

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>July 29, 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	156.00	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri Line I. THP Unit IV, V and VI under emergency shutdown.
		Unit- II	99.34	400kV THP - Siliguri Line - II	114.20	+	
		Unit- III	98.25	400kV THP - Siliguri Line- IV	108.65	+	
		Unit- IV	0.00	400kV THP - Malbase Line - III	129.31	+	
		Unit- V	0.00	400kV Malbase - Siliguri Line	102.32	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>353.59</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.404%</b>		
2	720MW MHP	Unit-I	197.76	400kV MHP - Jigmeling Line - I	294.21	+	Unit-III under Restoration . 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II(Interim) under shutdown.
		Unit-II	197.42	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.72	+	
		Unit-IV	197.87	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)	-21.58	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	151.38	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	226.98	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	226.23	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	32.04	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	32.13	+	
		-	-	220kV Tsirang - Jigmeling Line	89.66	+	
-	-	132kV Gelephu - Salakati Line	22.67	+			
<b>Total</b>	<b>593.05</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.526%</b>				
3	336MW CHP	Unit- I	92.10	220kV CHP - Birpara Line- I	94.07	+	
		Unit- II	90.47	220kV CHP - Birpara Line- II	93.88	+	
		Unit- III	92.35	220kV CHP - Malbase Line- III	145.22	+	
		Unit- IV	92.16	220kV CHP - Semtokha Line- IV	15.82	+	
		-	-	220kV Malbase - Birpara Line	41.54	+	
		-	-	66kV CHP - Chumdo Line	8.64	+	
		-	-	66kV CHP - Gedu Line	6.11	+	
		-	-	3x3MVA, 66/11kV TFR	1.10	+	
		<b>Total</b>	<b>367.08</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.610%</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	45.50	+	
		Unit- II	12.10	66kV BHP - Lobeysa Line	25.20	+	
		<b>Total</b>	<b>24.40</b>	220kV BHP - Tsirang Line	-6.31	-	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.88	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	3.35	+	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.256%</b>		
6	126MW DHP	Unit-I	50.42	220kV DHP - Tsirang Line	99.43	+	220kV DHP_Dagapela Line on standby.
		Unit-II	49.51	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.87	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>99.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.200%</b>		
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	37.91	+	
		Unit-II	16.57	132kV KHP - Kilikhar Line	27.52	+	
		Unit- III	16.48	5MVA, 132/11kV TFR	0.50	+	
		Unit- IV	16.54	132kV Motanga - Rangia Line	43.91	+	
		<b>Total</b>	<b>66.08</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.227%</b>		

**Note: Generation-Load Summary (MW) for July 29, 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	886.70	242.38	239.55	554.66	2.83
2	Eastern Grid	659.13	77.62	74.35	671.17	3.27
	<b>Total</b>	<b>1,545.83</b>	<b>320.00</b>	<b>313.90</b>	<b>1,225.83</b>	<b>6.10</b>

**Note: Generation-Load Summary for July 29, 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	1,679.64	228.68	210.39	1,365.65	18.29
2	Eastern Grid	659.70	50.44	48.05	694.57	2.39
	<b>Total</b>	<b>2,339.34</b>	<b>279.12</b>	<b>258.44</b>	<b>2,060.22</b>	<b>20.68</b>

**NOTE-BHP & MHP 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.

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>July 30, 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	166.77	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri Line I under breakdown.
		Unit- II	166.69	400kV THP - Siliguri Line - II	257.00	+	
		Unit- III	167.05	400kV THP - Siliguri Line- IV	245.01	+	
		Unit- IV	158.01	400kV THP - Malbase Line - III	282.95	+	
		Unit- V	127.94	400kV Malbase - Siliguri Line	231.86	+	
		Unit- VI	2.43	-	-	-	
		<b>Total</b>	<b>788.89</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.498%</b>		
2	720MW MHP	Unit-I	197.86	400kV MHP - Jigmeling Line - I	293.44	+	Unit-III under Restoration. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) under standby.
		Unit-II	197.37	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.25	+	
		Unit-IV	197.75	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)	-51.70	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	158.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	237.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	237.00	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.90	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	28.90	+	
		-	-	220kV Tsirang - Jigmeling Line	111.50	+	
-	-	132kV Gelephu - Salakati Line	19.69	+			
<b>Total</b>	<b>592.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.723%</b>				
3	336MW CHP	Unit- I	92.10	220kV CHP - Birpara Line- I	97.05	+	
		Unit- II	90.47	220kV CHP - Birpara Line- II	96.95	+	
		Unit- III	92.35	220kV CHP - Malbase Line- III	155.82	+	
		Unit- IV	92.16	220kV CHP - Semtokha Line- IV	2.11	+	
		-	-	220kV Malbase - Birpara Line	38.04	+	
		-	-	66kV CHP - Chumdo Line	6.01	+	
		-	-	66kV CHP - Gedu Line	6.14	+	
		-	-	3x3MVA, 66/11kV TFR	0.70	+	
		<b>Total</b>	<b>367.08</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.627%</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	50.80	+	
		Unit- II	12.20	66kV BHP - Lobeysha Line	25.20	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-11.18	-	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	1.96	+	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.725%</b>		
6	126MW DHP	Unit-I	63.61	220kV DHP - Tsirang Line	126.19	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.24	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.10	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.85</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.284%</b>		
7	60MW KHP	Unit- I	16.55	132kV KHP - Nangkhon Line	29.32	+	Unit IV tripped at 08:26 hrs.
		Unit-II	16.58	132kV KHP - Kilikhar Line	19.57	+	
		Unit- III	16.48	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	29.17	+	
		<b>Total</b>	<b>49.61</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.645%</b>		

**Note: Generation-Load Summary (MW) for July 30, 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	1,349.02	271.61	265.64	965.91	5.97
2	Eastern Grid	642.59	72.43	67.82	681.66	4.61
	<b>Total</b>	<b>1,991.61</b>	<b>344.04</b>	<b>333.46</b>	<b>1,647.57</b>	<b>10.58</b>

**Note: Generation-Load Summary for July 30, 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	1,678.23	216.93	201.24	1,386.17	15.69
2	Eastern Grid	660.05	42.92	38.28	692.26	4.64
	<b>Total</b>	<b>2,338.28</b>	<b>259.85</b>	<b>239.52</b>	<b>2,078.43</b>	<b>20.33</b>

**NOTE- BHP & MHP data collected from site**

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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.
  - The clocks of all the locations are not synchronized.
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