

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>March 18, 2022</b>
<b>Hours:</b>	<b>18:00 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 I, II, III & V on Standby. 400kV THP-Siliguri - I under Shutdown. 400kV THP-Siliguri - II under Breakdown. 400kV THP-Siliguri IV ideally charged from India end.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	169.24	400kV THP - Malbase Line - III	335.95	
		Unit- V	0.00	400kV Malbase - Siliguri Line	214.99	
		Unit- VI	168.91	-	-	
		<b>Total</b>	<b>338.15</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.65%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	199.05	Unit-I & II under Annual Maintenance. 400kV MHP-JLG Line II,III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG-ALI I ( Interim) on Standby. 400kV JLG_ALI Line II (Direct) on Standby
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	75.59	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	124.20	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)	65.59	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	50.18	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	79.14	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.23	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.52	
		-	-	220kV Tsirang - Jigmeling Line	-46.06	
-	-	132kV Gelephu - Salakati Line	3.15			
<b>Total</b>	<b>199.79</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.37%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	25.87	Unit-I under maintenance. Unit-IV under Breakdown.
		Unit- II	82.20	220kV CHP - Birpara Line- II	26.06	
		Unit- III	85.91	220kV CHP - Malbase Line- III	27.57	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	70.37	
		-	-	220kV Malbase - Birpara Line	19.93	
		-	-	66kV CHP - Chumdo Line	13.11	
		-	-	66kV CHP - Gedu Line	2.83	
		-	-	3x3MVA, 66/11kV TFR	1.22	
<b>Total</b>	<b>168.11</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.64%</b>			
4	24MW BHP (U/S)	Unit- I	8.20	220kV BHP - Semtokha Line	31.50	U/S Unit-II & L/S Unit-II under AMP. L/S Unit I tripped at 17:28hrs.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	19.88	
		<b>Total</b>	<b>8.20</b>	220kV BHP - Tsirang Line	-43.73	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.30	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	12.17	
		<b>Total</b>	<b>0.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>3.05%</b>	
6	126MW DHP	Unit-I	26.68	220kV DHP - Tsirang Line	0.00	Unit-II under Annual Maintenance. 220kV DHP_Tsirang Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	26.47	
		-	-	220kV Jigmeling - Dagapela Line	-18.93	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>26.68</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.04%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	15.39	Unit-I under AMP.
		Unit-II	10.11	132kV KHP - Kilikhar Line	13.94	
		Unit- III	10.08	5MVA, 132/11kV TFR	0.56	
		Unit- IV	10.06	132kV Motanga - Rangia Line	2.47	
		<b>Total</b>	<b>30.25</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.18%</b>	

**Note: Generation-Load Summary (MW) for March 18, 2022 at 18:00hrs.**

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	541.14	300.35	296.81	286.85	3.54
2	Eastern Grid	230.04	49.04	47.94	134.94	1.10
<b>Total</b>		<b>771.18</b>	<b>349.39</b>	<b>344.75</b>	<b>421.79</b>	<b>4.64</b>

**Note: Generation-Load Summary for March 18, 2021 at 18:00hrs.**

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	324.43	246.41	241.55	59.28	4.86
2	Eastern Grid	146.26	66.45	64.76	98.55	1.69
<b>Total</b>		<b>470.69</b>	<b>312.86</b>	<b>306.31</b>	<b>157.83</b>	<b>6.55</b>

**NOTE- 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**

**Date:** March 19, 2022  
**Hours:** 09:00 Hours

**Date:** 12-Jan-22      **Time:** 18:00hrs      **Load(MW):** 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 I, II, III and V on Standby. 400kV THP- Siliguri - I under Shutdown. 400kV THP- Siliguri - II under Breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	110.05	
		Unit- IV	167.69	400kV THP - Malbase Line - III	194.67	
		Unit- V	0.00	400kV Malbase - Siliguri Line	90.19	
		Unit- VI	139.23	-	-	
		<b>Total</b>	<b>306.92</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.72%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	165.37	Unit-I & II under Annual Maintenance. 400kV MHP-JLG Line II,III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG-ALI I ( Interim) on Standby. 400kV JLG_ALI Line II (Direct) on Standby
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	70.61	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	96.16	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)	55.74	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	42.18	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	65.42	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.83	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.10	
		-	-	220kV Tsirang - Jigmeling Line	-38.14	
-	-	132kV Gelephu - Salakati Line	5.81			
<b>Total</b>	<b>166.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.84%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	12.22	Unit-I under Annual Maintenance. Unit-IV under Breakdown.
		Unit- II	72.06	220kV CHP - Birpara Line- II	12.04	
		Unit- III	78.50	220kV CHP - Malbase Line- III	49.27	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	59.34	
		-	-	220kV Malbase - Birpara Line	-18.33	
		-	-	66kV CHP - Chumdo Line	12.99	
		-	-	66kV CHP - Gedu Line	2.68	
		-	-	3x3MVA, 66/11kV TFR	1.12	
<b>Total</b>	<b>150.56</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.60%</b>			
4	24MW BHP (U/S)	Unit- I	9.10	220kV BHP - Semtokha Line	44.10	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeysa Line	21.07	
		<b>Total</b>	<b>9.10</b>	220kV BHP - Tsirang Line	-35.66	
5	40MW BHP (L/S)	Unit- I	20.90	5MVA, 66/11kV TFR	0.39	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	12.55	
		<b>Total</b>	<b>20.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.33%</b>	
6	126MW DHP	Unit-I	30.77	220kV DHP - Tsirang Line	0.00	Unit-II under Annual maintenance. 220kV DHP_Tsirang Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	30.55	
		-	-	220kV Jigmeling - Dagapela Line	-23.17	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>30.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.06%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	29.91	Unit-I under AMP.
		Unit-II	16.53	132kV KHP - Kilikhar Line	18.43	
		Unit- III	16.36	5MVA, 132/11kV TFR	0.60	
		Unit- IV	16.55	132kV Motanga - Rangia Line	13.43	
		<b>Total</b>	<b>49.44</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.01%</b>	

**Note: Generation-Load Summary (MW) for March 19, 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	518.25	350.22	347.00	206.17	3.22
2	Eastern Grid	216.21	51.23	49.33	126.84	1.90
<b>Total</b>		<b>734.46</b>	<b>401.45</b>	<b>396.33</b>	<b>333.01</b>	<b>5.12</b>

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1	Western Grid	318.49	235.17	229.95	69.72	5.22
2	Eastern Grid	159.99	51.65	50.91	120.94	0.74
<b>Total</b>		<b>478.48</b>	<b>286.82</b>	<b>280.86</b>	<b>190.66</b>	<b>5.96</b>

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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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