.79
1/7/2021 3:15	4.49	5.85	4.93	0	49.8
1/7/2021 3:30	4.44	5.66	4.55	0	49.79
1/7/2021 3:45	4.3	5.65	3.92	0	49.79
1/7/2021 4:00	3.61	5.64	1.91	0	49.78
1/7/2021 4:15	3.92	5.64	3	0	49.79
1/7/2021 4:30	3.95	5.63	2.8	0	49.79
1/7/2021 4:45	4.12	5.63	3.77	0	49.79
1/7/2021 5:00	4.77	3.36	6.07	0.78	49.8
1/7/2021 5:15	4.67	3.04	6.04	0.35	49.8
1/7/2021 5:30	3.78	2.98	3	0.22	49.79
1/7/2021 5:45	3.43	3.08	1.89	0.52	49.79
1/7/2021 6:00	3.46	3.34	1.83	0.87	49.79
1/7/2021 6:15	3.14	3.74	0.96	1.13	49.78
1/7/2021 6:30	3.11	4.09	0.79	1.96	49.79
1/7/2021 6:45	3.23	4.31	1.08	2.24	49.79
1/7/2021 7:00	3.44	4.93	1.57	5.09	49.8
1/7/2021 7:15	3.62	5.32	1.88	8.09	49.8

1/7/2021 7:30	3.34	5.53	1.39	9.62	49.8
1/7/2021 7:45	2.97	5.73	0.54	10.78	49.8
1/7/2021 8:00	3.52	7.65	1.59	29.17	49.8
1/7/2021 8:15	3.9	7.93	3.28	34.25	49.8
1/7/2021 8:30	4.22	6.87	3.79	21.53	49.8
1/7/2021 8:45	4.64	7.01	6.56	21.9	49.8
1/7/2021 9:00	4.61	7	5.9	21.7	49.8
1/7/2021 9:15	4.42	6.23	5.95	15.26	49.8
1/7/2021 9:30	3.39	6.05	2.11	13.7	49.8
1/7/2021 9:45	2.98	5.7	0.7	11.19	49.8
1/7/2021 10:00	3.45	5.89	1.87	12.44	49.8
1/7/2021 10:15	3.71	6.52	2.58	17.73	49.8
1/7/2021 10:30	3.56	6.83	2.24	21.11	49.8
1/7/2021 10:45	3.89	7.82	3.29	30.7	49.8
1/7/2021 11:00	4.45	7.87	5.43	31.09	49.8
1/7/2021 11:15	4.99	7.97	8.18	31.13	49.8
1/7/2021 11:30	5.61	7.94	12.06	31.11	49.8
1/7/2021 11:45	5.68	7.15	12.66	23.39	49.8
1/7/2021 12:00	5.96	7.38	14.84	25.92	49.8
1/7/2021 12:15	6.03	7.41	15.68	25.88	49.8
1/7/2021 12:30	5.83	7.66	13.81	28.2	49.8
1/7/2021 12:45	5.93	7.93	14.58	33.38	49.8
1/7/2021 13:00	6.15	8.16	17.01	36.52	49.8
1/7/2021 13:15	6.31	9	18.68	45.84	49.8
1/7/2021 13:30	6.06	8.68	16.09	42.05	49.8
1/7/2021 13:45	6.08	8.07	16.44	35.13	49.8
1/7/2021 14:00	6.14	8.85	17.1	43.93	49.8
1/7/2021 14:15	5.88	8.71	14.36	42.38	49.8
1/7/2021 14:30	6.12	8.09	16.48	35.06	49.8
1/7/2021 14:45	6	8.15	15.41	36.11	49.8
1/7/2021 15:00	5.86	8.16	14.39	35.47	49.8
1/7/2021 15:15	6.16	8.32	17.06	37.4	49.8
1/7/2021 15:30	6.42	8.12	19.67	34.91	49.8
1/7/2021 15:45	6.06	8.15	16.47	34.82	49.8
1/7/2021 16:00	5.6	7.7	12.83	29.98	49.8
1/7/2021 16:15	5.15	6.88	9.48	21.27	49.8
1/7/2021 16:30	4.59	6.08	6.29	14.21	49.8
1/7/2021 16:45	4.18	5.33	4.65	9.1	49.8
1/7/2021 17:00	3.64	5.8	2.54	11.83	49.8

1/7/2021 17:15	3.35	6.19	1.61	14.98	49.8
1/7/2021 17:30	4.07	6.53	3	17.99	49.8
1/7/2021 17:45	4.46	6.63	5.19	19.03	49.8
1/7/2021 18:00	4.61	7.38	5.8	26.02	49.8
1/7/2021 18:15	4.51	7.44	5.22	26.53	49.8
1/7/2021 18:30	4.64	7.53	6.13	26.91	49.8
1/7/2021 18:45	5.41	7.1	10.77	22.54	49.8
1/7/2021 19:00	5.63	6.69	12.83	18.62	49.8
1/7/2021 19:15	5.05	6.19	9.48	14.24	49.8
1/7/2021 19:30	6.49	5.72	24.39	10.66	49.8
1/7/2021 19:45	6.73	5.21	28.4	7.94	49.8
1/7/2021 20:00	5.15	5.29	13.44	8.89	49.8
1/7/2021 20:15	3.48	5.17	3.37	8.03	49.8
1/7/2021 20:30	3.16	5.58	0.99	10.02	49.8
1/7/2021 20:45	3.29	6.26	1.74	14.19	49.8
1/7/2021 21:00	3.7	6.17	1.83	14.11	49.8
1/7/2021 21:15	4.64	7.12	5.78	22.29	49.8
1/7/2021 21:30	4.82	6.66	5.49	18.09	49.8
1/7/2021 21:45	4.13	6.44	4.07	15.87	49.8
1/7/2021 22:00	3.87	6.7	2.7	17.94	49.8
1/7/2021 22:15	4.38	6.56	5.12	17.2	49.8
1/7/2021 22:30	4.87	6.47	6.14	16.26	49.8
1/7/2021 22:45	5.13	6.93	8.29	20.41	49.8
1/7/2021 23:00	4.21	7.26	3.85	23.64	49.8
1/7/2021 23:15	4.28	7.27	4.26	22.44	49.8
1/7/2021 23:30	4.83	7.12	5.19	20.43	49.8
1/7/2021 23:45	6.28	7	18.07	18.46	49.8
1/8/2021 0:00	6.45	7.15	20.18	19.5	49.8
1/8/2021 0:15	6.16	7.19	17.37	20.2	49.8
1/8/2021 0:30	5.97	6.93	14.85	17.88	49.8
1/8/2021 0:45	5.45	6.59	10.84	15.72	49.8
1/8/2021 1:00	5.5	6.72	11.95	16.68	49.8
1/8/2021 1:15	6.25	6.52	19.62	15.31	49.8
1/8/2021 1:30	8.6	6.99	48.83	18.4	49.8
1/8/2021 1:45	9.02	7.63	50.56	24.51	49.8
1/8/2021 2:00	8.52	7.66	40.07	24.45	49.8
1/8/2021 2:15	8.43	6.84	36.18	17.48	49.8
1/8/2021 2:30	9.28	5.68	36.23	9.65	49.8
1/8/2021 2:45	9.47	5.43	36.21	7.87	49.8

1/8/2021 3:00	10.46	5.32	36.2	7.78	49.8
1/8/2021 3:15	9.81	4.73	36.21	5.26	49.8
1/8/2021 3:30	10.43	4.86	36.21	5.85	49.8
1/8/2021 3:45	9.9	5.57	36.22	9.8	49.8
1/8/2021 4:00	8.44	6.17	36.19	12.65	49.8
1/8/2021 4:15	7.64	6.07	37.18	11.99	49.8
1/8/2021 4:30	7.81	5.52	40.35	9.18	49.8
1/8/2021 4:45	7.75	5.24	39.66	7.97	49.8
1/8/2021 5:00	7.16	5.64	27	10.66	49.8
1/8/2021 5:15	6.77	7.17	24.51	22.61	49.8
1/8/2021 5:30	6.62	9.77	15.36	47.66	49.8
1/8/2021 5:45	6.89	9.95	25.39	47.24	49.8
1/8/2021 6:00	6.18	7.41	17.9	22.44	49.8
1/8/2021 6:15	6.01	6.72	16.41	18.02	49.8
1/8/2021 6:30	5.99	7.6	16.48	26.61	49.8
1/8/2021 6:45	5.95	7.6	15.96	27.22	49.8
1/8/2021 7:00	6.39	7.55	20.91	25.76	49.8
1/8/2021 7:15	6.57	7.75	21.91	27.27	49.8
1/8/2021 7:30	6.89	7.15	20.82	22.3	49.8
1/8/2021 7:45	6.19	6.19	10.4	14.12	49.8
1/8/2021 8:00	5.74	5.57	3.64	9.63	49.8
1/8/2021 8:15	5.74	5.23	3.72	8.62	49.8
1/8/2021 8:30	5.91	4.29	4.34	4.51	49.8
1/8/2021 8:45	5.85	4.63	4.01	5.74	49.8
1/8/2021 9:00	5.63	4.74	3.65	7.14	49.8
1/8/2021 9:15	6	5.65	15.73	11.89	49.8
1/8/2021 9:30	6.22	6.85	13.33	21.26	49.8
1/8/2021 9:45	6.58	7.18	20.43	24.03	49.8
1/8/2021 10:00	6.6	6.79	22.44	19.96	49.8
1/8/2021 10:15	6.6	7.57	22.71	27.3	49.8
1/8/2021 10:30	6.91	7.93	26.28	32.13	49.8
1/8/2021 10:45	7.08	8.16	28.14	33.38	49.8
1/8/2021 11:00	6.8	7.78	25.2	29.63	49.8
1/8/2021 11:15	6.57	7.29	22.05	24.21	49.8
1/8/2021 11:30	6.87	7.07	25.61	21.87	49.8
1/8/2021 11:45	6.89	7.18	25.76	24.7	49.8
1/8/2021 12:00	6.53	8.63	21.16	40.3	49.8
1/8/2021 12:15	6.32	7.49	18.94	28.09	49.8
1/8/2021 12:30	6.4	7.52	20.21	28.03	49.8

1/8/2021 12:45	6.19	7.94	17.75	32.29	49.8
1/8/2021 13:00	6.17	8.15	17.69	34.71	49.8
1/8/2021 13:15	7.22	7.17	30.3	24.66	49.8
1/8/2021 13:30	8.17	7.39	35.07	25.79	49.8
1/8/2021 13:45	7.56	8.31	33.19	36.59	49.8
1/8/2021 14:00	7.5	8.04	32.83	33.46	49.8
1/8/2021 14:15	7.3	8.39	30.92	37.22	49.8
1/8/2021 14:30	7.71	8.41	29.47	37.57	49.8
1/8/2021 14:45	8.07	11.22	42.7	58.09	49.8
1/8/2021 15:00	7.57	10.22	36.49	57.4	49.8
1/8/2021 15:15	7.13	8.83	30.57	44.01	49.8
1/8/2021 15:30	6.53	8.04	22.41	34.65	49.8
1/8/2021 15:45	6.08	7.19	17.02	24.85	49.8
1/8/2021 16:00	5.54	7.05	13	23	49.8
1/8/2021 16:15	4.6	6.57	6.99	18.21	49.8
1/8/2021 16:30	4.58	5.87	6.56	12.71	49.8
1/8/2021 16:45	4.07	5.83	4.4	12.23	49.8
1/8/2021 17:00	4.53	5.6	6.35	10.3	49.8
1/8/2021 17:15	4.92	5.09	8.38	7.92	49.8
1/8/2021 17:30	5.65	4.78	13.16	6.3	49.8
1/8/2021 17:45	5.89	4.48	15.54	4.72	49.8
1/8/2021 18:00	5.3	3.79	11.2	2.24	49.8
1/8/2021 18:15	5.27	3.9	10.12	2.58	49.8
1/8/2021 18:30	6.07	3.96	16.04	2.63	49.8
1/8/2021 18:45	6.13	3.91	9.96	2.87	49.8
1/8/2021 19:00	5.81	3.95	14.63	3	49.8
1/8/2021 19:15	4.63	4.36	7.42	4.47	49.8
1/8/2021 19:30	5.42	5.35	11.02	8.69	49.8
1/8/2021 19:45	5.69	5.89	12.93	11.94	49.8
1/8/2021 20:00	5.71	5.78	13.17	11.26	49.8
1/8/2021 20:15	5.51	5.65	12	10.81	49.8
1/8/2021 20:30	4.75	5.86	6.78	11.34	49.8
1/8/2021 20:45	5.05	5.4	8.49	9.05	49.8
1/8/2021 21:00	5.77	5.13	13.31	7.65	49.8
1/8/2021 21:15	5.39	4.85	10.57	6.17	49.8
1/8/2021 21:30	5.03	5.02	7.45	7.23	49.8
1/8/2021 21:45	4.8	5.21	6.94	8.14	49.8
1/8/2021 22:00	5.01	5.26	8.21	8.7	49.8
1/8/2021 22:15	4.81	5.08	7.23	7.63	49.8

1/8/2021 22:30	4.44	4.94	5.51	6.75	49.8
1/8/2021 22:45	4.96	4.92	7.55	6.67	49.8
1/8/2021 23:00	4.72	4.72	6.85	6	49.8
1/8/2021 23:15	5.18	4.89	9.16	6.53	49.8
1/8/2021 23:30	5.2	5.04	8.95	7.17	49.8
1/8/2021 23:45	4.51	5.06	5.56	7.09	49.8
1/9/2021 0:00	4.36	4.74	5	5.49	49.8
1/9/2021 0:15	4.54	3.86	5.64	2.38	49.8
1/9/2021 0:30	5.27	3.47	9.4	1.42	49.8
1/9/2021 0:45	5.27	3.27	9.02	0.79	49.8
1/9/2021 1:00	5.63	3.51	11.01	1.34	49.8
1/9/2021 1:15	5.64	3.86	10.98	2.01	49.8
1/9/2021 1:30	5.4	3.67	7.63	1.68	49.8
1/9/2021 1:45	5.53	3.44	10.38	0.98	49.8
1/9/2021 2:00	5.42	2.93	10.69	0.06	49.8
1/9/2021 2:15	5.08	2.86	8.6	0	49.8
1/9/2021 2:30	4.79	2.9	7.17	0	49.8
1/9/2021 2:45	4.73	3	6.73	0	49.8
1/9/2021 3:00	4.64	2.84	6.19	0	49.8
1/9/2021 3:15	4.14	3.15	4.36	0	49.79
1/9/2021 3:30	3.87	3.01	3.08	0	49.79
1/9/2021 3:45	3.83	3.03	3.22	0	49.79
1/9/2021 4:00	4	2.78	3.83	0	49.79
1/9/2021 4:15	3.7	2.58	2.88	0	49.79
1/9/2021 4:30	3.83	2.13	3.32	0	49.79
1/9/2021 4:45	4.12	2.11	4.22	0	49.79
1/9/2021 5:00	4.51	1.84	5.85	0	49.8
1/9/2021 5:15	4.65	1.68	6.29	0	49.8
1/9/2021 5:30	4.41	1.29	5.33	0	49.8
1/9/2021 5:45	3.9	1.34	3.51	0	49.79
1/9/2021 6:00	3.55	1.17	2.22	0	49.78
1/9/2021 6:15	3.43	1.36	1.82	0	49.78
1/9/2021 6:30	3.19	1.39	1.26	0	49.78
1/9/2021 6:45	3.11	1.3	1.13	0	49.78
1/9/2021 7:00	2.85	1.32	0.78	0	49.78
1/9/2021 7:15	2.71	1.13	0.31	0	49.78
1/9/2021 7:30	2.8	1.27	0.24	0	49.78
1/9/2021 7:45	3.26	0.63	1.42	0	49.78
1/9/2021 8:00	3.31	0.64	1.67	0	49.78

1/9/2021 8:15	3.3	1.06	1.61	0	49.78
1/9/2021 8:30	3.46	1.38	1.95	0	49.78
1/9/2021 8:45	3.5	1.28	2.05	0	49.78
1/9/2021 9:00	3.03	1.42	0.94	0	49.78
1/9/2021 9:15	2.94	1.1	0.58	0	49.78
1/9/2021 9:30	3.55	1.59	1.55	0	49.78
1/9/2021 9:45	3.79	1.06	2.88	0	49.79
1/9/2021 10:00	3.69	1.12	2.44	0	49.79
1/9/2021 10:15	3.38	1.16	1.48	0	49.78
1/9/2021 10:30	3.37	1.45	1.4	0	49.78
1/9/2021 10:45	3.57	3.23	1.99	0.72	49.79
1/9/2021 11:00	3.88	3.94	2.84	1.34	49.79
1/9/2021 11:15	4.31	3.53	4.56	0.8	49.8
1/9/2021 11:30	4.46	3.53	3.73	0.92	49.79
1/9/2021 11:45	5.05	3.9	7.96	1.53	49.8
1/9/2021 12:00	5.19	3.63	8.92	0.93	49.8
1/9/2021 12:15	5.13	3.23	8.82	0.3	49.8
1/9/2021 12:30	5.01	3.37	7.97	0.32	49.8
1/9/2021 12:45	5.18	3.36	8.76	0.26	49.8
1/9/2021 13:00	5.47	3.4	11.13	0.53	49.8
1/9/2021 13:15	5.67	3.63	12.46	1.19	49.8
1/9/2021 13:30	6.09	3.79	11.49	2.06	49.8
1/9/2021 13:45	6.02	4.33	15.45	4.07	49.8
1/9/2021 14:00	6.26	4.08	17.37	3.28	49.8
1/9/2021 14:15	6.29	4.56	17.73	3	49.8
1/9/2021 14:30	6.18	5.58	12.55	11.63	49.8
1/9/2021 14:45	6.55	4.71	20.8	6.57	49.8
1/9/2021 15:00	6.5	3.62	20.6	1.95	49.8
1/9/2021 15:15	7.06	3.14	26.84	0.07	49.8
1/9/2021 15:30	7.27	4.02	29.72	1.77	49.8
1/9/2021 15:45	7.29	2.88	29.59	0.07	49.8
1/9/2021 16:00	7.15	2.92	28.14	0	49.8
1/9/2021 16:15	7.05	2.99	26.94	0	49.8
1/9/2021 16:30	7.12	3.38	28.19	0	49.8
1/9/2021 16:45	7.32	4.17	30.4	2.05	49.8
1/9/2021 17:00	7.36	5.31	31.19	7.97	49.8
1/9/2021 17:15	7.28	4.54	30.05	4.59	49.8
1/9/2021 17:30	6.99	4.15	26.85	3.59	49.8
1/9/2021 17:45	6.97	4.43	26.04	4.43	49.8

1/9/2021 18:00	6.86	4.78	23.74	5.82	49.8
1/9/2021 18:15	6.55	4.54	20.41	4.76	49.8
1/9/2021 18:30	6.28	5.13	13.37	7.24	49.8
1/9/2021 18:45	5.82	4.08	12.93	3.68	49.8
1/9/2021 19:00	5.95	4.19	13.6	3.44	49.8
1/9/2021 19:15	5.9	4.5	13.62	4.31	49.8
1/9/2021 19:30	6.11	3.75	15.44	2.17	49.8
1/9/2021 19:45	5.6	2.93	11.21	0.14	49.8
1/9/2021 20:00	5.58	2.94	10.83	0	49.8
1/9/2021 20:15	5.35	2.93	9.56	0	49.8
1/9/2021 20:30	5.39	2.76	8.86	0	49.8
1/9/2021 20:45	4.86	3.02	7.18	0	49.8
1/9/2021 21:00	4.51	3.81	5.61	0.22	49.8
1/9/2021 21:15	4.06	4.37	3.75	1.47	49.8
1/9/2021 21:30	4.06	5.03	3.29	5.79	49.8
1/9/2021 21:45	4.15	4.01	3.54	2.5	49.8
1/9/2021 22:00	4.07	2.94	3.39	0.23	49.79
1/9/2021 22:15	3.53	2.41	1.93	0	49.78
1/9/2021 22:30	3.59	2.35	2.11	0	49.78
1/9/2021 22:45	3.29	2.67	1.47	0	49.78
1/9/2021 23:00	3.51	2.83	2	0	49.78
1/9/2021 23:15	3.5	3.24	2	0	49.78
1/9/2021 23:30	3.14	3.42	1.27	0	49.78
1/9/2021 23:45	2.53	2.87	0.07	0	49.78
1/10/2021 0:00	2.05	2.28	0	0	49.78
1/10/2021 0:15	2.31	2.14	0	0	49.78
1/10/2021 0:30	2.47	2.24	0	0	49.78
1/10/2021 0:45	2.49	1.98	0	0	49.78
1/10/2021 1:00	2.01	2.71	0	0	49.78
1/10/2021 1:15	1.21	2.9	0	0	49.78
1/10/2021 1:30	1.35	2.43	0	0	49.78
1/10/2021 1:45	1.47	2.01	0	0	49.78
1/10/2021 2:00	1.77	1.3	0	0	49.78
1/10/2021 2:15	1.83	0.73	0	0	49.78
1/10/2021 2:30	1.37	1.12	0	0	49.78
1/10/2021 2:45	1.46	0.76	0	0	49.78
1/10/2021 3:00	1.94	0.67	0	0	49.78
1/10/2021 3:15	1.59	1.96	0	0	49.78
1/10/2021 3:30	1.16	2.73	0	0	49.78

1/10/2021 3:45	0.87	2.94	0	0	49.78
1/10/2021 4:00	0.81	2.79	0	0	49.78
1/10/2021 4:15	1.53	2.63	0	0	49.78
1/10/2021 4:30	1.2	2.86	0	0	49.78
1/10/2021 4:45	1.35	3.26	0	0	49.78
1/10/2021 5:00	1.1	3.49	0	0	49.78
1/10/2021 5:15	1.48	3.07	0	0	49.78
1/10/2021 5:30	2.94	2.99	0	0	49.78
1/10/2021 5:45	3.09	2.92	0.17	0	49.78
1/10/2021 6:00	3	2.82	0.27	0	49.78
1/10/2021 6:15	3.38	2.91	0.91	0	49.78
1/10/2021 6:30	3.02	3.02	0.42	0	49.78
1/10/2021 6:45	2.79	2.89	0.1	0	49.78
1/10/2021 7:00	2.43	2.95	0	0	49.78
1/10/2021 7:15	2.54	3.04	0	0	49.78
1/10/2021 7:30	2.64	3.21	0.08	0	49.78
1/10/2021 7:45	2.57	2.65	0.04	0	49.78
1/10/2021 8:00	2.4	2.54	0	0	49.78
1/10/2021 8:15	2.29	2.37	0	0	49.78
1/10/2021 8:30	2.26	2.37	0	0	49.78
1/10/2021 8:45	2.19	2.68	0	0	49.78
1/10/2021 9:00	2.11	2.9	0	0	49.78
1/10/2021 9:15	1.99	2.88	0	0	49.78
1/10/2021 9:30	2.73	2.88	0	0	49.78
1/10/2021 9:45	2.9	2.88	0.19	0	49.78
1/10/2021 10:00	2.57	3	0	0	49.78
1/10/2021 10:15	2.04	3.22	0	0	49.78
1/10/2021 10:30	2.11	3.18	0	0	49.78
1/10/2021 10:45	2.68	3.09	0	0.1	49.78
1/10/2021 11:00	3.04	2.88	0	0	49.78
1/10/2021 11:15	3.05	2.91	0.13	0	49.78
1/10/2021 11:30	3.36	2.99	1	0	49.78
1/10/2021 11:45	3.27	3.07	1.09	0	49.78

1/10/2021 12:00	3.4	3.33	1.54	0	49.78
1/10/2021 12:15	3.82	3.26	2.72	0	49.79
1/10/2021 12:30	3.86	3.48	2.83	0	49.79
1/10/2021 12:45	4.06	3.63	3.48	0	49.79
1/10/2021 13:00	5.07	3.9	7.96	0.14	49.8
1/10/2021 13:15	5.52	3.27	10.61	0.82	49.8
1/10/2021 13:30	5.78	2.18	11.65	0.07	49.8
1/10/2021 13:45	5.89	2.29	9.44	0	49.8
1/10/2021 14:00	6.63	2.15	14.12	0	49.8
1/10/2021 14:15	6.72	2.6	15.07	0	49.8
1/10/2021 14:30	6.51	2.78	13.39	0	49.8
1/10/2021 14:45	6.38	2.25	18.43	0	49.8
1/10/2021 15:00	6.87	1.93	25.06	0	49.8
1/10/2021 15:15	6.98	2.12	26.51	0	49.8
1/10/2021 15:30	6.66	2.58	22.42	0	49.8
1/10/2021 15:45	6.71	2.58	22.58	0	49.8
1/10/2021 16:00	6.42	2.89	19.25	0	49.8
1/10/2021 16:15	6.27	3.41	17.96	0	49.8
1/10/2021 16:30	6.04	4.7	14.8	3.84	49.8
1/10/2021 16:45	5.78	5.62	13.34	9.5	49.8
1/10/2021 17:00	5.82	6.48	13.44	16.61	49.8
1/10/2021 17:15	5.97	6.03	14.53	13.41	49.8

1/10/2021 17:30	5.97	5.54	14.34	9.46	49.8
1/10/2021 17:45	5.75	5.6	12.57	9.75	49.8
1/10/2021 18:00	5.48	3.96	10.86	2.45	49.8
1/10/2021 18:15	5.77	3.28	12.73	0.55	49.8
1/10/2021 18:30	6.34	2.88	16.45	0.2	49.8
1/10/2021 18:45	6.52	2.97	18.56	0.12	49.8
1/10/2021 19:00	6.3	3.05	17.45	0.01	49.8
1/10/2021 19:15	5.66	3.07	12.09	0	49.8
1/10/2021 19:30	5.6	2.91	7.99	0	49.8
1/10/2021 19:45	6	3.21	14.06	0	49.8
1/10/2021 20:00	5.26	3.41	9.21	0	49.8
1/10/2021 20:15	4.72	2.93	6.14	0	49.8
1/10/2021 20:30	4.88	2.68	6.84	0	49.8
1/10/2021 20:45	5.02	2.35	7.04	0	49.8
1/10/2021 21:00	4.91	2.31	6.73	0	49.8
1/10/2021 21:15	4.93	2.69	7.04	0	49.8
1/10/2021 21:30	4.92	2.77	6.8	0	49.8
1/10/2021 21:45	4.64	2.78	6.34	0	49.8
1/10/2021 22:00	5.12	2.72	8.14	0	49.8
1/10/2021 22:15	5.24	2.93	8.41	0	49.8
1/10/2021 22:30	5.06	2.94	6.67	0	49.8
1/10/2021 22:45	4.86	3.27	6.66	0	49.8

1/10/2021 23:00	4.69	2.95	6.66	0	49.8
1/10/2021 23:15	4.4	2.66	5.45	0	49.8
1/10/2021 23:30	3.8	3.35	2.75	0.2	49.79
1/10/2021 23:45	4.2	3.69	3.39	1.38	49.8