

Weekly System Status Report – 2021 Week 51 (20/12/2021 – 26/12/2021)

Introduction

This document is intended to provide a general picture of the Adequacy of the National Electricity Supply System in the medium term. The Report will be updated weekly, on Tuesdays and circulated Wednesdays, thereafter, published on the Eskom website, updated on Wednesdays. The values contained in this report are unverified and not official yet and can change at any time.

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Historic Daily Peak System Capacity/Demand

Date	Available Dispatchable Generation (MW)	Non-commercial Generation (MW)	Residual Load Forecast (MW)	Actual Residual Demand (MW) Incl IOS	Operating Reserve Margin (Excl Non-Commercial Units)	Operating Reserve Margin (Incl Non-Commercial Units)	Forecast vs. Actual (Residual Demand)
Mon 20/Dec/2021	31,070	0	26,390	25,570	21.5%	21.5%	3.2%
Tue 21/Dec/2021	28,903	0	25,867	25,905	11.6%	11.6%	-0.1%
Wed 22/Dec/2021	28,787	0	25,657	25,298	13.8%	13.8%	1.4%
Thu 23/Dec/2021	28,817	0	25,068	24,784	16.3%	16.3%	1.1%
Fri 24/Dec/2021	28,363	0	23,808	23,451	20.9%	20.9%	1.5%
Sat 25/Dec/2021	29,808	0	21,990	22,306	33.6%	33.6%	-1.4%
Sun 26/Dec/2021	29,656	0	22,460	22,698	30.7%	30.7%	-1.0%

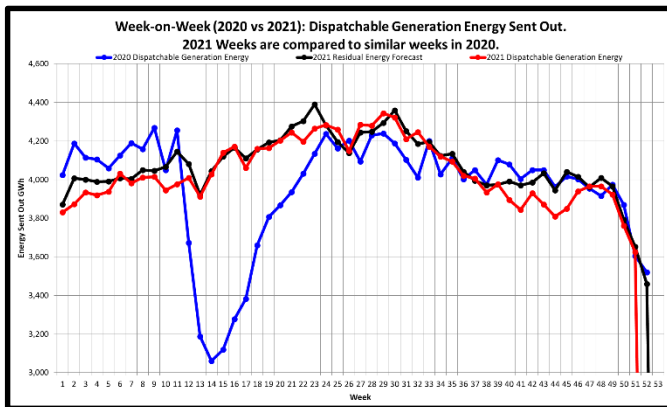
Date	Total Available Generation Incl Renewables (MW)	Non-commercial Generation (MW)	RSA Contracted Load Forecast (MW)	Actual RSA Contracted Demand (MW) Incl IOS	Operating Reserve Margin (Excl Non-Commercial Units)	Operating Reserve Margin (Incl Non-Commercial Units)	Forecast vs. Actual (RSA Contracted Demand)
Mon 20/Dec/2021	33,363	0	28,132	27,863	19.7%	19.7%	1.0%
Tue 21/Dec/2021	30,447	0	27,307	27,449	10.9%	10.9%	-0.5%
Wed 22/Dec/2021	30,107	0	27,200	26,618	13.1%	13.1%	2.2%
Thu 23/Dec/2021	30,577	0	26,989	26,543	15.2%	15.2%	1.7%
Fri 24/Dec/2021	30,115	0	25,745	25,203	19.5%	19.5%	2.2%
Sat 25/Dec/2021	32,628	0	24,891	25,013	30.4%	30.4%	-0.5%
Sun 26/Dec/2021	30,777	0	23,834	23,819	29.2%	29.2%	0.1%

Notes:

- Available Dispatchable Generation means **all generation resources** that can be dispatched by Eskom and includes capacity available from all emergency generation resources.
- RSA Contracted Load Forecast is the total official day-ahead hourly forecast. Residual Load Forecast excludes the expected generation from renewables.
- Actual Residual Demand is the aggregated metered hourly sent-out generation and imports from dispatchable resources and includes demand reductions. The Actual RSA Contracted Demand includes renewable generation.
- Net Maximum Dispatchable Capacity (including imports and emergency generation resources) = 49 590 MW (Incl. non-comm. Kusile units).
- These figures do not include any demand side products.
- The peak hours for the residual demand can differ from that of the RSA contracted demand, depending on renewable generation.

Week-on-Week Dispatchable Generation Energy Sent Out

[2021 weeks compared to similar 2020 weeks]



Week 51 : Dispatchable Generation Energy Sent Out Statistics

Energy Sent Out	3,626	GWh
Week-on-Week Growth	0.61	%
Year-on-Year Growth (Year-to-Date) Annual	1.98	%

Note:

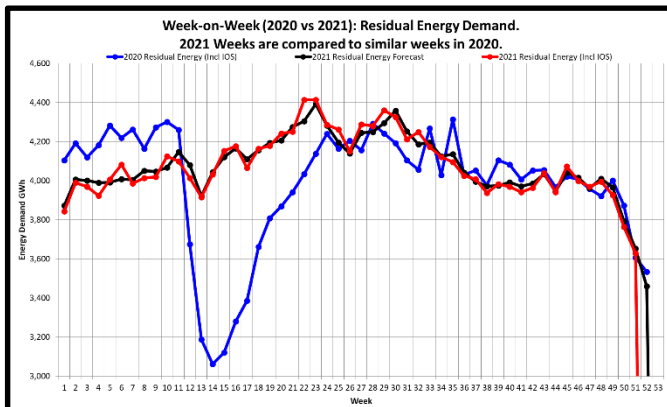
2021 Weeks are compared to similar weeks in 2020.
(2021 week 1 ~ 2020 week 1)

Annual Dispatchable Generation Energy Sent Out Statistics

Year	01 Jan to 26 Dec Energy	Annual Energy (01 Jan to 31 Dec)	Unit
2016	224,021	226,721	GWh
2017	222,551	225,203	GWh
2018	221,535	224,202	GWh
2019	216,960	219,563	GWh
2020	204,197	206,725	GWh
2021 (YTD)	207,564		GWh

Week-on-Week Residual Energy Demand

[2021 weeks compared to similar 2020 weeks]



Week 51 : Residual Energy Demand Statistics (Incl IOS)

Energy Demand	3,629	GWh
Week-on-Week Growth	0.63	%
Year-on-Year Growth (Year-to-Date) Annual	2.23	%

Note:

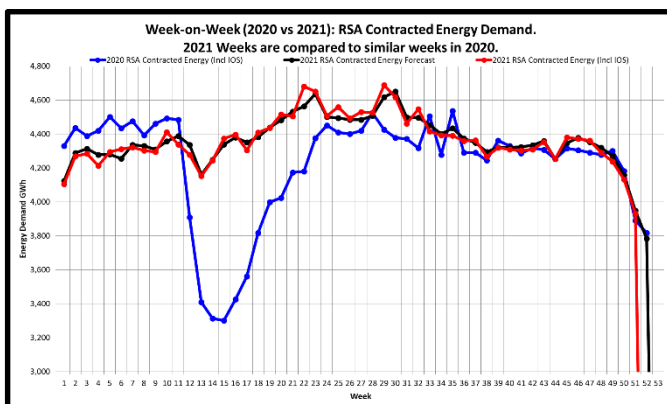
2021 Weeks are compared to similar weeks in 2020.
(2021 week 1 ~ 2020 week 1)

Annual Residual Energy Demand Statistics (Incl IOS)

Year	01 Jan to 26 Dec Energy	Annual Energy (01 Jan to 31 Dec)	Unit
2016	224,108	226,808	GWh
2017	222,596	225,248	GWh
2018	221,920	224,594	GWh
2019	218,320	220,924	GWh
2020	205,609	208,151	GWh
2021 (YTD)	209,496		GWh

Week-on-Week RSA Contracted Energy Demand

[2021 weeks compared to similar 2020 weeks]



Week 51 : RSA Contracted Energy Demand Statistics (Incl IOS)

Energy Demand	3,932	GWh
Week-on-Week Growth	1.02	%
Year-on-Year Growth (Year-to-Date) Annual	3.34	%

Note:

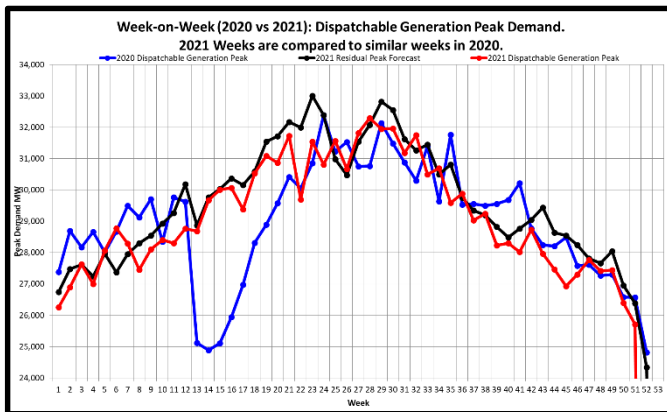
2021 Weeks are compared to similar weeks in 2020.
(2021 week 1 ~ 2020 week 1)

Annual RSA Contracted Energy Demand Statistics (Incl IOS)

Year	01 Jan to 26 Dec Energy	Annual Energy (01 Jan to 31 Dec)	Unit
2016	235,170	238,069	GWh
2017	232,610	235,426	GWh
2018	232,631	235,482	GWh
2019	229,733	232,511	GWh
2020	217,882	220,630	GWh
2021 (YTD)	224,424		GWh

Week-on-Week Dispatchable Generation Peak Demand

[2021 weeks compared to similar 2020 weeks]



Week 51 : Dispatchable Generation Peak Demand Statistics

Peak Demand	25,711	MW
Week-on-Week Growth	-3.25	%
Year-on-Year Growth (Year-to-Date) Annual	-0.28	%

Note:

2021 Weeks are compared to similar weeks in 2020.

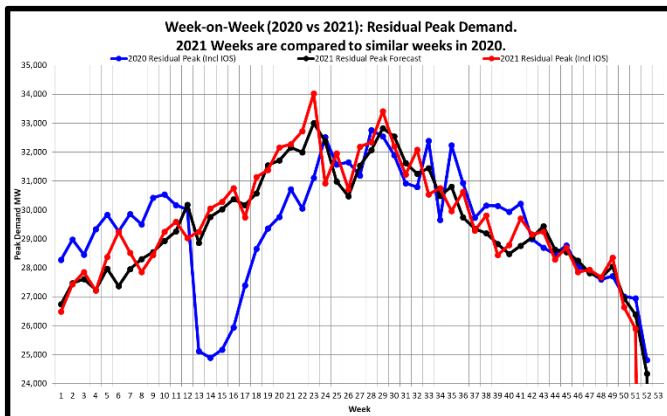
(2021 week 1 ~ 2020 week 1)

Annual Dispatchable Generation Peak Demand Statistics

Year	Peak Date	Annual Peak	Unit
2016	Thu 04-Aug-2016	34,181	MW
2017	Tue 30-May-2017	35,457	MW
2018	Mon 16-Jul-2018	34,256	MW
2019	Thu 30-May-2019	33,066	MW
2020	Wed 17-Jun-2020	32,384	MW
2021 (YTD)	Thu 15-Jul-2021	32,292	MW

Week-on-Week Residual Peak Demand

[2021 weeks compared to similar 2020 weeks]



Week 51 : Residual Peak Demand Statistics (Incl IOS)

Peak Demand	25,905	MW
Week-on-Week Growth	-3.87	%
Year-on-Year Growth (Year-to-Date) Annual	3.89	%

Note:

2021 Weeks are compared to similar weeks in 2020.

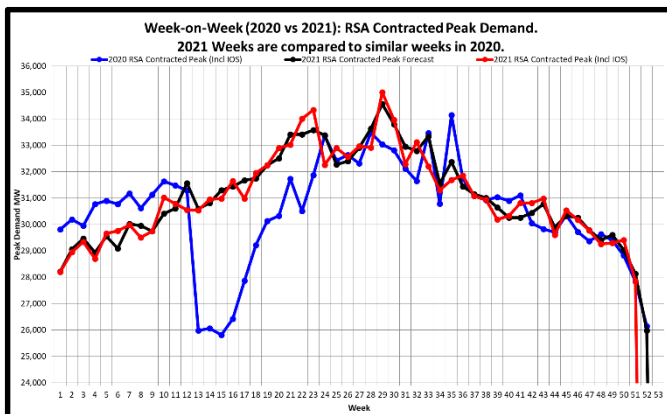
(2021 week 1 ~ 2020 week 1)

Annual Residual Peak Demand Statistics (Incl IOS)

Year	Peak Date	Annual Peak	Unit
2016	Thu 07-Jul-2016	34,488	MW
2017	Tue 30-May-2017	35,517	MW
2018	Tue 29-May-2018	34,907	MW
2019	Thu 30-May-2019	33,746	MW
2020	Wed 15-Jul-2020	32,756	MW
2021 (YTD)	Tue 08-Jun-2021	34,029	MW

Week-on-Week RSA Contracted Peak Demand

[2021 weeks compared to similar 2020 weeks]



Week 51 : RSA Contracted Peak Demand Statistics (Incl IOS)

Peak Demand	27,863	MW
Week-on-Week Growth	0.09	%
Year-on-Year Growth (Year-to-Date) Annual	2.49	%

Note:

2021 Weeks are compared to similar weeks in 2020.

(2021 week 1 ~ 2020 week 1)

Annual RSA Contracted Peak Demand Statistics (Incl IOS)

Year	Peak Date	Annual Peak	Unit
2016	Mon 30-May-2016	34,913	MW
2017	Tue 30-May-2017	35,769	MW
2018	Tue 29-May-2018	35,345	MW
2019	Thu 30-May-2019	34,510	MW
2020	Tue 01-Sep-2020	34,155	MW
2021 (YTD)	Thu 22-Jul-2021	35,005	MW

Weekly Generation Availability

	Week														Annual (Jan - Dec)	
	38	39	40	41	42	43	44	45	46	47	48	49	50	51	YTD	2020
Energy Availability Factor (Eskom EAF)	62.40	60.95	57.51	58.06	58.69	58.25	56.48	58.46	58.61	61.83	58.44	57.77	59.81	56.75	61.91	65.04
Planned Outage Factor	13.37	12.23	12.54	11.57	11.00	11.42	9.82	13.35	8.90	12.28	12.09	11.70	11.92	13.51	10.78	11.24
Unplanned Outage Factor	20.93	23.43	27.14	27.61	27.60	27.92	30.96	24.89	29.82	23.73	27.36	27.87	26.60	28.20	24.43	20.88
Other Outage Factor	3.30	3.39	2.81	2.76	2.71	2.41	2.74	3.30	2.67	2.16	2.11	2.66	1.67	1.54	2.88	2.84

EAF: Ratio of the available energy generation over a given time period to the maximum amount of energy which could be produced over the same time period.

Outage Factors: Ratio of energy losses over a given time period to the maximum amount of energy which could be produced over the same time period.

YTD: Year-to-Date (01 January of current year to current week)

Three Month Outlook

This is the forecast demand vs. available generating capacity for each week for 3 months ahead. Colour codes ranging from Green (no shortage) to Red (worst case) are used to indicate the absence or presence of a capacity constraint.

Week Start	Week	MW RSA Contracted Forecast	MW Residual Forecast	MW Available Dispatchable Capacity	MW Available Capacity (Less OR and UA)	MW Planned Maintenance	MW Unplanned Outage Assumption (UA)	MW Planned Risk Level (+14200 MW)	MW Likely Risk Scenario (+16200 MW)
27-Dec-21	52	25983	24341	41783	27583	7807	12000		
03-Jan-22	1	28334	26296	44428	30228	5162	12000		
10-Jan-22	2	29467	27429	43724	29524	5866	12000		
17-Jan-22	3	29462	27425	42511	28311	7079	12000		
24-Jan-22	4	29847	27809	41791	27591	7799	12000		
31-Jan-22	5	30033	27949	43060	28860	6530	12000		
07-Feb-22	6	30280	28197	42385	28185	7205	12000		
14-Feb-22	7	30459	28376	42540	28340	7050	12000		
21-Feb-22	8	30125	28042	42928	28728	6662	12000		
28-Feb-22	9	30232	28359	42859	28659	6731	12000		
07-Mar-22	10	30863	28990	43676	29476	5914	12000		
14-Mar-22	11	30821	28948	44007	29807	5583	12000		
21-Mar-22	12	30886	28831	43432	29232	6158	12000		
28-Mar-22	13	31470	29415	43301	29101	6289	12000		
04-Apr-22	14	31552	30175	44216	31016	5374	11000		
11-Apr-22	15	31814	30437	44476	31276	5114	11000		
18-Apr-22	16	32020	30642	44951	31751	4639	11000		
25-Apr-22	17	32052	30674	44906	31706	4684	11000		
02-May-22	18	32553	31122	45481	32281	4109	11000		
09-May-22	19	33309	31878	46401	33201	3189	11000		
16-May-22	20	33997	32566	46401	33201	3189	11000		
23-May-22	21	33899	32468	46401	33201	3189	11000		
30-May-22	22	35359	33928	46585	33385	3005	11000		
06-Jun-22	23	34352	32786	46100	32900	3490	11000		
13-Jun-22	24	34186	32620	45507	32307	4083	11000		
20-Jun-22	25	34427	32861	46160	32960	3430	11000		
27-Jun-22	26	34450	32884	46142	32942	3448	11000		
04-Jul-22	27	34574	33000	45925	32725	3665	11000		
11-Jul-22	28	34644	33071	46162	32962	3428	11000		
18-Jul-22	29	35023	33450	46162	32962	3428	11000		
25-Jul-22	30	34323	32750	46162	32962	3428	11000		
01-Aug-22	31	33489	31924	45068	31868	4522	11000		
08-Aug-22	32	33039	31474	44384	31184	5206	11000		
15-Aug-22	33	33212	31647	43920	30720	5670	11000		
22-Aug-22	34	32861	31323	44110	30910	5480	11000		
29-Aug-22	35	32397	30878	44296	31096	5294	11000		
05-Sep-22	36	32729	30641	44215	31015	5375	11000		
12-Sep-22	37	32971	30883	44442	31242	5148	11000		
19-Sep-22	38	32359	30272	43805	30605	5785	11000		
26-Sep-22	39	32080	29992	43349	30149	6241	11000		
03-Oct-22	40	32414	30308	44096	30896	5494	11000		
10-Oct-22	41	31774	29809	43327	30127	6263	11000		
17-Oct-22	42	32028	30038	42986	29786	6604	11000		
24-Oct-22	43	31415	29451	42302	29102	7288	11000		
31-Oct-22	44	31472	29346	42168	28968	7422	11000		
07-Nov-22	45	31872	29689	42111	28911	7479	11000		
14-Nov-22	46	31613	29430	42311	29111	7279	11000		
21-Nov-22	47	31292	29109	42105	28905	7485	11000		
28-Nov-22	48	31035	28832	41600	28400	7990	11000		
05-Dec-22	49	31177	28837	42817	29617	6773	11000		
12-Dec-22	50	30787	28446	41638	28438	7952	11000		
19-Dec-22	51	29472	27132	40103	26903	9487	11000		
26-Dec-22	52	27021	24680	40183	26983	9407	11000		
02-Jan-23	1	#N/A	#N/A	#N/A	#N/A	#N/A	11000		

Notes - Assumptions critical:

The maintenance plan included in these assumptions includes a base scenario of outages (planned risk level). As there is opportunity for further outages, these will be included. This "likely risk scenario" includes an additional 2000 MW of outages on the base plan.

The expected imports at Apollo is included.

Avon and Dedisa is also included.

The forecast used is the latest operational weekly residual peak forecast, which excludes the expected renewable generation.

Operating Reserve (OR) from Generation: 2 200 MW

Unplanned Outage Assumption (UA): 12 000 MW (11000 MW from April '22)

Reserves: OR + UA = 14 200 MW

Eskom Installed Capacity: 48 585 MW (Incl. non-comm. Kusile units).

Installed Dispatchable Capacity: 49 590 MW (Incl. Avon and Dedisa).

Medupi Unit 4 capacity of 720MW has been removed from the capacity planning models by including it in the committed PCLF (although it is UCLF).

Key:

Risk Level	Description
Green	Adequate Generation to meet Demand and Reserves.
Yellow	< 1 000MW Possibly short to meet Reserves
Orange	1 001MW – 2 000MW Definitely short to meet Reserves and possibly Demand
Red	> 2 001MW Short to meet Demand and Reserves

Medium Term Peak Demand/Capacity Forecast

Please go to the link below for the Medium-term System Adequacy Outlook - 2022 to 2026. (Published 30 October 2021).

<https://www.eskom.co.za/wp-content/uploads/2021/11/MediumTermSystemAdequacyOutlook2022-2026.pdf>

or

<https://www.eskom.co.za/eskom-divisions/tx/system-adequacy-reports/>

Renewable Energy Statistics

Note: Times are expressed as hour beginning

Current Installed Capacity (MW)	
CSP	500.0
PV	2,212.1
Wind (Eskom+IPP)	3,023.4
Total (Incl other REs)	5,761.0

Maximum Contribution (MW) - based on System Operator data (subject to metering verification)					
Cal Year	Indicator	CSP	PV	Wind (Eskom+IPP)	Total (Incl other REs)
All Time	Maximum	504.9	2,099.5	2,533.5	4,784.7
	Max Date	30-Nov-2021 16:00	24-Oct-2021 12:00	25-Nov-2021 20:00	01-Nov-2021 13:00
2016	Maximum	200.9	1,350.5	1,229.8	2,576.3
	Max Date	11-Aug-2016 14:00	16-Dec-2016 12:00	23-Dec-2016 13:00	23-Dec-2016 13:00
2017	Maximum	302.0	1,432.5	1,708.2	3,142.7
	Max Date	07-Nov-2017 10:00	27-Oct-2017 12:00	25-Dec-2017 18:00	13-Dec-2017 13:00
2018	Maximum	399.7	1,392.1	1,902.3	3,298.9
	Max Date	04-Dec-2018 16:00	03-Oct-2018 12:00	02-Oct-2018 16:00	28-Sep-2018 11:00
2019	Maximum	502.1	1,375.6	1,872.0	3,530.6
	Max Date	24-Sep-2019 11:00	19-Jan-2019 12:00	14-Dec-2019 15:00	27-Oct-2019 13:00
2020	Maximum	504.5	1,929.2	2,113.9	4,050.0
	Max Date	25-Nov-2020 12:00	25-Nov-2020 12:00	01-Dec-2020 19:00	24-Nov-2020 13:00
2021	Maximum	504.9	2,099.5	2,533.5	4,784.7
	Max Date	30-Nov-2021 16:00	24-Oct-2021 12:00	25-Nov-2021 20:00	01-Nov-2021 13:00

Annual Energy Contribution (MWh) - based on System Operator data (subject to metering verification)					
Cal Year	Indicator	CSP	PV	Wind (Eskom+IPP)	Total (Incl other REs)
All Time	Annual Energy	1,647,284	5,065,230	8,318,370	15,156,584
2016	Total Energy	529,522	2,630,141	3,730,771	6,951,261
2017	Total Energy	687,703	3,324,857	5,081,023	9,198,632
2018	Total Energy	1,031,288	3,282,124	6,467,095	10,887,902
2019	Total Energy	1,557,151	3,324,989	6,624,642	11,586,945
2020	Total Energy	1,626,049	4,140,212	6,625,830	12,478,704
2021	Total Energy	1,647,284	5,065,230	8,318,370	15,156,584

Maximum Difference between Consecutive Evening Peaks (MW) - based on System Operator data (subject to metering verification)		
Cal Year	Indicator	Total (Incl other REs)
All Time	Maximum	1,744
	Max Date	07-Aug-2021 to 08-Aug-2021
2016	Maximum	828
	Max Date	30-Aug-2016 to 31-Aug-2016
2017	Maximum	1,038
	Max Date	19-Jun-2017 to 20-Jun-2017
2018	Maximum	1,336
	Max Date	01-Sep-2018 to 02-Sep-2018
2019	Maximum	1,464
	Max Date	05-Jul-2019 to 06-Jul-2019
2020	Maximum	1,488
	Max Date	31-Aug-2020 to 01-Sep-2020
2021	Maximum	1,744
	Max Date	07-Aug-2021 to 08-Aug-2021

Maximum proportion that Renewables contributed towards actual hourly energy supplied (%) - based on System Operator data (subject to metering verification)		
Cal Year	Indicator	Total (Incl other REs)
All Time	Maximum	19.1%
	Max Date	01-Nov-2021 13:00
2016	Maximum	9.8%
	Max Date	23-Dec-2016 13:00
2017	Maximum	12.7%
	Max Date	25-Dec-2017 15:00
2018	Maximum	13.1%
	Max Date	01-Jan-2018 14:00
2019	Maximum	13.9%
	Max Date	14-Dec-2019 14:00
2020	Maximum	16.1%
	Max Date	27-Dec-2020 15:00
2021	Maximum	19.1%
	Max Date	01-Nov-2021 13:00