

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	June 15, 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	187.31	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri Line I under maintenance
		Unit- II	187.11	400kV THP - Siliguri Line - II	352.05	+	
		Unit- III	188.33	400kV THP - Siliguri Line- IV	336.83	+	
		Unit- IV	185.64	400kV THP - Malbase Line - III	412.50	+	
		Unit- V	186.41	400kV Malbase - Siliguri Line	313.83	+	
		Unit- VI	185.66	-	-	-	
		Total	1,120.46	Error at Station/Auxiliary Consumption/Losses	1.703%		
2	720MW MHP	Unit-I	197.92	400kV MHP - Jigmeling Line - I	293.74	+	Unit-III on breakdown. 400kV MHP_JLG line II and IV on standby. 132kV MHP_Yurmoo line I & II not in service.
		Unit-II	197.49	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.26	+	
		Unit-IV	197.81	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	19.55	+	
		-	-	400kV Jigmeling - Alipurduar Line - I	319.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	320.50	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	48.70	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	48.70	+	
		-	-	220kV Tsirang - Jigmeling Line	159.04	+	
		-	-	132kV Gelephu - Salakati Line	47.61	+	
Total	593.22	Error at Station/Auxiliary Consumption/Losses	0.711%				
3	336MW CHP	Unit- I	91.82	220kV CHP - Birpara Line- I	91.88	+	
		Unit- II	91.29	220kV CHP - Birpara Line- II	91.54	+	
		Unit- III	91.85	220kV CHP - Malbase Line- III	116.23	+	
		Unit- IV	91.83	220kV CHP - Semtokha Line- IV	47.67	+	
		-	-	220kV Malbase - Birpara Line	59.44	+	
		-	-	66kV CHP - Chumdo Line	10.28	+	
		-	-	66kV CHP - Gedu Line	4.28	+	
		-	-	3x3MVA, 66/11kV TFR	1.20	+	
Total	366.79	Error at Station/Auxiliary Consumption/Losses	1.011%				
4	24MW BHP (U/S)	Unit- I	10.10	220kV BHP - Semtokha Line	0.00		220kV BHP-SEM line under shutdown. 30MVA ICT(220/66kV) kept open at LV side.
		Unit- II	9.80	66kV BHP - Lobeyasa Line	19.60	+	
		Total	19.90	220kV BHP - Tsirang Line	37.35	+	
	40MW BHP (L/S)	Unit- I	18.39	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	19.00	30MVA ICT, 220/66kV (HV)	0.00		
Total	37.39	Error at Station/Auxiliary Consumption/Losses	-0.960%				
5	126MW DHP	Unit-I	63.37	220kV DHP - Tsirang Line	125.80	+	220kV DHP_Dagapela Line on standby.
		Unit-II	62.94	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.10	+	
		-	-	5MVA, 220/33kV TFR	0.50	+	
		Total	126.31	Error at Station/Auxiliary Consumption/Losses	0.008%		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	57.53	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	7.32	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.36	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	48.83	+	
		Total	66.00	Error at Station/Auxiliary Consumption/Losses	1.197%		

Note: Generation-Load Summary (MW) for June 15, 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	1,670.85	266.24	246.09	1,245.57	20.15
2	Eastern Grid	659.22	82.12	77.11	736.14	5.01
Total		2,330.07	348.36	323.20	1,981.71	25.16

Note: Generation-Load Summary for June 15, 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	1,527.05	197.51	179.67	1,261.61	17.84
2	Eastern Grid	658.82	51.69	47.16	675.06	4.53
Total		2,185.87	249.20	226.83	1,936.67	22.37

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:	June 16, 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	187.20	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri Line I under maintenance.
		Unit- II	186.69	400kV THP - Siliguri Line - II	359.35	+	
		Unit- III	186.27	400kV THP - Siliguri Line- IV	341.99	+	
		Unit- IV	186.58	400kV THP - Malbase Line - III	405.18	+	
		Unit- V	188.69	400kV Malbase - Siliguri Line	322.36	+	
		Unit- VI	186.49	-	-	-	
		Total	1,121.92	Error at Station/Auxiliary Consumption/Losses		1.373%	
2	720MW MHP	Unit-I	197.79	400kV MHP - Jigmeling Line - I	294.41	+	Unit-III on breakdown 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmo line I & II not in service.
		Unit-II	197.85	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.83	+	
		Unit-IV	197.69	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	61.13	+	
		-	-	400kV Jigmeling - Alipurduar Line - I	260.73	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	259.61	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	-29.31	-	
		-	-	80MVA, 220/132kV ICT - II (HV)	-29.25	-	
		-	-	220kV Tsirang - Jigmeling Line	1.52	+	
		-	-	132kV Gelephu - Salakati Line	27.80	+	
		Total	593.33	Error at Station/Auxiliary Consumption/Losses		0.521%	
3	336MW CHP	Unit- I	91.98	220kV CHP - Birpara Line- I	91.33	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	91.23	+	
		Unit- III	91.71	220kV CHP - Malbase Line- III	121.96	+	
		Unit- IV	91.67	220kV CHP - Semtokha Line- IV	47.72	+	
		-	-	220kV Malbase - Birpara Line	54.20	+	
		-	-	66kV CHP - Chumdo Line	7.77	+	
		-	-	66kV CHP - Gedu Line	4.04	+	
		-	-	3x3MVA, 66/11kV TFR	0.70	+	
Total	366.54	Error at Station/Auxiliary Consumption/Losses		0.488%			
4	24MW BHP (U/S)	Unit- I	7.00	220kV BHP - Semtokha Line	0.00		BHP both the units tripped. 220kV BHP_SEM line under shutdown. 30MVA ICT(220/66kV) kept open.
		Unit- II	6.70	66kV BHP - Lobeyasa Line	12.80	+	
		Total	13.70	220kV BHP - Tsirang Line	-0.07	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.84	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	0.00		
Total	0.00	Error at Station/Auxiliary Consumption/Losses		0.949%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00		DHP both the units and lines tripped. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.31	+	
		-	-	5MVA, 220/33kV TFR	0.00		
		Total	0.00	Error at Station/Auxiliary Consumption/Losses		0.000%	
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	60.99	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	4.23	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	35.98	+	
		Total	66.00	Error at Station/Auxiliary Consumption/Losses		0.697%	

Note: Generation-Load Summary (MW) for June 16, 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	1,502.16	240.18	224.17	1,260.46	16.01
2	Eastern Grid	659.33	76.73	73.18	584.12	3.55
Total		2,161.49	316.91	297.35	1,844.58	19.56

Note: Generation-Load Summary for June 16, 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	1,536.33	199.90	182.96	1,279.88	16.94
2	Eastern Grid	659.21	46.02	42.52	669.74	3.50
Total		2,195.54	245.92	225.48	1,949.62	20.44

NOTE-KHP & 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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