

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>May 31, 2022</b>
<b>Hours:</b>	<b>19:00 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	67.88	400kV THP - Siliguri Line - I	0.00	Unit-III & V on standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	70.26	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	142.23	
		Unit- IV	99.70	400kV THP - Malbase Line - III	231.78	
		Unit- V	0.00	400kV Malbase - Siliguri Line	125.44	
		Unit- VI	139.63	-	-	
		<b>Total</b>	<b>377.47</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.92%</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	130.26	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	120.81	400kV MHP - Jigmeling Line - III	125.16	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	124.23	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	94.28	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	60.77	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	91.62	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	29.75	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.27	
		-	-	220kV Tsirang - Jigmeling Line	-11.74	
-	-	132kV Gelephu - Salakati Line	3.56			
<b>Total</b>	<b>251.07</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.67%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	30.41	Unit-I on standby.
		Unit- II	61.95	220kV CHP - Birpara Line- II	30.39	
		Unit- III	64.76	220kV CHP - Malbase Line- III	45.20	
		Unit- IV	66.14	220kV CHP - Semtokha Line- IV	66.49	
		-	-	220kV Malbase - Birpara Line	15.26	
		-	-	66kV CHP - Chumdo Line	14.86	
		-	-	66kV CHP - Gedu Line	3.77	
		-	-	3x3MVA, 66/11kV TFR	1.20	
<b>Total</b>	<b>192.85</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.27%</b>			
4	24MW BHP (U/S)	Unit- I	5.30	220kV BHP - Semtokha Line	38.60	
		Unit- II	5.00	66kV BHP - Lobeyasa Line	21.34	
		<b>Total</b>	<b>10.30</b>	220kV BHP - Tsirang Line	-32.52	
5	40MW BHP (L/S)	Unit- I	8.70	5MVA, 66/11kV TFR	0.55	
		Unit- II	9.10	30MVA ICT, 220/66kV (HV)	11.94	
		<b>Total</b>	<b>17.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.46%</b>	
6	126MW DHP	Unit-I	23.74	220kV DHP - Tsirang Line	23.54	Unit-II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	22.58	
		-	-	5MVA, 220/33kV TFR	0.19	
<b>Total</b>	<b>23.74</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.04%</b>			
7	60MW KHP	Unit- I	14.02	132kV KHP - Nangkhon Line	35.49	
		Unit-II	14.01	132kV KHP - Kilikhar Line	19.61	
		Unit- III	13.96	5MVA, 132/11kV TFR	0.59	
		Unit- IV	14.04	132kV Motanga - Rangia Line	40.67	
		<b>Total</b>	<b>56.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.61%</b>	

**Note: Generation-Load Summary (MW) for May 31, 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	622.16	290.17	286.04	343.73	4.13
2	Eastern Grid	307.10	98.74	96.72	196.62	2.02
<b>Total</b>		<b>929.26</b>	<b>388.91</b>	<b>382.76</b>	<b>540.35</b>	<b>6.15</b>

**Note: Generation-Load Summary for May 31, 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	1,081.26	224.98	208.49	814.20	16.49
2	Eastern Grid	524.72	68.41	64.59	498.39	3.82
<b>Total</b>		<b>1,605.98</b>	<b>293.39</b>	<b>273.08</b>	<b>1,312.59</b>	<b>20.31</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>June 1, 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	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I under maintenance Unit- III & V on standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	118.52	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	175.44	
		Unit- IV	167.04	400kV THP - Malbase Line - III	246.15	
		Unit- V	0.00	400kV Malbase - Siliguri Line	161.01	
		Unit- VI	139.77	-	-	
		<b>Total</b>	<b>425.33</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.88%</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	159.83	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	160.57	400kV MHP - Jigmeling Line - III	159.92	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	158.91	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	75.47	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	95.21	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	143.66	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.76	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.22	
		-	-	220kV Tsirang - Jigmeling Line	-4.31	
-	-	132kV Gelephu - Salakati Line	5.85			
<b>Total</b>	<b>320.40</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.49%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	41.30	Unit-I on standby
		Unit- II	78.51	220kV CHP - Birpara Line- II	41.43	
		Unit- III	76.54	220kV CHP - Malbase Line- III	73.31	
		Unit- IV	75.57	220kV CHP - Semtokha Line- IV	56.13	
		-	-	220kV Malbase - Birpara Line	11.10	
		-	-	66kV CHP - Chumdo Line	12.20	
		-	-	66kV CHP - Gedu Line	4.37	
		-	-	3x3MVA, 66/11kV TFR	0.72	
<b>Total</b>	<b>230.62</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.50%</b>			
4	24MW BHP (U/S)	Unit- I	10.20	220kV BHP - Semtokha Line	39.80	
		Unit- II	12.10	66kV BHP - Lobeyssa Line	20.67	
		<b>Total</b>	<b>22.30</b>	220kV BHP - Tsirang Line	-25.78	
5	40MW BHP (L/S)	Unit- I	6.60	5MVA, 66/11kV TFR	0.37	
		Unit- II	6.30	30MVA ICT, 220/66kV (HV)	8.32	
		<b>Total</b>	<b>12.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.40%</b>	
6	126MW DHP	Unit-I	24.24	220kV DHP - Tsirang Line	23.98	Unit-II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	21.66	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>24.24</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.25%</b>			
7	60MW KHP	Unit- I	16.51	132kV KHP - Nangkhoh Line	44.31	
		Unit-II	16.47	132kV KHP - Kilikhar Line	20.71	
		Unit- III	16.49	5MVA, 132/11kV TFR	0.30	
		Unit- IV	16.54	132kV Motanga - Rangia Line	47.40	
		<b>Total</b>	<b>66.01</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.05%</b>	

**Note: Generation-Load Summary (MW) for June 01, 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	715.39	289.42	284.32	430.28	5.10
2	Eastern Grid	386.41	89.98	87.72	292.12	2.26
<b>Total</b>		<b>1,101.80</b>	<b>379.40</b>	<b>372.04</b>	<b>722.40</b>	<b>7.36</b>

**Note: Generation-Load Summary for June 01, 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	963.55	228.49	217.82	697.07	10.67
2	Eastern Grid	574.64	62.33	59.19	550.30	3.14
<b>Total</b>		<b>1,538.19</b>	<b>290.82</b>	<b>277.01</b>	<b>1,247.37</b>	<b>13.81</b>

**NOTE-BHP collected from Site.**

1. 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:

- 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.