

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>July 7, 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	184.98	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	147.60	400kV THP - Siliguri Line - II	0.00	
		Unit- III	168.84	400kV THP - Siliguri Line- IV	429.89	
		Unit- IV	80.27	400kV THP - Malbase Line - III	422.08	
		Unit- V	107.65	400kV Malbase - Siliguri Line	425.73	
		Unit- VI	169.16	-	-	
		<b>Total</b>	<b>858.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.76%</b>	
2	720MW MHP	Unit-I	160.17	400kV MHP - Jigmeling Line - I	238.26	Unit III under shutdown. 400kV MHP-JLG line II & 400kV MHP-JLG Line IV on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby.
		Unit-II	160.23	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	239.86	
		Unit-IV	160.70	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)	49.17	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	98.90	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	158.14	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	158.99	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.79	
		-	-	80MVA, 220/132kV ICT - II (HV)	29.37	
		-	-	220kV Tsirang - Jigmeling Line	45.53	
-	-	132kV Gelephu - Salakati Line	10.23			
<b>Total</b>	<b>481.10</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.62%</b>			
3	336MW CHP	Unit- I	91.31	220kV CHP - Birpara Line- I	75.29	
		Unit- II	91.49	220kV CHP - Birpara Line- II	75.30	
		Unit- III	90.56	220kV CHP - Malbase Line- III	144.75	
		Unit- IV	91.57	220kV CHP - Semtokha Line- IV	47.42	
		-	-	220kV Malbase - Birpara Line	10.54	
		-	-	66kV CHP - Chumdo Line	12.12	
		-	-	66kV CHP - Gedu Line	6.24	
		-	-	3x3MVA, 66/11kV TFR	1.21	
<b>Total</b>	<b>364.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.71%</b>			
4	24MW BHP (U/S)	Unit- I	20.19	220kV BHP - Semtokha Line	46.14	
		Unit- II	20.23	66kV BHP - Lobeyasa Line	23.36	
		<b>Total</b>	<b>40.42</b>	220kV BHP - Tsirang Line	-9.59	
5	40MW BHP (L/S)	Unit- I	10.12	5MVA, 66/11kV TFR	0.55	
		Unit- II	10.12	30MVA ICT, 220/66kV (HV)	3.70	
		<b>Total</b>	<b>20.24</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.33%</b>	
6	126MW DHP	Unit-I	58.43	220kV DHP - Tsirang Line	58.09	Unit II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	35.63	
		-	-	5MVA, 220/33kV TFR	0.30	
<b>Total</b>	<b>58.43</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.07%</b>			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	41.16	
		Unit-II	16.53	132kV KHP - Kilikhar Line	23.84	
		Unit- III	16.61	5MVA, 132/11kV TFR	1.40	
		Unit- IV	16.59	132kV Motanga - Rangia Line	28.30	
		<b>Total</b>	<b>66.22</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.27%</b>	

**Note: Generation-Load Summary (MW) for July 07, 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	1,342.52	280.24	270.87	1,016.75	9.37
2	Eastern Grid	547.32	138.29	135.49	454.56	2.80
<b>Total</b>		<b>1,889.84</b>	<b>418.53</b>	<b>406.36</b>	<b>1,471.31</b>	<b>12.17</b>

**Note: Generation-Load Summary for July 07, 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	1,518.68	255.08	248.02	1,145.84	7.06
2	Eastern Grid	659.37	74.83	70.82	702.30	4.01
<b>Total</b>		<b>2,178.05</b>	<b>329.91</b>	<b>318.84</b>	<b>1,848.14</b>	<b>11.07</b>

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.

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>July 8, 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	184.96	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	67.25	400kV THP - Siliguri Line - II	0.00	
		Unit- III	167.47	400kV THP - Siliguri Line- IV	369.31	
		Unit- IV	167.17	400kV THP - Malbase Line - III	362.98	
		Unit- V	68.00	400kV Malbase - Siliguri Line	365.20	
		Unit- VI	79.70	-	-	
		<b>Total</b>	<b>734.55</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.31%</b>	
2	720MW MHP	Unit-I	170.20	400kV MHP - Jigmeling Line - I	255.47	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 I (Interim) on standby
		Unit-II	170.17	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	257.10	
		Unit-IV	175.29	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)	52.52	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	108.35	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	170.97	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	170.98	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.07	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.39	
		-	-	220kV Tsirang - Jigmeling Line	31.65	
-	-	132kV Gelephu - Salakati Line	5.26			
<b>Total</b>	<b>515.66</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.60%</b>			
3	336MW CHP	Unit- I	91.00	220kV CHP - Birpara Line- I	50.62	Unit-IV under breakdown.
		Unit- II	91.45	220kV CHP - Birpara Line- II	50.68	
		Unit- III	91.71	220kV CHP - Malbase Line- III	121.06	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	33.84	
		-	-	220kV Malbase - Birpara Line	-11.29	
		-	-	66kV CHP - Chumdo Line	10.44	
		-	-	66kV CHP - Gedu Line	5.63	
		-	-	3x3MVA, 66/11kV TFR	0.71	
<b>Total</b>	<b>274.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.43%</b>			
4	24MW BHP (U/S)	Unit- I	10.30	220kV BHP - Semtokha Line	57.79	
		Unit- II	10.00	66kV BHP - Lobeyasa Line	23.61	
		<b>Total</b>	<b>20.30</b>	220kV BHP - Tsirang Line	-23.91	
5	40MW BHP (L/S)	Unit- I	18.30	5MVA, 66/11kV TFR	0.46	
		Unit- II	19.50	30MVA ICT, 220/66kV (HV)	-4.67	
		<b>Total</b>	<b>37.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.26%</b>	
6	126MW DHP	Unit-I	57.41	220kV DHP - Tsirang Line	57.13	220kV DHP_Dagapela Line on Standby. Unit-II standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	35.02	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>57.41</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.14%</b>			
7	60MW KHP	Unit- I	16.47	132kV KHP - Nangkhoh Line	41.39	
		Unit-II	16.55	132kV KHP - Kilikhar Line	23.63	
		Unit- III	16.65	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.50	132kV Motanga - Rangia Line	32.98	
		<b>Total</b>	<b>66.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.13%</b>	

**Note: Generation-Load Summary (MW) for July 08, 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	1,124.22	268.05	264.38	824.52	3.67
2	Eastern Grid	581.83	124.94	121.10	488.54	3.84
<b>Total</b>		<b>1,706.05</b>	<b>392.99</b>	<b>385.48</b>	<b>1,313.06</b>	<b>7.51</b>

**Note: Generation-Load Summary for July 08, 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	1,683.14	189.14	174.22	1,374.10	14.92
2	Eastern Grid	659.40	65.11	61.38	714.19	3.73
<b>Total</b>		<b>2,342.54</b>	<b>254.25</b>	<b>235.60</b>	<b>2,088.29</b>	<b>18.65</b>

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.

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