

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

Maximum Load/Demand till Date

Date: **October 2, 2021**  
Hours: **19:00 Hours**

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	146.67	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	117.81	400kV THP - Siliguri Line - II	227.78	+	
		Unit- III	98.96	400kV THP - Siliguri Line- IV	216.51	+	
		Unit- IV	128.58	400kV THP - Malbase Line - III	289.42	+	
		Unit- V	127.23	400kV Malbase - Siliguri Line	197.62	+	
		Unit- VI	119.82	-	-	-	
		<b>Total</b>	<b>739.07</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.725%</b>		
2	720MW MHP	Unit-I	145.27	400kV MHP - Jigmeling Line - I	218.79	+	Unit-II on standby. 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. (There is MW power difference of 9.62 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	150.52	400kV MHP - Jigmeling Line - III	220.06	+	
		Unit-IV	145.47	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)	45.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	95.99	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	145.39	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	144.86	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	25.66	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.96	+	
		-	-	220kV Tsirang - Jigmeling Line	8.38	+	
-	-	132kV Gelephu - Salakati Line	13.40	+			
<b>Total</b>	<b>441.26</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.546%</b>				
3	336MW CHP	Unit- I	92.03	220kV CHP - Birpara Line- I	105.61	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.75	220kV CHP - Birpara Line- II	105.80	+	
		Unit- III	92.24	220kV CHP - Malbase Line- III	133.66	+	
		Unit- IV	91.45	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	69.02	+	
		-	-	66kV CHP - Chumdo Line	16.01	+	
		-	-	66kV CHP - Gedu Line	4.86	+	
		-	-	3x3MVA, 66/11kV TFR	1.41	+	
<b>Total</b>	<b>367.47</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.033%</b>				
4	24MW BHP (U/S)	Unit- I	11.70	220kV BHP - Semtokha Line	88.80	+	
		Unit- II	11.50	66kV BHP - Lobeysa Line	31.00	+	
		<b>Total</b>	<b>23.20</b>	220kV BHP - Tsirang Line	-54.59	-	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	8.33	+	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>-1.849%</b>		
6	126MW DHP	Unit-I	47.36	220kV DHP - Tsirang Line	70.92	+	220kV DHP_Dagapela Line on standby.
		Unit-II	23.97	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line		+	
		-	-	5MVA, 220/33kV TFR	0.27	+	
		<b>Total</b>	<b>71.33</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.196%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	39.34	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	25.73	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.45	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	51.65	+	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.730%</b>		

**Note: Generation-Load Summary (MW) for October 02, 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) at Generator end.
1	Western Grid	1,242.77	312.05	307.63	922.34	4.42
2	Eastern Grid	507.26	64.35	61.46	451.29	2.89
	<b>Total</b>	<b>1,750.03</b>	<b>376.40</b>	<b>369.09</b>	<b>1,373.63</b>	<b>7.31</b>

**Note: Generation-Load Summary for October 02, 2020 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
1	Western Grid	1,628.41	216.62	200.08	1,321.46	16.54
2	Eastern Grid	464.97	59.45	57.25	495.85	2.20
	<b>Total</b>	<b>2,093.38</b>	<b>276.07</b>	<b>257.33</b>	<b>1,817.31</b>	<b>18.74</b>

**NOTE-BHP, JLG and MHPA data collected from site**

1. The Instantaneous load balance is 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**

Maximum Load/Demand till Date

Date:	October 3, 2021
Hours:	09:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	146.07	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	115.97	400kV THP - Siliguri Line - II	237.75	+	
		Unit- III	99.82	400kV THP - Siliguri Line- IV	225.88	+	
		Unit- IV	128.86	400kV THP - Malbase Line - III	272.02	+	
		Unit- V	127.43	400kV Malbase - Siliguri Line	212.36	+	
		Unit- VI	119.59	-	-	-	
		<b>Total</b>	<b>737.74</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.283%</b>		
2	720MW MHP	Unit-I	145.47	400kV MHP - Jigmeling Line - I	223.73	+	Unit-II on standby. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby. (There is MW power difference of 11.38 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	155.63	400kV MHP - Jigmeling Line - III	224.95	+	
		Unit-IV	150.18	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)	5.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	107.63	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	163.85	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	163.02	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.06	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.14	+	
		-	-	220kV Tsirang - Jigmeling Line	20.43	+	
-	-	132kV Gelephu - Salakati Line	8.60	+			
<b>Total</b>	<b>451.28</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.576%</b>				
3	336MW CHP	Unit- I	92.09	220kV CHP - Birpara Line- I	97.11	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.36	220kV CHP - Birpara Line- II	97.35	+	
		Unit- III	91.23	220kV CHP - Malbase Line- III	151.35	+	
		Unit- IV	90.97	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	41.36	+	
		-	-	66kV CHP - Chumdo Line	14.03	+	
		-	-	66kV CHP - Gedu Line	3.90	+	
		-	-	3x3MVA, 66/11kV TFR	1.10	+	
		<b>Total</b>	<b>365.65</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.222%</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	83.60	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	29.90	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-48.50	-	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.87	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	6.62	+	
		<b>Total</b>	<b>41.60</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.348%</b>		
6	126MW DHP	Unit-I	47.36	220kV DHP - Tsirang Line	71.88	+	220kV DHP_Dagapela Line on standby.
		Unit-II	24.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.98	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>72.35</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.235%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	42.65	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	22.48	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	35.90	+	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.827%</b>		

**Note: Generation-Load Summary (MW) for October 03, 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) at Generator end.
1	Western Grid	1,241.84	309.60	308.28	911.81	1.32
2	Eastern Grid	517.28	58.71	55.56	479.00	3.15
	<b>Total</b>	<b>1,759.12</b>	<b>368.31</b>	<b>363.84</b>	<b>1,390.81</b>	<b>4.47</b>

**Note: Generation-Load Summary for October 03, 2020 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
1	Western Grid	1,533.58	209.13	191.88	1,242.81	17.25
2	Eastern Grid	576.44	51.14	49.23	606.94	1.91
	<b>Total</b>	<b>2,110.02</b>	<b>260.27</b>	<b>241.11</b>	<b>1,849.75</b>	<b>19.16</b>

**NOTE-KHP, JLG, BHP & MHPA data collected from site**

1. The Instantaneous load balance is 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.