

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>May 26, 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	117.68	400kV THP - Siliguri Line - I	0.00	Unit- II on standby. Unit-VI under AMP 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	68.58	400kV THP - Siliguri Line- IV	196.58	
		Unit- IV	165.58	400kV THP - Malbase Line - III	297.70	
		Unit- V	147.16	400kV Malbase - Siliguri Line	176.82	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>499.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.95%</b>	
2	720MW MHP	Unit-I	99.86	400kV MHP - Jigmeling Line - I	0.00	Unit- II under maintenance 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	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	100.67	400kV MHP - Jigmeling Line - III	152.59	
		Unit-IV	105.52	400kV MHP - Jigmeling Line - IV	151.58	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	85.77	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	85.60	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	129.07	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.40	
		-	-	80MVA, 220/132kV ICT - II (HV)	28.71	
		-	-	220kV Tsirang - Jigmeling Line	-8.37	
-	-	132kV Gelephu - Salakati Line	6.31			
<b>Total</b>	<b>306.05</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.61%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	70.58	Unit-I on standby. 220kV CHP_MAL line under maintenance
		Unit- II	81.47	220kV CHP - Birpara Line- II	70.56	
		Unit- III	82.94	220kV CHP - Malbase Line- III	0.00	
		Unit- IV	77.13	220kV CHP - Semtokha Line- IV	75.62	
		-	-	220kV Malbase - Birpara Line	-15.77	
		-	-	66kV CHP - Chumdo Line	17.76	
		-	-	66kV CHP - Gedu Line	5.54	
		-	-	3x3MVA, 66/11kV TFR	1.10	
<b>Total</b>	<b>241.54</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.16%</b>			
4	24MW BHP (U/S)	Unit- I	8.70	220kV BHP - Semtokha Line	29.70	L/S Unit-I & U/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	24.40	
		<b>Total</b>	<b>8.70</b>	<b>220kV BHP - Tsirang Line</b>	<b>-28.46</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.55	
		Unit- II	17.70	30MVA ICT, 220/66kV (HV)	16.45	
		<b>Total</b>	<b>17.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.80%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	22.75	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	22.97	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	20.61	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>22.97</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.09%</b>			
7	60MW KHP	Unit- I	16.08	132kV KHP - Nangkhoh Line	29.57	Unit-III on standby.
		Unit-II	16.09	132kV KHP - Kilikhar Line	17.76	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.41	
		Unit- IV	16.07	132kV Motanga - Rangia Line	21.25	
		<b>Total</b>	<b>48.24</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.04%</b>	

**Note: Generation-Load Summary (MW) for May 26, 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	789.91	299.51	294.18	498.77	5.33
2	Eastern Grid	354.29	103.69	101.31	242.23	2.38
<b>Total</b>		<b>1,144.20</b>	<b>403.20</b>	<b>395.49</b>	<b>741.00</b>	<b>7.71</b>

**Note: Generation-Load Summary for May 26, 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	906.60	219.22	211.09	638.09	8.13
2	Eastern Grid	561.22	71.40	67.36	539.11	4.04
<b>Total</b>		<b>1,467.82</b>	<b>290.62</b>	<b>278.45</b>	<b>1,177.20</b>	<b>12.18</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>May 27, 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	117.96	400kV THP - Siliguri Line - I	0.00	Unit- II on standby. Unit-VI under AMP 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	66.65	400kV THP - Siliguri Line- IV	159.38	
		Unit- IV	118.98	400kV THP - Malbase Line - III	236.75	
		Unit- V	98.54	400kV Malbase - Siliguri Line	147.05	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>402.13</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.49%</b>	
2	720MW MHP	Unit-I	95.22	400kV MHP - Jigmeling Line - I	0.00	Unit- II under maintenance 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	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	95.66	400kV MHP - Jigmeling Line - III	143.20	
		Unit-IV	95.43	400kV MHP - Jigmeling Line - IV	141.95	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	60.26	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	88.18	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	132.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.16	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.57	
		-	-	220kV Tsirang - Jigmeling Line	4.91	
-	-	132kV Gelephu - Salakati Line	5.13			
<b>Total</b>	<b>286.31</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.41%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	70.05	Unit-I on standby
		Unit- II	81.65	220kV CHP - Birpara Line- II	69.86	
		Unit- III	74.84	220kV CHP - Malbase Line- III	0.00	
		Unit- IV	80.17	220kV CHP - Semtokha Line- IV	73.54	
		-	-	220kV Malbase - Birpara Line	-35.46	
		-	-	66kV CHP - Chumdo Line	15.86	
		-	-	66kV CHP - Gedu Line	5.72	
		-	-	3x3MVA, 66/11kV TFR	0.86	
<b>Total</b>	<b>236.66</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.33%</b>			
4	24MW BHP (U/S)	Unit- I	8.90	220kV BHP - Semtokha Line	24.70	L/S Unit-I & U/S Unit-II on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	22.88	
		<b>Total</b>	<b>8.90</b>	<b>220kV BHP - Tsirang Line</b>	<b>-20.22</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.36	L/S Unit-I & U/S Unit-II on standby.
		Unit- II	19.00	30MVA ICT, 220/66kV (HV)	14.48	
		<b>Total</b>	<b>19.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.65%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	27.24	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	27.48	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	21.02	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>27.48</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.15%</b>			
7	60MW KHP	Unit- I	13.97	132kV KHP - Nangkhoh Line	50.45	
		Unit-II	14.02	132kV KHP - Kilikhar Line	4.60	
		Unit- III	14.02	5MVA, 132/11kV TFR	0.38	
		Unit- IV	14.00	132kV Motanga - Rangia Line	24.10	
		<b>Total</b>	<b>56.01</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.04%</b>	

**Note: Generation-Load Summary (MW) for May 27, 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	694.17	278.38	271.39	410.88	6.99
2	Eastern Grid	342.32	97.02	95.28	250.21	1.74
<b>Total</b>		<b>1,036.49</b>	<b>375.40</b>	<b>366.67</b>	<b>661.09</b>	<b>8.73</b>

**Note: Generation-Load Summary for May 27, 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	1,613.26	212.04	194.65	1,339.52	17.39
2	Eastern Grid	657.29	73.60	69.07	645.39	4.53
<b>Total</b>		<b>2,270.55</b>	<b>285.64</b>	<b>263.72</b>	<b>1,984.91</b>	<b>21.92</b>

**NOTE-BHP 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.
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