

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

Maximum Load/Demand till Date

Date: **September 8, 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	185.45	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	184.73	400kV THP - Siliguri Line - II	350.45	+	
		Unit- III	185.79	400kV THP - Siliguri Line- IV	336.41	+	
		Unit- IV	183.77	400kV THP - Malbase Line - III	416.38	+	
		Unit- V	185.94	400kV Malbase - Siliguri Line	311.84	+	
		Unit- VI	185.77	-	-	-	
		<b>Total</b>	<b>1,111.45</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.739%</b>		
2	720MW MHP	Unit-I	197.80	400kV MHP - Jigmeling Line - I	391.86	+	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 a MW power difference of 11MW between MHP fdr sending end & JLG fdr receiving end)
		Unit-II	197.22	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.82	400kV MHP - Jigmeling Line - III	394.06	+	
		Unit-IV	197.38	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-0.80	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	191.98	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	290.85	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	290.80	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	44.10	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	44.30	+	
		-	-	220kV Tsirang - Jigmeling Line	90.90	+	
-	-	132kV Gelephu - Salakati Line	31.48	+			
<b>Total</b>	<b>790.22</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.544%</b>				
3	336MW CHP	Unit- I	91.61	220kV CHP - Birpara Line- I	99.67	+	
		Unit- II	91.37	220kV CHP - Birpara Line- II	99.64	+	
		Unit- III	92.08	220kV CHP - Malbase Line- III	118.95	+	
		Unit- IV	91.32	220kV CHP - Semtokha Line- IV	28.96	+	
		-	-	220kV Malbase - Birpara Line	70.88	+	
		-	-	66kV CHP - Chumdo Line	10.65	+	
		-	-	66kV CHP - Gedu Line	5.55	+	
		-	-	3x3MVA, 66/11kV TFR	1.22	+	
		<b>Total</b>	<b>366.38</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.475%</b>		
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	85.40	+	
		Unit- II	12.30	66kV BHP - Lobeysa Line	11.89	+	
		<b>Total</b>	<b>24.70</b>	220kV BHP - Tsirang Line	-31.86	-	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	20.90	30MVA ICT, 220/66kV (HV)	-12.86	-	
		<b>Total</b>	<b>41.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>-0.181%</b>		
6	126MW DHP	Unit-I	63.64	220kV DHP - Tsirang Line	126.23	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.13	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.80	+	
		-	-	5MVA, 220/33kV TFR	0.40	+	
		<b>Total</b>	<b>126.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.110%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	36.04	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.19	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	42.67	+	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>2.227%</b>		

**Note: Generation-Load Summary (MW) for September 08, 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	1,670.80	311.01	302.84	1,268.89	8.17
2	Eastern Grid	856.22	99.34	93.57	847.78	5.77
	<b>Total</b>	<b>2,527.02</b>	<b>410.35</b>	<b>396.41</b>	<b>2,116.67</b>	<b>13.94</b>

**Note: Generation-Load Summary for September 08, 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	1,670.56	212.52	189.50	1,364.41	23.02
2	Eastern Grid	852.29	68.00	64.93	877.92	3.07
	<b>Total</b>	<b>2,522.85</b>	<b>280.52</b>	<b>254.43</b>	<b>2,242.33</b>	<b>26.09</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**

<b>Date:</b>	<b>September 9, 2021</b>
<b>Hours:</b>	<b>09:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
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	185.53	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	186.56	400kV THP - Siliguri Line - II	360.64	+	
		Unit- III	185.75	400kV THP - Siliguri Line- IV	344.78	+	
		Unit- IV	185.40	400kV THP - Malbase Line - III	401.48	+	
		Unit- V	185.40	400kV Malbase - Siliguri Line	323.42	+	
		Unit- VI	186.02	-	-	-	
		<b>Total</b>	<b>1,114.66</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.696%</b>		
2	720MW MHP	Unit-I	197.83	400kV MHP - Jigmeling Line - I	391.92	+	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 18.5MW between Total MHP generation & outgoing fdr at JLG end)
		Unit-II	197.16	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.82	400kV MHP - Jigmeling Line - III	393.93	+	
		Unit-IV	197.12	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)	-36.43	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	200.71	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	303.63		
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	303.51	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	-31.38	-	
		-	-	80MVA, 220/132kV ICT - II (HV)	-31.49	-	
		-	-	220kV Tsirang - Jigmeling Line	98.55	+	
-	-	132kV Gelephu - Salakati Line	25.75	+			
<b>Total</b>	<b>789.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.517%</b>				
3	336MW CHP	Unit- I	91.32	220kV CHP - Birpara Line- I	96.69	+	
		Unit- II	91.29	220kV CHP - Birpara Line- II	97.00	+	
		Unit- III	92.33	220kV CHP - Malbase Line- III	135.41	+	
		Unit- IV	91.34	220kV CHP - Semtokha Line- IV	22.18	-	
		-	-	220kV Malbase - Birpara Line	53.49	+	
		-	-	66kV CHP - Chumdo Line	6.69	+	
		-	-	66kV CHP - Gedu Line	5.87	+	
		-	-	3x3MVA, 66/11kV TFR	0.70	+	
<b>Total</b>	<b>366.28</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.475%</b>				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	83.10	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	6.90	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-24.61	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-16.64	-	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.015%</b>		
6	126MW DHP	Unit-I	63.71	220kV DHP - Tsirang Line	126.28	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.21	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.89	+	
		-	-	5MVA, 220/33kV TFR	0.30		
		<b>Total</b>	<b>126.92</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.268%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	36.38	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	24.46	+	
		Unit- III	14.21	5MVA, 132/11kV TFR	0.22	+	
		Unit- IV	14.83	132kV Motanga - Rangia Line	40.88	+	
		<b>Total</b>	<b>62.04</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.586%</b>		

**Note: Generation-Load Summary (MW) for September 09, 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	1,674.16	299.59	290.63	1,276.02	8.96
2	Eastern Grid	851.97	76.04	70.98	874.48	5.06
	<b>Total</b>	<b>2,526.13</b>	<b>375.63</b>	<b>361.61</b>	<b>2,150.50</b>	<b>14.02</b>

**Note: Generation-Load Summary for September 09, 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	1,680.97	199.25	183.00	1,394.01	16.25
2	Eastern Grid	847.01	51.69	46.95	883.03	4.74
	<b>Total</b>	<b>2,527.98</b>	<b>250.94</b>	<b>229.95</b>	<b>2,277.04</b>	<b>20.99</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.