

**BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT**

Maximum Load/Demand till Date

Date:	June 16, 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	188.37	400kV THP - Siliguri Line - I	0.00		The 400kV THP-Siliguri Line I under maintenance
		Unit- II	187.29	400kV THP - Siliguri Line - II	355.25	+	
		Unit- III	187.57	400kV THP - Siliguri Line- IV	339.11	+	
		Unit- IV	187.27	400kV THP - Malbase Line - III	409.88	+	
		Unit- V	187.09	400kV Malbase - Siliguri Line	316.86	+	
		Unit- VI	186.12	-	-	-	
		<b>Total</b>	<b>1,123.71</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.733%</b>		
2	720MW MHP	Unit-I	197.35	400kV MHP - Jigmeling Line - I	297.74	+	Unit-III under breakdown. The 400kV MHP_JLG line II and IV on standby. The 400kV Jigmeling-Alipurduar Line- II opened for test charging of 400kV Jigmeling-Alipurduar Quad Moose (Direct line). The 132kV MHP_Yurmoo line I & II not in service.
		Unit-II	197.89	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.45	+	
		Unit-IV	197.59	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)	13.63	-	
		-	-	400kV Jigmeling - Alipurduar Line - I	0.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	546.90	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	61.20	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	61.30	+	
		-	-	220kV Tsirang - Jigmeling Line	89.62	+	
		-	-	132kV Gelephu - Salakati Line	64.19	+	
		<b>Total</b>	<b>592.83</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.061%</b>		
3	336MW CHP	Unit- I	91.48	220kV CHP - Birpara Line- I	87.98	+	
		Unit- II	91.07	220kV CHP - Birpara Line- II	87.68	+	
		Unit- III	91.56	220kV CHP - Malbase Line- III	117.54	+	
		Unit- IV	91.62	220kV CHP - Semtokha Line- IV	54.99	+	
		-	-	220kV Malbase - Birpara Line	52.78	+	
		-	-	66kV CHP - Chumdo Line	9.68	+	
		-	-	66kV CHP - Gedu Line	4.38	+	
		-	-	66kV Semtokha-Dochula Line (HTLS)	29.60	+	
		-	-	3x3MVA, 66/11kV TFR	1.10	+	
		<b>Total</b>	<b>365.73</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.651%</b>		
4	24MW BHP (U/S)	Unit- I	6.20	220kV BHP - Semtokha Line	0.00		220kV BHP-SEM line under shutdown. The 30MVA ICT(220/66kV) kept open at LV side.
		Unit- II	6.00	66kV BHP - Lobeysa Line	11.00	+	
		<b>Total</b>	<b>12.20</b>	220kV BHP - Tsirang Line	24.36	+	
	40MW BHP (L/S)	Unit- I	12.40	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	12.20	30MVA ICT, 220/66kV (HV)	0.00		
<b>Total</b>	<b>24.60</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.467%</b>				
5	126MW DHP	Unit-I	34.32	220kV DHP - Tsirang Line	67.99	+	220kV DHP_Dagapela Line on standby.
		Unit-II	34.06	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.60	+	
		-	-	5MVA, 220/33kV TFR	0.35	+	
		<b>Total</b>	<b>68.38</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.058%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	35.39	+	
		Unit-II	16.50	132kV KHP - Kilihar Line	29.77	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.38	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	60.67	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.692%</b>		

**Note: Generation-Load Summary (MW) for June 16, 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	1,594.62	265.34	274.11	1,239.66	-8.77
2	Eastern Grid	658.83	76.69	76.59	671.76	0.10
<b>Total</b>		<b>2,253.45</b>	<b>342.03</b>	<b>350.70</b>	<b>1,911.42</b>	<b>-8.67</b>

**Note: Generation-Load Summary for June 16, 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	1,586.82	209.43	191.24	1,298.55	18.19
2	Eastern Grid	657.31	59.14	55.14	677.01	4.00
<b>Total</b>		<b>2,244.13</b>	<b>268.57</b>	<b>246.38</b>	<b>1,975.56</b>	<b>22.19</b>

**NOTE-ALL 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 17, 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	187.25	400kV THP - Siliguri Line - I	0.00		The 400kV THP-Siliguri Line I under maintenance.
		Unit- II	187.08	400kV THP - Siliguri Line - II	358.39	+	
		Unit- III	186.08	400kV THP - Siliguri Line- IV	343.57	+	
		Unit- IV	186.67	400kV THP - Malbase Line - III	402.17	+	
		Unit- V	187.90	400kV Malbase - Siliguri Line	324.29	+	
		Unit- VI	185.96	-	-	-	
		<b>Total</b>	<b>1,120.94</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.500%</b>		
2	720MW MHP	Unit-I	197.53	400kV MHP - Jigmeling Line - I	294.23	+	Unit-III on breakdown 400kV MHP-JLG Line II & on standby.The 132kV MHP_Yurmoo line I & II not in service.
		Unit-II	197.60	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.71	+	
		Unit-IV	197.60	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)	22.14	+	
		-	-	400kV Jigmeling - Alipurduar Line - I	281.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	282.20	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.30	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	34.30	+	
		-	-	220kV Tsirang - Jigmeling Line	50.59	+	
		-	-	132kV Gelephu - Salakati Line	33.10	+	
<b>Total</b>	<b>592.73</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.471%</b>				
3	336MW CHP	Unit- I	92.01	220kV CHP - Birpara Line- I	103.78	+	
		Unit- II	91.53	220kV CHP - Birpara Line- II	103.51	+	
		Unit- III	91.48	220kV CHP - Malbase Line- III	144.63	+	
		Unit- IV	91.46	220kV CHP - Semtokha Line- IV	0.80	+	
		-	-	220kV Malbase - Birpara Line	58.10	+	
		-	-	66kV CHP - Chumdo Line	5.74	+	
		-	-	66kV CHP - Gedu Line	5.12	+	
		-	-	66kV Semtokha-Dochula Line (HTLS)	29.10		
		-	-	3x3MVA, 66/11kV TFR	0.69	+	
<b>Total</b>	<b>366.48</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.603%</b>				
4	24MW BHP (U/S)	Unit- I	6.00	220kV BHP - Semtokha Line	50.03		30MVA ICT(220/66kV) kept open.
		Unit- II	6.00	66kV BHP - Lobeysa Line	11.42	+	
	<b>Total</b>	<b>12.00</b>	220kV BHP - Tsirang Line	-26.05	-		
	40MW BHP (L/S)	Unit- I	12.20	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	12.00	30MVA ICT, 220/66kV (HV)	0.00		
<b>Total</b>	<b>24.20</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.276%</b>				
5	126MW DHP	Unit-I	35.29	220kV DHP - Tsirang Line	79.95	+	220kV DHP_Dagapela Line on standby.
		Unit-II	45.04	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR		+	
<b>Total</b>	<b>80.33</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.473%</b>				
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	61.38	+	
		Unit-II	16.50	132kV KHP - Kilihar Line	4.00	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.26	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	43.49	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.545%</b>		

**Note: Generation-Load Summary (MW) for June 17, 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	1,603.95	261.72	272.42	1,291.64	-10.70
2	Eastern Grid	658.73	69.13	65.98	640.19	3.15
<b>Total</b>		<b>2,262.68</b>	<b>330.85</b>	<b>338.40</b>	<b>1,931.83</b>	<b>-7.55</b>

**Note: Generation-Load Summary for June 17, 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	1,542.62	179.16	158.99	1,297.65	20.17
2	Eastern Grid	656.25	45.57	42.29	676.49	3.28
<b>Total</b>		<b>2,198.87</b>	<b>224.73</b>	<b>201.28</b>	<b>1,974.14</b>	<b>23.45</b>

**NOTE-BHP & MHPA 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.

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