

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

**Coincidental Maximum Load**

**Date:** August 20, 2022  
**Hours:** 19:00 Hours

**Date**      **Time**      **Load(MW)**  
 15-Aug-22      19:30 hrs      521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.24	400kV THP - Siliguri Line - I	0.00	400kV THP_ Siliguri Line I under breakdown
		Unit- II	185.38	400kV THP - Siliguri Line - II	327.35	
		Unit- III	98.38	400kV THP - Siliguri Line- IV	313.32	
		Unit- IV	184.26	400kV THP - Malbase Line - III	377.81	
		Unit- V	184.29	400kV Malbase - Siliguri Line	297.75	
		Unit- VI	185.62	-	-	
		<b>Total</b>	<b>1,023.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.46%</b>	
2	720MW MHP	Unit-I	180.21	400kV MHP - Jigmeling Line - I	335.09	400kV MHP-JLG Line II on Standby. 400kV MHP-JLG Line IV under breakdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	180.18	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.47	400kV MHP - Jigmeling Line - III	336.99	
		Unit-IV	180.65	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)	73.42	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	147.98	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	222.57	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	221.17	
		-	-	80MVA, 220/132kV ICT - I (HV)	39.81	
		-	-	80MVA, 220/132kV ICT - II (HV)	40.58	
		-	-	220kV Tsirang - Jigmeling Line	-9.02	
-	-	132kV Gelephu - Salakati Line	13.20			
<b>Total</b>	<b>676.51</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.65%</b>			
3	336MW CHP	Unit- I	90.95	220kV CHP - Birpara Line- I	96.19	220kV MAL_Birpara Line under breakdown.
		Unit- II	90.82	220kV CHP - Birpara Line- II	96.08	
		Unit- III	91.60	220kV CHP - Malbase Line- III	64.96	
		Unit- IV	71.58	220kV CHP - Semtokha Line- IV	63.34	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	13.64	
		-	-	66kV CHP - Gedu Line	9.83	
		-	-	3x3MVA, 66/11kV TFR	1.22	
		<b>Total</b>	<b>344.95</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.09%</b>	
4	24MW BHP (U/S)	Unit- I	11.40	220kV BHP - Semtokha Line	41.74	
		Unit- II	11.00	66kV BHP - Lobeyasa Line	26.24	
		<b>Total</b>	<b>22.40</b>	220kV BHP - Tsirang Line	-7.83	
5	40MW BHP (L/S)	Unit- I	19.50	5MVA, 66/11kV TFR	0.70	
		Unit- II	19.70	30MVA ICT, 220/66kV (HV)	5.19	
		<b>Total</b>	<b>39.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.22%</b>	
6	126MW DHP	Unit-I	36.87	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	36.00	220kV DHP - Dagapela Line	72.39	
		-	-	220kV Jigmeling - Dagapela Line	-17.18	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>72.87</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.38%</b>			
7	60MW KHP	Unit- I	16.53	132kV KHP - Nangkhoh Line	38.23	
		Unit-II	16.62	132kV KHP - Kilikhar Line	26.76	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.52	
		Unit- IV	16.59	132kV Motanga - Rangia Line	30.63	
		<b>Total</b>	<b>66.24</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.10%</b>	

**Note: Generation-Load Summary (MW) for August 20, 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	1,502.59	363.74	358.33	1,130.69	5.41
2	Eastern Grid	742.75	115.36	110.20	635.55	5.16
<b>Total</b>		<b>2,245.34</b>	<b>479.10</b>	<b>468.53</b>	<b>1,766.24</b>	<b>10.57</b>

**Note: Generation-Load Summary for August 20, 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	1,655.76	284.13	276.25	1,272.33	7.88
2	Eastern Grid	835.21	83.75	79.04	850.76	4.71
<b>Total</b>		<b>2,490.97</b>	<b>367.88</b>	<b>355.29</b>	<b>2,123.09</b>	<b>12.59</b>

**NOTE-**

- 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**

**Date:** August 21, 2022  
**Hours:** 09:00 Hours

**Date**      **Time**      **Load(MW)**  
 15-Aug-22      19:30 hrs      521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	186.11	400kV THP - Siliguri Line - I	0.00	400kV THP_Siliguri Line I under breakdown.
		Unit- II	183.97	400kV THP - Siliguri Line - II	317.87	
		Unit- III	129.19	400kV THP - Siliguri Line- IV	303.42	
		Unit- IV	148.98	400kV THP - Malbase Line - III	352.03	
		Unit- V	146.93	400kV Malbase - Siliguri Line	291.40	
		Unit- VI	185.65	-	-	
		<b>Total</b>	<b>980.83</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.77%</b>	
2	720MW MHP	Unit-I	170.10	400kV MHP - Jigmeling Line - I	320.22	400kV MHP-JLG Line II under standby and IV under breakdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	170.19	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.45	400kV MHP - Jigmeling Line - III	322.39	
		Unit-IV	170.73	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)	46.52	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	147.46	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	221.33	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	219.97	
		-	-	80MVA, 220/132kV ICT - I (HV)	30.52	
		-	-	80MVA, 220/132kV ICT - II (HV)	31.04	
		-	-	220kV Tsirang - Jigmeling Line	2.60	
-	-	132kV Gelephu - Salakati Line	14.00			
<b>Total</b>	<b>646.47</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.60%</b>			
3	336MW CHP	Unit- I	91.32	220kV CHP - Birpara Line- I	89.89	220kV MAL_BIR line under breakdown.
		Unit- II	91.25	220kV CHP - Birpara Line- II	89.77	
		Unit- III	90.27	220kV CHP - Malbase Line- III	81.58	
		Unit- IV	71.62	220kV CHP - Semtokha Line- IV	59.42	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	10.35	
		-	-	66kV CHP - Gedu Line	11.32	
		-	-	3x3MVA, 66/11kV TFR	0.95	
<b>Total</b>	<b>344.46</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.34%</b>			
4	24MW BHP (U/S)	Unit- I	10.64	220kV BHP - Semtokha Line	36.58	
		Unit- II	10.64	66kV BHP - Lobeyssa Line	23.81	
		<b>Total</b>	<b>21.28</b>	220kV BHP - Tsirang Line	-0.82	
5	40MW BHP (L/S)	Unit- I	19.16	5MVA, 66/11kV TFR	0.39	
		Unit- II	19.28	30MVA ICT, 220/66kV (HV)	2.76	
		<b>Total</b>	<b>38.44</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.40%</b>	
6	126MW DHP	Unit-I	38.37	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	38.02	220kV DHP - Dagapela Line	75.91	
		-	-	220kV Jigmeling - Dagapela Line	-22.23	
		-	-	5MVA, 220/33kV TFR	0.50	
<b>Total</b>	<b>76.39</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.03%</b>			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	41.47	
		Unit-II	16.50	132kV KHP - Kilikhar Line	23.74	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.35	
		Unit- IV	16.50	132kV Motanga - Rangia Line	32.98	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.66%</b>	

**Note: Generation-Load Summary (MW) for August 21, 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	1,461.40	344.22	335.79	1,092.35	8.43
2	Eastern Grid	712.47	101.56	97.26	635.74	4.30
<b>Total</b>		<b>2,173.87</b>	<b>445.78</b>	<b>433.05</b>	<b>1,728.09</b>	<b>12.73</b>

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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	1,669.94	296.45	285.50	1,260.74	10.95
2	Eastern Grid	657.55	69.44	65.04	700.86	4.40
<b>Total</b>		<b>2,327.49</b>	<b>365.89</b>	<b>350.54</b>	<b>1,961.60</b>	<b>15.35</b>

**NOTE: All eastern data 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.