

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>June 30, 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	186.64	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri Line I under maintenance.
		Unit- II	185.05	400kV THP - Siliguri Line - II	356.12	+	
		Unit- III	186.00	400kV THP - Siliguri Line- IV	341.81	+	
		Unit- IV	184.70	400kV THP - Malbase Line - III	405.88	+	
		Unit- V	185.75	400kV Malbase - Siliguri Line	320.22	+	
		Unit- VI	185.03	-	-	-	
		<b>Total</b>	<b>1,113.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.841%</b>		
2	720MW MHP	Unit-I	197.48	400kV MHP - Jigmeling Line - I	294.20	+	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 I(Interim) under shutdown
		Unit-II	197.73	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.91	+	
		Unit-IV	197.82	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)	-38.80	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	154.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	232.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	232.80	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	36.40	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	36.20	+	
		-	-	220kV Tsirang - Jigmeling Line	114.30	+	
-	-	132kV Gelephu - Salakati Line	22.33	+			
<b>Total</b>	<b>593.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.492%</b>				
3	336MW CHP	Unit- I	91.35	220kV CHP - Birpara Line- I	102.43	+	
		Unit- II	91.34	220kV CHP - Birpara Line- II	102.14	+	
		Unit- III	91.66	220kV CHP - Malbase Line- III	136.34	+	
		Unit- IV	91.87	220kV CHP - Semtokha Line- IV	8.92	+	
		-	-	220kV Malbase - Birpara Line	60.53	+	
		-	-	66kV CHP - Chumdo Line	8.17	+	
		-	-	66kV CHP - Gedu Line	5.10	+	
		-	-	3x3MVA, 66/11kV TFR	1.20	+	
		<b>Total</b>	<b>366.22</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.524%</b>		
4	24MW BHP (U/S)	Unit- I	12.20	220kV BHP - Semtokha Line	47.44	+	30MVA ICT(220/66kV) under shutdown.
		Unit- II	12.10	66kV BHP - Lobeysa Line	23.10	+	
		<b>Total</b>	<b>24.30</b>	220kV BHP - Tsirang Line	-6.42	-	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	20.10	30MVA ICT, 220/66kV (HV)	0.00		
		<b>Total</b>	<b>40.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>-0.324%</b>		
6	126MW DHP	Unit-I	63.64	220kV DHP - Tsirang Line	126.25	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.08	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.70	+	
		-	-	5MVA, 220/33kV TFR	0.28	+	
		<b>Total</b>	<b>126.72</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.150%</b>		
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkor Line	-9.90	-	All the units at KHP tripped.
		Unit-II	0.00	132kV KHP - Kilikhar Line	9.00	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.89	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	38.33	+	
		<b>Total</b>	<b>0.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.000%</b>		

**Note: Generation-Load Summary (MW) for June 30, 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	1,670.91	273.36	263.80	1,283.25	9.56
2	Eastern Grid	593.03	26.87	23.94	680.46	2.93
<b>Total</b>		<b>2,263.94</b>	<b>300.23</b>	<b>287.74</b>	<b>1,963.71</b>	<b>12.49</b>

**Note: Generation-Load Summary for June 30, 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	1,550.49	199.82	181.48	1,268.37	18.34
2	Eastern Grid	820.10	58.49	56.99	843.91	1.50
<b>Total</b>		<b>2,370.59</b>	<b>258.31</b>	<b>238.47</b>	<b>2,112.28</b>	<b>19.84</b>

**NOTE-BHP, KHP and MHEP 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>July 1, 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	187.00	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri Line I under maintenance.
		Unit- II	187.00	400kV THP - Siliguri Line - II	362.00	+	
		Unit- III	187.00	400kV THP - Siliguri Line- IV	400.00	+	
		Unit- IV	187.00	400kV THP - Malbase Line - III	346.00	+	
		Unit- V	187.00	400kV Malbase - Siliguri Line	324.00	+	
		Unit- VI	187.00	-	-	-	
		<b>Total</b>	<b>1,122.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.248%</b>		
2	720MW MHP	Unit-I	197.95	400kV MHP - Jigmeling Line - I	294.16	+	Unit-III on Restoration. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) under shutdown.
		Unit-II	197.90	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.73	+	
		Unit-IV	197.66	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)	70.64	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	162.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	245.50	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	245.50	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.40	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.40	+	
		-	-	220kV Tsirang - Jigmeling Line	121.93	+	
-	-	132kV Gelephu - Salakati Line	25.98	+			
<b>Total</b>	<b>593.51</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.610%</b>				
3	336MW CHP	Unit- I	92.00	220kV CHP - Birpara Line- I	102.38	+	
		Unit- II	92.00	220kV CHP - Birpara Line- II	101.64	+	
		Unit- III	92.00	220kV CHP - Malbase Line- III	144.99	+	
		Unit- IV	92.00	220kV CHP - Semtokha Line- IV	5.65	+	
		-	-	220kV Malbase - Birpara Line	54.00	+	
		-	-	66kV CHP - Chumdo Line	5.70	+	
		-	-	66kV CHP - Gedu Line	4.50	+	
		-	-	3x3MVA, 66/11kV TFR	0.80	+	
<b>Total</b>	<b>368.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.636%</b>				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	42.90	+	30MVA ICT(220/66kV) under shutdown
		Unit- II	12.10	66kV BHP - Lobeysa Line	22.65	+	
		<b>Total</b>	<b>24.40</b>	220kV BHP - Tsirang Line	-2.09	-	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.95	+	
		Unit- II	20.80	30MVA ICT, 220/66kV (HV)	0.00		
		<b>Total</b>	<b>41.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.814%</b>		
6	126MW DHP	Unit-I	63.62	220kV DHP - Tsirang Line	126.47	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.23	220kV DHP - Dagapela Line			
		-	-	220kV Jigmeling - Dagapela Line	1.40	+	
		-	-	5MVA, 220/33kV TFR		+	
		<b>Total</b>	<b>126.85</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.300%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkor Line	41.07	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	24.27	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	41.30	+	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.485%</b>		

**Note: Generation-Load Summary (MW) for July 01, 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	1,682.45	216.50	199.99	1,344.02	16.51
2	Eastern Grid	659.51	60.96	57.02	720.48	3.94
	<b>Total</b>	<b>2,341.96</b>	<b>277.46</b>	<b>257.01</b>	<b>2,064.50</b>	<b>20.45</b>

**Note: Generation-Load Summary for July 01, 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	1,569.56	214.14	198.00	1,279.15	16.14
2	Eastern Grid	822.75	46.98	43.07	852.04	3.91
	<b>Total</b>	<b>2,392.31</b>	<b>261.12</b>	<b>241.07</b>	<b>2,131.19</b>	<b>20.05</b>

**NOTE-BHP, CHP,THP,DHP and MHEP 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.

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