

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

**Coincidental Maximum Load**

**Date:** November 26, 2021  
**Hours:** 19:00 Hours

**Date**      **Time**      **Load(MW)**  
 26-Nov-21      19:00hrs      459.39 MW

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 & III under AMP. Unit-II on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under Annual Maintenance .
		Unit- II	0.00	400kV THP - Siliguri Line - II	179.37	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	172.91	
		Unit- IV	139.34	400kV THP - Malbase Line - III	0.00	
		Unit- V	78.47	400kV Malbase - Siliguri Line	-65.40	
		Unit- VI	138.56	-	-	
		<b>Total</b>	<b>356.37</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.15%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	99.96	Unit-I on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line I(Direct) opened (Both end).
		Unit-II	130.21	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	70.49	400kV MHP - Jigmeling Line - III	100.14	
		Unit-IV	0.00	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)	72.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	49.76	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	75.84	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.69	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.04	
		-	-	220kV Tsirang - Jigmeling Line	-14.69	
-	-	132kV Gelephu - Salakati Line	-2.18			
<b>Total</b>	<b>200.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.30%</b>			
3	336MW CHP	Unit- I	61.87	220kV CHP - Birpara Line- I	15.03	CHP Unit IV under Annual Maintenance.
		Unit- II	60.15	220kV CHP - Birpara Line- II	14.68	
		Unit- III	75.53	220kV CHP - Malbase Line- III	75.32	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	67.56	
		-	-	220kV Malbase - Birpara Line	-33.35	
		-	-	66kV CHP - Chumdo Line	19.93	
		-	-	66kV CHP - Gedu Line	2.69	
		-	-	3x3MVA, 66/11kV TFR	2.10	
<b>Total</b>	<b>197.55</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.12%</b>			
4	24MW BHP (U/S)	Unit- I	6.80	220kV BHP - Semtokha Line	65.70	
		Unit- II	6.70	66kV BHP - Lobeyasa Line	30.31	
		<b>Total</b>	<b>13.50</b>	220kV BHP - Tsirang Line	-57.18	
5	40MW BHP (L/S)	Unit- I	13.00	5MVA, 66/11kV TFR	0.26	
		Unit- II	13.00	30MVA ICT, 220/66kV (HV)	17.76	
		<b>Total</b>	<b>26.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.04%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	47.01	Unit-I on standby. 220kV DHP-Dagapela Line on standby.
		Unit-II	47.20	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	13.80	
		-	-	5MVA, 220/33kV TFR	0.10	
<b>Total</b>	<b>47.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.18%</b>			
7	60MW KHP	Unit- I	12.49	132kV KHP - Nangkhoh Line	17.79	Unit-IV under Annual Maintenance.
		Unit-II	12.50	132kV KHP - Kilikhar Line	18.89	
		Unit- III	12.45	5MVA, 132/11kV TFR	0.33	
		Unit- IV	0.00	132kV Motanga - Rangia Line	6.84	
		<b>Total</b>	<b>37.44</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.16%</b>	

**Note: Generation-Load Summary (MW) for November 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	640.62	372.06	367.23	283.24	4.83
2	Eastern Grid	238.14	93.20	92.16	130.26	1.03
<b>Total</b>		<b>878.76</b>	<b>465.26</b>	<b>459.39</b>	<b>413.50</b>	<b>5.86</b>

**Note: Generation-Load Summary for November 26, 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 (MW)
1	Western Grid	530.99	235.31	233.65	266.07	1.66
2	Eastern Grid	192.29	54.60	52.30	167.30	2.30
<b>Total</b>		<b>723.28</b>	<b>289.91</b>	<b>285.95</b>	<b>433.37</b>	<b>3.96</b>

**NOTE-BHP, KHP, MHPA, and MOT 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:** November 27, 2021  
**Hours:** 09:00 Hours

Date	Time	Load(MW)
26-Nov-21	19:00hrs	459.39 MW

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 & III under Annual Maintenance. Unit-II on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under Annual Maintenance .
		Unit- II	0.00	400kV THP - Siliguri Line - II	188.83	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	182.22	
		Unit- IV	138.93	400kV THP - Malbase Line - III	0.00	
		Unit- V	98.56	400kV Malbase - Siliguri Line	-73.97	
		Unit- VI	138.68	-	-	
		<b>Total</b>	<b>376.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.36%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	97.47	Unit-I on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line I(Direct) opened (Both end).
		Unit-II	120.16	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	76.54	400kV MHP - Jigmeling Line - III	98.04	
		Unit-IV	0.00	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)	-5.70	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	79.29	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	120.29	
		-	-	80MVA, 220/132kV ICT - I (HV)	26.13	
		-	-	80MVA, 220/132kV ICT - II (HV)	26.52	
		-	-	220kV Tsirang - Jigmeling Line	71.36	
-	-	132kV Gelephu - Salakati Line	8.62			
<b>Total</b>	<b>196.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.60%</b>			
3	336MW CHP	Unit- I	56.98	220kV CHP - Birpara Line- I	-3.29	Unit-IV under Annual Maintenance.
		Unit- II	59.16	220kV CHP - Birpara Line- II	-3.14	
		Unit- III	76.07	220kV CHP - Malbase Line- III	48.18	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	127.08	
		-	-	220kV Malbase - Birpara Line	-42.00	
		-	-	66kV CHP - Chumdo Line	19.62	
		-	-	66kV CHP - Gedu Line	1.85	
		-	-	3x3MVA, 66/11kV TFR	1.40	
<b>Total</b>	<b>192.21</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.27%</b>			
4	24MW BHP (U/S)	Unit- I	6.80	220kV BHP - Semtokha Line	0.00	220kV BHP_SEM under breakdown.
		Unit- II	6.50	66kV BHP - Lobeyasa Line	9.53	
		<b>Total</b>	<b>13.30</b>	220kV BHP - Tsirang Line	29.30	
5	40MW BHP (L/S)	Unit- I	13.30	5MVA, 66/11kV TFR	0.51	220kV BHP_SEM under breakdown.
		Unit- II	13.30	30MVA ICT, 220/66kV (HV)	2.94	
		<b>Total</b>	<b>26.60</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.40%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	44.75	Unit-I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	44.99	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	12.92	
		-	-	5MVA, 220/33kV TFR	0.23	
<b>Total</b>	<b>44.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.02%</b>			
7	60MW KHP	Unit- I	11.50	132kV KHP - Nangkhor Line	16.84	Unit-IV under Annual Maintenance.
		Unit-II	11.47	132kV KHP - Kilikhar Line	16.92	
		Unit- III	11.51	5MVA, 132/11kV TFR	0.23	
		Unit- IV	0.00	132kV Motanga - Rangia Line	18.28	
		<b>Total</b>	<b>34.48</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.42%</b>	

**Note: Generation-Load Summary (MW) for November 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	653.27	333.26	327.06	248.65	6.20
2	Eastern Grid	231.18	76.06	74.38	226.48	1.68
<b>Total</b>		<b>884.45</b>	<b>409.32</b>	<b>401.44</b>	<b>475.13</b>	<b>7.88</b>

**Note: Generation-Load Summary for November 27, 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 (MW)
1	Western Grid	479.34	209.01	201.56	239.83	7.45
2	Eastern Grid	200.45	53.35	47.90	177.60	5.45
<b>Total</b>		<b>679.79</b>	<b>262.36</b>	<b>249.46</b>	<b>417.43</b>	<b>12.90</b>

**NOTE-BHP, MHPA and MOT 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.