

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>May 9, 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	0.00	400kV THP - Siliguri Line - I	0.00	Unit-II & V under annual maintenance Unit-I on standby. Unit IV tripped at 12:50hrs 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	178.30	400kV THP - Siliguri Line- IV	132.59	
		Unit- IV	0.00	400kV THP - Malbase Line - III	221.15	
		Unit- V	0.00	400kV Malbase - Siliguri Line	117.09	
		Unit- VI	178.63	-	-	
		<b>Total</b>	<b>356.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.89%</b>	
2	720MW MHP	Unit-I	110.16	400kV MHP - Jigmeling Line - I	0.00	Unit- III under Shutdown. Unit- II on Standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	109.11	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	110.42	400kV MHP - Jigmeling Line - IV	109.47	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	66.23	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	47.32	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	70.77	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	-19.01	
		-	-	80MVA, 220/132kV ICT - II (HV)	-19.30	
		-	-	220kV Tsirang - Jigmeling Line	-27.26	
-	-	132kV Gelephu - Salakati Line	4.80			
<b>Total</b>	<b>220.58</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.91%</b>			
3	336MW CHP	Unit- I	57.63	220kV CHP - Birpara Line- I	30.52	Unit-IV on Standby.
		Unit- II	53.44	220kV CHP - Birpara Line- II	30.76	
		Unit- III	91.24	220kV CHP - Malbase Line- III	55.59	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	65.28	
		-	-	220kV Malbase - Birpara Line	6.19	
		-	-	66kV CHP - Chumdo Line	14.46	
		-	-	66kV CHP - Gedu Line	4.43	
		-	-	3x3MVA, 66/11kV TFR	1.42	
<b>Total</b>	<b>202.31</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.07%</b>			
4	24MW BHP (U/S)	Unit- I	6.60	220kV BHP - Semtokha Line	41.85	L/S Unit-I under AMP. U/S Unit-II on Standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	20.77	
		<b>Total</b>	<b>6.60</b>	220kV BHP - Tsirang Line	-42.83	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.61	
		Unit- II	13.80	30MVA ICT, 220/66kV (HV)	14.99	
		<b>Total</b>	<b>13.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.00%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	24.78	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	25.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	7.73	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>25.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.08%</b>			
7	60MW KHP	Unit- I	13.30	132kV KHP - Nangkhoh Line	21.40	Unit-III on Standby.
		Unit-II	13.30	132kV KHP - Kilikhar Line	17.50	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.57	
		Unit- IV	13.30	132kV Motanga - Rangia Line	23.08	
		<b>Total</b>	<b>39.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.08%</b>	

**Note: Generation-Load Summary (MW) for May 09, 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	604.64	314.75	311.69	317.15	3.06
2	Eastern Grid	260.48	87.25	84.82	145.97	2.43
<b>Total</b>		<b>865.12</b>	<b>402.00</b>	<b>396.51</b>	<b>463.12</b>	<b>5.49</b>

**Note: Generation-Load Summary for May 09, 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	439.94	232.15	225.42	192.49	6.73
2	Eastern Grid	253.89	60.67	59.47	208.52	1.20
<b>Total</b>		<b>693.83</b>	<b>292.82</b>	<b>284.89</b>	<b>401.01</b>	<b>7.93</b>

**NOTE- MHP, KHP, JLG & BHP 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.

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>May 10, 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-V under annual maintenance & Unit-I & Unit-IV standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	127.95	400kV THP - Siliguri Line - II	0.00	
		Unit- III	80.00	400kV THP - Siliguri Line- IV	131.06	
		Unit- IV	0.00	400kV THP - Malbase Line - III	205.87	
		Unit- V	0.00	400kV Malbase - Siliguri Line	116.68	
		Unit- VI	130.06	-	-	
		<b>Total</b>	<b>338.01</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.32%</b>	
2	720MW MHP	Unit-I	119.84	400kV MHP - Jigmeling Line - I	0.00	Unit- III under Shutdown. Unit- II on Standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	116.95	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	116.21	400kV MHP - Jigmeling Line - IV	117.25	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	85.84	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	58.41	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	87.33	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.48	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.78	
		-	-	220kV Tsirang - Jigmeling Line	-29.99	
-	-	132kV Gelephu - Salakati Line	6.20			
<b>Total</b>	<b>236.05</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.78%</b>			
3	336MW CHP	Unit- I	33.60	220kV CHP - Birpara Line- I	18.61	Unit- IV on standby.
		Unit- II	35.27	220kV CHP - Birpara Line- II	18.52	
		Unit- III	85.83	220kV CHP - Malbase Line- III	45.12	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	55.79	
		-	-	220kV Malbase - Birpara Line	-4.83	
		-	-	66kV CHP - Chumdo Line	11.75	
		-	-	66kV CHP - Gedu Line	3.47	
		-	-	3x3MVA, 66/11kV TFR	0.83	
<b>Total</b>	<b>154.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.39%</b>			
4	24MW BHP (U/S)	Unit- I	6.00	220kV BHP - Semtokha Line	41.50	L/S Unit-I under Shutdown. U/S Unit-II on Standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	18.99	
		<b>Total</b>	<b>6.00</b>	220kV BHP - Tsirang Line	-42.58	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.35	L/S Unit-I under Shutdown. U/S Unit-II on Standby
		Unit- II	12.20	30MVA ICT, 220/66kV (HV)	13.49	
		<b>Total</b>	<b>12.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.33%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	20.75	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on Standby.
		Unit-II	20.96	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	7.91	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>20.96</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.05%</b>			
7	60MW KHP	Unit- I	13.35	132kV KHP - Nangkhor Line	37.43	Unit-III on Standby.
		Unit-II	13.41	132kV KHP - Kilikhar Line	1.93	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.45	
		Unit- IV	13.38	132kV Motanga - Rangia Line	18.89	
		<b>Total</b>	<b>40.14</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.81%</b>	

**Note: Generation-Load Summary (MW) for May 10, 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	531.87	281.82	280.18	280.04	1.64
2	Eastern Grid	276.19	75.37	73.19	170.83	2.18
<b>Total</b>		<b>808.06</b>	<b>357.19</b>	<b>353.37</b>	<b>450.87</b>	<b>3.82</b>

**Note: Generation-Load Summary for May 10, 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	433.45	215.02	209.45	196.63	5.57
2	Eastern Grid	310.73	58.68	57.03	273.85	1.65
<b>Total</b>		<b>744.18</b>	<b>273.70</b>	<b>266.48</b>	<b>470.48</b>	<b>7.22</b>

**NOTE-BHP, KHP, JLG & MHP data collected from Site.**

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- 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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