

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	April 22, 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	78.96	400kV THP - Siliguri Line - I	32.49	+	Unit- III & IV under AMP. Unit-II & 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	112.40	+	
		Unit- V	69.78	400kV Malbase - Siliguri Line	13.61	+	
		Unit- VI	0.00	-	-	-	
		Total	148.74	Error at Station/Auxiliary Consumption/Losses		2.588%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit I & IV Standby Unit-III under breakdown. 400kV MHP_JLG Line I, II & III Standby. 132kV MHP_Yurmoo line I & II are not in service. 400/220kV ICT at JLG not in service 400kV JIG-ALI Line-I under shutdown.
		Unit-II	149.83	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	148.18	+	
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II	144.70	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	5.40	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	5.40	+	
		-	-	220kV Tsirang - Jigmeling Line	12.63	+	
		-	-	132kV Gelephu - Salakati Line	-33.72	-	
Total	149.83	Error at Station/Auxiliary Consumption/Losses		1.101%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	2.39	+	Unit-I Standby. Unit-IV under AMP. 220kV CHP_BIR line II standby.
		Unit- II	45.79	220kV CHP - Birpara Line- II	0.00		
		Unit- III	45.03	220kV CHP - Malbase Line- III	18.94	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	49.18	+	
		-	-	220kV Malbase - Birpara Line	-10.63	-	
		-	-	66kV CHP - Chumdo Line	13.57	+	
		-	-	66kV CHP - Gedu Line	3.21	+	
		-	-	3x3MVA, 66/11kV TFR	1.50	+	
Total	90.82	Error at Station/Auxiliary Consumption/Losses		2.235%			
4	24MW BHP (U/S)	Unit- I	6.00	220kV BHP - Semtokha Line	2.72	+	U/S Unit-II .& L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	0.00	66kV BHP - Lobeyasa Line	12.90	+	
		Total	6.00	220kV BHP - Tsirang Line	0.00		
	40MW BHP (L/S)	Unit- I	10.70	5MVA, 66/11kV TFR	0.91	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	7.84	+	
Total	10.70	Error at Station/Auxiliary Consumption/Losses		1.018%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	15.30	+	Unit-I Standby.
		Unit-II	15.51	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.00	+	
		-	-	5MVA, 220/33kV TFR	0.20	+	
		Total	15.51	Error at Station/Auxiliary Consumption/Losses		0.064%	
6	60MW KHP	Unit- I	11.07	132kV KHP - Nangkhor Line	7.70	+	Unit-III and Unit-IV Standby.
		Unit-II	11.09	132kV KHP - Kilikhar Line	13.72	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.33	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-4.76	-	
		Total	22.16	Error at Station/Auxiliary Consumption/Losses		1.855%	

Note: Generation-Load Summary (MW) for April 22, 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	271.77	221.28	217.22	37.86	4.06
2	Eastern Grid	171.99	78.40	76.34	106.22	2.06
Total		443.76	299.68	293.56	144.08	6.12

Note: Generation-Load Summary for April 22, 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	484.56	237.80	230.40	246.76	7.40
2	Eastern Grid	216.49	60.48	56.90	156.01	3.58
Total		701.05	298.28	287.30	402.77	10.98

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 23, 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	78.57	400kV THP - Siliguri Line - I	70.72	+	Unit II & VI on standby. Unit III & IV 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	122.06	+	
		Unit- V	119.97	400kV Malbase - Siliguri Line	55.69	+	
		Unit- VI	0.00	-	-	-	
		Total	198.54	Error at Station/Auxiliary Consumption/Losses		2.901%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit -III under breakdown Unit-I & IV on standby 400kV MHP-JLG Line I, II & III on standby. 400kV JLG_ALI line II on Standby. 132kV MHP_Yurmoo lines not in service. 400/220kV ICT at JLG not in service
		Unit-II	150.16	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	149.00	+	
		-	-	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	146.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	7.20	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	7.10	+	
		-	-	220kV Tsirang - Jigmeling Line	15.35	+	
		-	-	132kV Gelephu - Salakati Line	4.51	+	
Total	150.16	Error at Station/Auxiliary Consumption/Losses		0.773%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	28.71	+	Unit-I on Standby. Unit-IV under AMP. 220kV CHP-BIR line II standby.
		Unit- II	66.36	220kV CHP - Birpara Line- II	0.00		
		Unit- III	69.76	220kV CHP - Malbase Line- III	58.69	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	34.03	+	
		-	-	220kV Malbase - Birpara Line	0.64	+	
		-	-	66kV CHP - Chumdo Line	9.31	+	
		-	-	66kV CHP - Gedu Line	2.90	+	
		-	-	3x3MVA, 66/11kV TFR	0.92	+	
Total	136.12	Error at Station/Auxiliary Consumption/Losses		1.146%			
4	24MW BHP (U/S)	Unit- I	4.80	220kV BHP - Semtokha Line	4.03	+	U/S Unit-II & L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	0.00	66kV BHP - Lobeyasa Line	9.80	+	
		Total	4.80	220kV BHP - Tsirang Line	0.00		
	40MW BHP (L/S)	Unit- I	9.80	5MVA, 66/11kV TFR	0.91	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	4.80	+	
Total	9.80	Error at Station/Auxiliary Consumption/Losses		-0.959%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	16.99	+	Unit-I standby.
		Unit-II	17.24	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR	0.25	+	
		Total	17.24	Error at Station/Auxiliary Consumption/Losses		0.000%	
6	60MW KHP	Unit- I	13.19	132kV KHP - Nangkhor Line	16.74	+	Unit-III & IV standby.
		Unit-II	13.12	132kV KHP - Kilikhar Line	8.77	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-13.93	-	
		Total	26.31	Error at Station/Auxiliary Consumption/Losses		1.745%	

Note: Generation-Load Summary (MW) for April 23, 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	366.50	195.39	189.11	155.76	6.28
2	Eastern Grid	176.47	55.04	53.42	136.78	1.62
Total		542.97	250.43	242.53	292.54	7.90

Note: Generation-Load Summary for April 23, 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	361.48	200.07	194.08	161.41	5.99
2	Eastern Grid	205.44	42.47	40.48	162.97	1.99
Total		566.92	242.54	234.56	324.38	7.98

NOTE- BHP, KHP & 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.
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