

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

**Coincidental Maximum Load**

**Date:** December 10, 2021  
**Hours:** 18:00 Hours

Date	Time	Load(MW)
6-Dec-21	18:00hrs	462.8

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 under Annual Maintenance. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line IV under Maintenance.
		Unit- II	0.00	400kV THP - Siliguri Line - II	99.30	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	98.49	400kV THP - Malbase Line - III	193.10	
		Unit- V	79.14	400kV Malbase - Siliguri Line	72.00	
		Unit- VI	119.34	-	-	
		<b>Total</b>	<b>296.97</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.54%</b>	
2	720MW MHP	Unit-I	159.93	400kV MHP - Jigmeling Line - I	158.35	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		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)	80.89	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	18.14	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	27.03	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	28.34	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.76	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.08	
		-	-	220kV Tsirang - Jigmeling Line	-20.74	
-	-	132kV Gelephu - Salakati Line	-3.64			
<b>Total</b>	<b>159.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.99%</b>			
3	336MW CHP	Unit- I	70.68	220kV CHP - Birpara Line- I	11.22	220kV CHP_Birpara Line- II on Standby. Unit-III on Standby. Unit-IV under Annual Maintenance.
		Unit- II	76.41	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	30.16	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.96	
		-	-	220kV Malbase - Birpara Line	-5.39	
		-	-	66kV CHP - Chumdo Line	20.53	
		-	-	66kV CHP - Gedu Line	2.92	
		-	-	3x3MVA, 66/11kV TFR	1.69	
		<b>Total</b>	<b>147.09</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.41%</b>	
4	24MW BHP (U/S)	Unit- I	5.70	220kV BHP - Semtokha Line	54.00	
		Unit- II	5.30	66kV BHP - Lobeyasa Line	30.15	
		<b>Total</b>	<b>11.00</b>	220kV BHP - Tsirang Line	-52.78	
5	40MW BHP (L/S)	Unit- I	10.80	5MVA, 66/11kV TFR	0.82	
		Unit- II	10.50	30MVA ICT, 220/66kV (HV)	20.37	
		<b>Total</b>	<b>21.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.34%</b>	
6	126MW DHP	Unit-I	37.34	220kV DHP - Tsirang Line	37.12	Unit-II under Shutdown. 220kV DHP-Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.89	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>37.34</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.05%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	11.89	Unit I on standby. Unit-IV under Annual Maintenance.
		Unit-II	14.50	132kV KHP - Kilikhar Line	16.28	
		Unit- III	14.50	5MVA, 132/11kV TFR	0.44	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-1.98	
		<b>Total</b>	<b>29.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.34%</b>	

**Note: Generation-Load Summary (MW) for December 10, 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	513.70	357.31	352.00	177.13	5.31
2	Eastern Grid	188.93	100.30	98.33	67.89	1.97
<b>Total</b>		<b>702.63</b>	<b>457.61</b>	<b>450.33</b>	<b>245.02</b>	<b>7.28</b>

**Note: Generation-Load Summary for December 10, 2020 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	404.91	241.41	223.68	163.50	17.73
2	Eastern Grid	171.30	45.40	42.24	125.90	3.16
<b>Total</b>		<b>576.21</b>	<b>286.81</b>	<b>265.92</b>	<b>289.40</b>	<b>20.89</b>

**NOTE- BHP, MAT and MHP 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**

**Date:** December 11, 2021  
**Hours:** 09:00 Hours

Date	Time	Load(MW)
6-Dec-21	18:00hrs	462.8

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 under Annual Maintenance. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line IV under Maintenance.
		Unit- II	0.00	400kV THP - Siliguri Line - II	100.34	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	80.37	400kV THP - Malbase Line - III	175.89	
		Unit- V	79.17	400kV Malbase - Siliguri Line	74.81	
		Unit- VI	119.29	-	-	
		<b>Total</b>	<b>278.83</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.93%</b>	
2	720MW MHP	Unit-I	162.75	400kV MHP - Jigmeling Line - I	161.92	Unit-II & III on Standby.  Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line II (Direct) under shutdown. 220kV Tsirang_Jigmeling line under breakdown.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		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)	57.67	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	39.83	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	62.59	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.83	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.15	
		-	-	220kV Tsirang - Jigmeling Line	-6.29	
-	-	132kV Gelephu - Salakati Line	1.03			
<b>Total</b>	<b>162.75</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.51%</b>			
3	336MW CHP	Unit- I	92.00	220kV CHP - Birpara Line- I	22.11	Unit-IV under Annual Maintenance. Unit-III on Standby. 220kV CHP_Birpara Line-II on standby.
		Unit- II	91.00	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	63.66	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	75.50	
		-	-	220kV Malbase - Birpara Line	-12.86	
		-	-	66kV CHP - Chumdo Line	17.68	
		-	-	66kV CHP - Gedu Line	2.91	
		-	-	3x3MVA, 66/11kV TFR	1.29	
<b>Total</b>	<b>183.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.08%</b>			
4	24MW BHP (U/S)	Unit- I	5.50	220kV BHP - Semtokha Line	44.70	
		Unit- II	5.10	66kV BHP - Lobeysa Line	26.57	
		<b>Total</b>	<b>10.60</b>	220kV BHP - Tsirang Line	-39.84	
5	40MW BHP (L/S)	Unit- I	10.70	5MVA, 66/11kV TFR	0.21	
		Unit- II	10.60	30MVA ICT, 220/66kV (HV)	16.60	
		<b>Total</b>	<b>21.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.82%</b>	
6	126MW DHP	Unit-I	37.20	220kV DHP - Tsirang Line	36.99	Unit-I under Shutdown. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.06	
		-	-	5MVA, 220/33kV TFR	0.10	
<b>Total</b>	<b>37.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.30%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	13.64	Unit-I on Standby. Unit-IV under Annual Maintenance.
		Unit-II	13.56	132kV KHP - Kilikhar Line	12.56	
		Unit- III	13.52	5MVA, 132/11kV TFR	0.35	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-3.24	
		<b>Total</b>	<b>27.08</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.96%</b>	

**Note: Generation-Load Summary (MW) for December 11, 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	530.93	352.82	350.00	184.40	2.82
2	Eastern Grid	189.83	83.33	81.97	100.21	1.36
<b>Total</b>		<b>720.76</b>	<b>436.15</b>	<b>431.97</b>	<b>284.61</b>	<b>4.18</b>

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1	Western Grid	438.04	214.67	210.70	204.73	3.97
2	Eastern Grid	176.70	59.79	58.21	135.56	1.58
<b>Total</b>		<b>614.74</b>	<b>274.46</b>	<b>268.91</b>	<b>340.29</b>	<b>5.55</b>

**NOTE- MAT & 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.