

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>June 30, 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	185.19	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	185.98	400kV THP - Siliguri Line - II	0.00	
		Unit- III	184.37	400kV THP - Siliguri Line- IV	556.79	
		Unit- IV	184.65	400kV THP - Malbase Line - III	546.72	
		Unit- V	184.78	400kV Malbase - Siliguri Line	549.62	
		Unit- VI	185.06	-	-	
		<b>Total</b>	<b>1,110.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.59%</b>	
2	720MW MHP	Unit-I	197.80	400kV MHP - Jigmeling Line - I	293.66	Unit III under shutdown. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby
		Unit-II	197.80	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.55	
		Unit-IV	197.70	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)	39.69	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	136.22	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	203.44	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	203.77	
		-	-	80MVA, 220/132kV ICT - I (HV)	40.83	
		-	-	80MVA, 220/132kV ICT - II (HV)	41.55	
		-	-	220kV Tsirang - Jigmeling Line	80.52	
-	-	132kV Gelephu - Salakati Line	16.45			
<b>Total</b>	<b>593.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.69%</b>			
3	336MW CHP	Unit- I	91.69	220kV CHP - Birpara Line- I	76.31	
		Unit- II	90.49	220kV CHP - Birpara Line- II	76.62	
		Unit- III	91.94	220kV CHP - Malbase Line- III	151.50	
		Unit- IV	92.33	220kV CHP - Semtokha Line- IV	40.84	
		-	-	220kV Malbase - Birpara Line	7.60	
		-	-	66kV CHP - Chumdo Line	13.16	
		-	-	66kV CHP - Gedu Line	5.27	
		-	-	3x3MVA, 66/11kV TFR	1.20	
<b>Total</b>	<b>366.45</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.42%</b>			
4	24MW BHP (U/S)	Unit- I	11.86	220kV BHP - Semtokha Line	55.04	
		Unit- II	11.86	66kV BHP - Lobeysa Line	25.87	
		<b>Total</b>	<b>23.72</b>	220kV BHP - Tsirang Line	-16.38	
5	40MW BHP (L/S)	Unit- I	20.47	5MVA, 66/11kV TFR	0.69	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	3.00	
		<b>Total</b>	<b>41.57</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.11%</b>	
6	126MW DHP	Unit-I	50.36	220kV DHP - Tsirang Line	99.82	220kV DHP_Dagapela Line on Standby.
		Unit-II	50.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	36.10	
		-	-	5MVA, 220/33kV TFR	0.45	
<b>Total</b>	<b>100.36</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.09%</b>			
7	60MW KHP	Unit- I	16.48	132kV KHP - Nangkhon Line	39.14	
		Unit-II	16.59	132kV KHP - Kilikhar Line	25.90	
		Unit- III	16.56	5MVA, 132/11kV TFR	0.38	
		Unit- IV	16.47	132kV Motanga - Rangia Line	35.22	
		<b>Total</b>	<b>66.10</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.03%</b>	

**Note: Generation-Load Summary (MW) for June 30, 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	1,642.13	294.67	286.44	1,266.94	8.23
2	Eastern Grid	659.40	144.82	140.05	595.10	4.77
<b>Total</b>		<b>2,301.53</b>	<b>439.49</b>	<b>426.49</b>	<b>1,862.04</b>	<b>13.00</b>

**Note: Generation-Load Summary for June 30, 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	1,670.91	273.36	263.80	1,283.25	9.56
2	Eastern Grid	593.03	26.87	23.94	680.46	2.93
<b>Total</b>		<b>2,263.94</b>	<b>300.23</b>	<b>287.74</b>	<b>1,963.71</b>	<b>12.49</b>

**NOTE-BHP Generation 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>July 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	185.15	400kV THP - Siliguri Line - I	0.00	Unit III got tripped at 07:43hrs. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	178.91	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	460.26	
		Unit- IV	184.88	400kV THP - Malbase Line - III	450.96	
		Unit- V	183.17	400kV Malbase - Siliguri Line	454.03	
		Unit- VI	185.09	-	-	
		<b>Total</b>	<b>917.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.65%</b>	
2	720MW MHP	Unit-I	197.85	400kV MHP - Jigmeling Line - I	293.80	Unit III under shutdown. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby
		Unit-II	197.83	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.60	
		Unit-IV	197.70	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)	23.89	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	139.73	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	209.31	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	209.24	
		-	-	80MVA, 220/132kV ICT - I (HV)	31.02	
		-	-	80MVA, 220/132kV ICT - II (HV)	31.65	
		-	-	220kV Tsirang - Jigmeling Line	71.40	
-	-	132kV Gelephu - Salakati Line	13.24			
<b>Total</b>	<b>593.38</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.67%</b>			
3	336MW CHP	Unit- I	40.18	220kV CHP - Birpara Line- I	65.32	
		Unit- II	93.93	220kV CHP - Birpara Line- II	66.10	
		Unit- III	92.26	220kV CHP - Malbase Line- III	140.79	
		Unit- IV	93.02	220kV CHP - Semtokha Line- IV	29.79	
		-	-	220kV Malbase - Birpara Line	-2.14	
		-	-	66kV CHP - Chumdo Line	11.01	
		-	-	66kV CHP - Gedu Line	5.09	
		-	-	3x3MVA, 66/11kV TFR	1.03	
<b>Total</b>	<b>319.39</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.08%</b>			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	65.80	
		Unit- II	12.10	66kV BHP - Lobeyasa Line	25.01	
		<b>Total</b>	<b>24.40</b>	220kV BHP - Tsirang Line	-25.44	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.36	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	1.55	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.71%</b>	
6	126MW DHP	Unit-I	48.39	220kV DHP - Tsirang Line	94.94	220kV DHP_Dagapela Line on Standby.
		Unit-II	47.03	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	34.84	
		-	-	5MVA, 220/33kV TFR	0.47	
<b>Total</b>	<b>95.42</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.01%</b>			
7	60MW KHP	Unit- I	16.46	132kV KHP - Nangkhoh Line	42.75	
		Unit-II	16.60	132kV KHP - Kilikhar Line	22.34	
		Unit- III	16.60	5MVA, 132/11kV TFR	0.43	
		Unit- IV	16.58	132kV Motanga - Rangia Line	27.62	
		<b>Total</b>	<b>66.24</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.09%</b>	

**Note: Generation-Load Summary (MW) for July 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	1,398.21	283.24	276.52	1,043.57	6.72
2	Eastern Grid	659.62	131.88	127.18	599.14	4.70
<b>Total</b>		<b>2,057.83</b>	<b>415.12</b>	<b>403.70</b>	<b>1,642.71</b>	<b>11.42</b>

**Note: Generation-Load Summary for July 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	1,682.45	216.50	199.99	1,344.02	16.51
2	Eastern Grid	659.51	60.96	57.02	720.48	3.94
<b>Total</b>		<b>2,341.96</b>	<b>277.46</b>	<b>257.01</b>	<b>2,064.50</b>	<b>20.45</b>

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

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  - 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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