

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	April 19, 2021
Hours:	19:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	81.30	400kV THP - Siliguri Line - I	65.24	+	Unit-II & III under AMP. Unit-IV & VI on standby. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Line - III	150.22	+	
		Unit- V	139.86	400kV Malbase - Siliguri Line	42.13	+	
		Unit- VI	0.00	-	-	-	
		Total	221.16	Error at Station/Auxiliary Consumption/Losses		2.577%	
2	720MW MHP	Unit-I	184.82	400kV MHP - Jigmeling Line - I	0.00	+	Unit II under Emergency shutdown. Unit-III under breakdown. Unit-IV under AMP. 400kV MHP_JLG Line I, II & III Standby. 400kV JLG_ALI line II Standby. 132kV MHP_Yurmo line I & II are not in service.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	183.13	+	
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	181.57	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	12.70	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.80	+	
		-	-	220kV Tsirang - Jigmeling Line	21.09	+	
		-	-	132kV Gelephu - Salakati Line	-24.55	-	
Total	184.82	Error at Station/Auxiliary Consumption/Losses		0.914%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	1.99	+	Unit-I Standby. Unit-IV under AMP. 220kV CHP_BIR line II standby.
		Unit- II	53.98	220kV CHP - Birpara Line- II	0.00		
		Unit- III	52.71	220kV CHP - Malbase Line- III	20.46	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	63.21	+	
		-	-	220kV Malbase - Birpara Line	-13.28	-	
		-	-	66kV CHP - Chumdo Line	13.88	+	
		-	-	66kV CHP - Gedu Line	3.57	+	
		-	-	3x3MVA, 66/11kV TFR	1.30	+	
Total	106.69	Error at Station/Auxiliary Consumption/Losses		2.137%			
4	24MW BHP (U/S)	Unit- I	4.30	220kV BHP - Semtokha Line	-11.89	-	U/S Unit-II Standby. L/S Unit-II AMP
		Unit- II	0.00	66kV BHP - Lobeyasa Line	13.91	+	
		Total	4.30	220kV BHP - Tsirang Line	9.68	+	
	40MW BHP (L/S)	Unit- I	8.50	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	9.20	+	
Total	8.50	Error at Station/Auxiliary Consumption/Losses		1.641%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	14.75	+	Unit-I Standby.
		Unit-II	15.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR	0.20	+	
		Total	15.00	Error at Station/Auxiliary Consumption/Losses		0.333%	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	21.99	+	Unit-I Standby.
		Unit-II	12.06	132kV KHP - Kilikhar Line	13.56	+	
		Unit- III	12.10	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	12.01	132kV Motanga - Rangia Line	6.04	+	
		Total	36.17	Error at Station/Auxiliary Consumption/Losses		0.774%	

Note: Generation-Load Summary (MW) for April 19, 2021 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	355.65	238.48	231.14	96.08	7.34
2	Eastern Grid	220.99	79.02	77.05	163.06	1.97
Total		576.64	317.50	308.19	259.14	9.31

Note: Generation-Load Summary for April 19, 2020 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	591.10	228.48	220.66	362.62	7.82
2	Eastern Grid	321.28	58.68	56.18	262.6	2.50
Total		912.38	287.16	276.84	625.22	10.32

NOTE-BHP & MHP data collected from site

1. The Instantaneous load balance is calculated as (Total generation - (Total export-Import) - Total domestic load) do not tend towards zero. This could be due to the following reasons:

- i) Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
- ii) The clocks of all the locations are not synchronized.

2. This report is generated to give an idea of the generation & load flow for the system at a particular instant.

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	April 20, 2021
Hours:	09:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	81.19	400kV THP - Siliguri Line - I	73.55	+	Unit IV & VI on standby. Unit II& III under AMP. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Line - III	131.89	+	
		Unit- V	128.95	400kV Malbase - Siliguri Line	56.31	+	
		Unit- VI	0.00	-	-	-	
		Total	210.14	Error at Station/Auxiliary Consumption/Losses		2.237%	
2	720MW MHP	Unit-I	159.77	400kV MHP - Jigmeling Line - I	0.00		Unit-II under PTW Unit -III under breakdown Unit-IV under AMP. 400kV MHP-JLG Line II ,III & IV on standby. 400kV JLG_ALI line II on Standby. 132kV MHP_Yurmoo lines not in service.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	158.61	+	
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	156.35	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	7.67	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	7.71	+	
		-	-	220kV Tsirang - Jigmeling Line	16.58	+	
		-	-	132kV Gelephu - Salakati Line	-14.20	-	
Total	159.77	Error at Station/Auxiliary Consumption/Losses		0.726%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	10.03	+	Unit-I on Standby. Unit-IV under AMP. 220kV CHP-BIR line II standby.
		Unit- II	61.21	220kV CHP - Birpara Line- II	0.00		
		Unit- III	58.47	220kV CHP - Malbase Line- III	59.29	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	37.02	+	
		-	-	220kV Malbase - Birpara Line	-29.57	-	
		-	-	66kV CHP - Chumdo Line	8.32	+	
		-	-	66kV CHP - Gedu Line	3.82	+	
		-	-	3x3MVA, 66/11kV TFR	0.90	+	
Total	119.68	Error at Station/Auxiliary Consumption/Losses		0.251%			
4	24MW BHP (U/S)	Unit- I	4.60	220kV BHP - Semtokha Line	-1.00	-	U/S Unit-II Standby. L/S Unit-II under Shutdown
		Unit- II	0.00	66kV BHP - Lobeyasa Line	10.30	+	
		Total	4.60	220kV BHP - Tsirang Line	3.80	+	
	40MW BHP (L/S)	Unit- I	9.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	6.40	+	
Total	9.70	Error at Station/Auxiliary Consumption/Losses		2.168%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	14.29	+	Unit-I standby.
		Unit-II	14.56	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.93	+	
		-	-	5MVA, 220/33kV TFR	0.26	+	
		Total	14.56	Error at Station/Auxiliary Consumption/Losses		0.069%	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	10.53	+	Unit-I & IV standby.
		Unit-II	11.11	132kV KHP - Kilikhar Line	11.04	+	
		Unit- III	11.12	5MVA, 132/11kV TFR	0.29	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.80	+	
		Total	22.23	Error at Station/Auxiliary Consumption/Losses		1.646%	

Note: Generation-Load Summary (MW) for April 20, 2021 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	358.68	231.78	227.39	110.32	4.39
2	Eastern Grid	182.00	55.63	54.10	142.95	1.53
Total		540.68	287.41	281.49	253.27	5.92

Note: Generation-Load Summary for April 20, 2020 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	525.21	200.19	192.23	325.02	7.96
2	Eastern Grid	305.21	44.89	44.99	260.32	-0.10
Total		830.42	245.08	237.22	585.34	7.86

NOTE- BHP & MHP data collected from site

- The Instantaneous load balance is calculated as (Total generation - (Total export-Import) - Total domestic load) do not tend towards zero. This could be due to the following reasons:
 - Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
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