

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

**Coincidental Maximum Load**

Date:	May 24, 2022
Hours:	19:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	68.89	400kV THP - Siliguri Line - I	0.00	Unit- II on standby. Unit-VI under shutdown. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	99.66	400kV THP - Siliguri Line- IV	147.17	
		Unit- IV	119.46	400kV THP - Malbase Line - III	235.94	
		Unit- V	99.15	400kV Malbase - Siliguri Line	132.51	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>387.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.05%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit- I & IV on Standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line II under shutdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	120.22	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	130.80	400kV MHP - Jigmeling Line - III	125.45	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	124.54	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	89.29	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	63.15	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	94.83	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	31.61	
		-	-	80MVA, 220/132kV ICT - II (HV)	32.11	
		-	-	220kV Tsirang - Jigmeling Line	-23.66	
-	-	132kV Gelephu - Salakati Line	3.21			
<b>Total</b>	<b>251.02</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.41%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	36.09	Unit-I on standby.
		Unit- II	76.02	220kV CHP - Birpara Line- II	35.94	
		Unit- III	73.89	220kV CHP - Malbase Line- III	55.55	
		Unit- IV	64.61	220kV CHP - Semtokha Line- IV	65.77	
		-	-	220kV Malbase - Birpara Line	15.44	
		-	-	66kV CHP - Chumdo Line	15.07	
		-	-	66kV CHP - Gedu Line	3.71	
		-	-	3x3MVA, 66/11kV TFR	1.18	
<b>Total</b>	<b>214.52</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.56%</b>			
4	24MW BHP (U/S)	Unit- I	7.60	220kV BHP - Semtokha Line	39.60	L/S Unit-I & U/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	20.73	
		<b>Total</b>	<b>7.60</b>	220kV BHP - Tsirang Line	-36.82	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.58	L/S Unit-I & U/S Unit-II on standby
		Unit- II	16.70	30MVA ICT, 220/66kV (HV)	13.88	
		<b>Total</b>	<b>16.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.86%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	22.22	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	22.46	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	0.50	
		-	-	5MVA, 220/33kV TFR	0.23	
<b>Total</b>	<b>22.46</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.04%</b>			
7	60MW KHP	Unit- I	12.45	132kV KHP - Nangkhoh Line	30.53	
		Unit-II	12.45	132kV KHP - Kilikhar Line	18.31	
		Unit- III	12.52	5MVA, 132/11kV TFR	0.52	
		Unit- IV	12.46	132kV Motanga - Rangia Line	31.74	
		<b>Total</b>	<b>49.88</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.04%</b>	

**Note: Generation-Load Summary (MW) for May 24, 2022 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	648.44	304.95	299.47	367.15	5.48
2	Eastern Grid	300.90	84.31	82.76	192.93	1.55
<b>Total</b>		<b>949.34</b>	<b>389.26</b>	<b>382.23</b>	<b>560.08</b>	<b>7.03</b>

**Note: Generation-Load Summary for May 24, 2021 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	585.26	215.21	206.84	357.27	8.37
2	Eastern Grid	406.98	62.80	59.49	356.96	3.31
<b>Total</b>		<b>992.24</b>	<b>278.01</b>	<b>266.33</b>	<b>714.23</b>	<b>11.68</b>

**NOTE- BHP data collected from site.**

- The Instantaneous load balance,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.
  - The clocks of all the locations are not synchronized.
- 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**

**Coincidental Maximum Load**

<b>Date:</b>	<b>May 25, 2022</b>
<b>Hours:</b>	<b>09:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	69.03	400kV THP - Siliguri Line - I	0.00	Unit-II on standby. Unit-VI under Shutdown. Unit-V tripped at 08:51hrs. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	117.74	400kV THP - Siliguri Line- IV	62.94	
		Unit- IV	0.00	400kV THP - Malbase Line - III	120.21	
		Unit- V	0.00	400kV Malbase - Siliguri Line	52.94	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>186.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.94%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit-I & IV on standby. 400kV MHP-JLG Line I & II under Shutdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	120.20	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	130.84	400kV MHP - Jigmeling Line - III	125.28	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	124.33	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	59.57	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	74.82	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	113.57	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	7.72	
		-	-	80MVA, 220/132kV ICT - II (HV)	7.86	
		-	-	220kV Tsirang - Jigmeling Line	-33.92	
-	-	132kV Gelephu - Salakati Line	9.45			
<b>Total</b>	<b>251.04</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.57%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	24.04	Unit-I on standby
		Unit- II	60.00	220kV CHP - Birpara Line- II	24.17	
		Unit- III	58.06	220kV CHP - Malbase Line- III	61.44	
		Unit- IV	59.49	220kV CHP - Semtokha Line- IV	49.97	
		-	-	220kV Malbase - Birpara Line	-7.47	
		-	-	66kV CHP - Chumdo Line	12.23	
		-	-	66kV CHP - Gedu Line	4.05	
		-	-	3x3MVA, 66/11kV TFR	0.76	
<b>Total</b>	<b>177.55</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.50%</b>			
4	24MW BHP (U/S)	Unit- I	7.04	220kV BHP - Semtokha Line	47.50	L/S Unit-I & U/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	19.44	
		<b>Total</b>	<b>7.04</b>	220kV BHP - Tsirang Line	-46.18	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.33	L/S Unit-I & U/S Unit-II on standby
		Unit- II	13.96	30MVA ICT, 220/66kV (HV)	12.92	
		<b>Total</b>	<b>13.96</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.43%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	20.71	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	20.97	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	10.04	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>20.97</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.29%</b>			
7	60MW KHP	Unit- I	13.49	132kV KHP - Nangkhoh Line	37.87	132kV Motanga - Rangia Line under Shutdown.
		Unit-II	13.46	132kV KHP - Kilikhar Line	15.26	
		Unit- III	13.46	5MVA, 132/11kV TFR	0.56	
		Unit- IV	13.49	132kV Motanga - Rangia Line	0.00	
		<b>Total</b>	<b>53.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.39%</b>	

**Note: Generation-Load Summary (MW) for May 25, 2022 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	406.29	283.59	279.11	156.62	4.48
2	Eastern Grid	304.94	73.18	71.54	197.84	1.64
<b>Total</b>		<b>711.23</b>	<b>356.77</b>	<b>350.65</b>	<b>354.46</b>	<b>6.12</b>

**Note: Generation-Load Summary for May 25, 2021 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	594.62	211.03	202.12	408.88	8.91
2	Eastern Grid	460.48	52.36	46.38	382.83	5.98
<b>Total</b>		<b>1,055.10</b>	<b>263.39</b>	<b>248.50</b>	<b>791.71</b>	<b>14.89</b>

**NOTE-BHP collected from Site.**

- The Instantaneous load balance,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.
  - The clocks of all the locations are not synchronized.
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