

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>September 26, 2021</b>
<b>Hours:</b>	<b>19:00 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	136.25	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	138.33	400kV THP - Siliguri Line - II	268.42	+	
		Unit- III	168.87	400kV THP - Siliguri Line- IV	256.64	+	
		Unit- IV	139.23	400kV THP - Malbase Line - III	329.93	+	
		Unit- V	137.85	400kV Malbase - Siliguri Line	235.35	+	
		Unit- VI	140.21	-	-	-	
		<b>Total</b>	<b>860.74</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.668%</b>		
2	720MW MHP	Unit-I	130.21	400kV MHP - Jigmeling Line - I	244.56	+	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 9.88 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	91.89	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.79	400kV MHP - Jigmeling Line - III	246.01	+	
		Unit-IV	140.59	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)	4.90	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	117.08	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	180.81	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	180.81	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	32.50	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	32.80	+	
		-	-	220kV Tsirang - Jigmeling Line	63.28	+	
-	-	132kV Gelephu - Salakati Line	20.99	+			
<b>Total</b>	<b>493.48</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.590%</b>				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	91.21	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	91.27	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	104.56	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	57.60	+	
		-	-	220kV Malbase - Birpara Line	68.54	+	
		-	-	66kV CHP - Chumdo Line	11.82	+	
		-	-	66kV CHP - Gedu Line	5.17	+	
		-	-	3x3MVA, 66/11kV TFR	1.50	+	
		<b>Total</b>	<b>365.34</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.605%</b>		
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	44.21	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	29.10	+	
		<b>Total</b>	<b>24.60</b>	220kV BHP - Tsirang Line	-9.25	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-6.72	-	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>2.184%</b>		
6	126MW DHP	Unit-I	46.37	220kV DHP - Tsirang Line	76.43	+	220kV DHP_Dagapela Line on standby.
		Unit-II	30.02	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.20	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>76.39</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>-0.445%</b>		
7	60MW KHP	Unit- I	16.51	132kV KHP - Nangkhoh Line	35.38	+	
		Unit-II	16.56	132kV KHP - Kilikhar Line	28.34	+	
		Unit- III	15.62	5MVA, 132/11kV TFR	0.45	+	
		Unit- IV	16.18	132kV Motanga - Rangia Line	49.58	+	
		<b>Total</b>	<b>64.87</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.079%</b>		

**Note: Generation-Load Summary (MW) for September 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) at Generator end.
1	Western Grid	1,368.87	294.16	287.29	1,011.43	6.87
2	Eastern Grid	558.35	72.36	68.75	549.27	3.61
	<b>Total</b>	<b>1,927.22</b>	<b>366.52</b>	<b>356.04</b>	<b>1,560.70</b>	<b>10.48</b>

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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	1,682.25	186.43	167.59	1,396.82	18.84
2	Eastern Grid	658.50	68.11	64.83	689.39	3.28
	<b>Total</b>	<b>2,340.75</b>	<b>254.54</b>	<b>232.42</b>	<b>2,086.21</b>	<b>22.12</b>

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

- 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:
  - 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.

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<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	137.25	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	136.55	400kV THP - Siliguri Line - II	268.78	+	
		Unit- III	138.50	400kV THP - Siliguri Line- IV	255.87	+	
		Unit- IV	139.15	400kV THP - Malbase Line - III	300.66	+	
		Unit- V	138.01	400kV Malbase - Siliguri Line	240.83	+	
		Unit- VI	140.57	-	-	-	
		<b>Total</b>	<b>830.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.569%</b>		
2	720MW MHP	Unit-I	159.86	400kV MHP - Jigmeling Line - I	320.90	+	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 11.47 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	160.19	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	160.71	400kV MHP - Jigmeling Line - III	322.20	+	
		Unit-IV	165.61	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)	-6.90	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	157.08	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	242.36	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	242.36	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	29.50	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	29.80	+	
		-	-	220kV Tsirang - Jigmeling Line	68.47	+	
-	-	132kV Gelephu - Salakati Line	20.72	+			
<b>Total</b>	<b>646.37</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.506%</b>				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	88.55	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	88.61	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	130.23	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	41.21	+	
		-	-	220kV Malbase - Birpara Line	43.39	+	
		-	-	66kV CHP - Chumdo Line	7.10	+	
		-	-	66kV CHP - Gedu Line	5.70	+	
		-	-	3x3MVA, 66/11kV TFR	0.80	+	
<b>Total</b>	<b>365.34</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.859%</b>				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	43.90	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	27.60	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-6.63	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	4.38	+	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.814%</b>		
6	126MW DHP	Unit-I	48.39	220kV DHP - Tsirang Line	77.89	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.60	+	
		-	-	5MVA, 220/33kV TFR	0.48	+	
		<b>Total</b>	<b>78.38</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.013%</b>		
7	60MW KHP	Unit- I	16.58	132kV KHP - Nangkhoh Line	37.26	+	
		Unit-II	16.61	132kV KHP - Kilikhar Line	26.50	+	
		Unit- III	15.26	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.30	132kV Motanga - Rangia Line	56.21	+	
		<b>Total</b>	<b>64.75</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.035%</b>		

**Note: Generation-Load Summary (MW) for September 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) at Generator end.
1	Western Grid	1,340.05	285.55	278.74	986.03	6.81
2	Eastern Grid	711.12	60.86	56.92	718.73	3.94
	<b>Total</b>	<b>2,051.17</b>	<b>346.41</b>	<b>335.66</b>	<b>1,704.76</b>	<b>10.75</b>

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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	1,679.70	180.39	163.86	1,318.31	16.53
2	Eastern Grid	659.07	55.43	51.28	684.64	4.15
	<b>Total</b>	<b>2,338.77</b>	<b>235.82</b>	<b>215.14</b>	<b>2,002.95</b>	<b>20.68</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.
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