

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

Maximum Load/Demand till Date

Date:	April 18, 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	79.09	400kV THP - Siliguri Line - I	35.11	+	Unit-II & III under AMP. Unit-IV & VI on standby. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Line - III	129.16	+	
		Unit- V	90.13	400kV Malbase - Siliguri Line	12.99	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>169.22</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.925%</b>	
2	720MW MHP	Unit-I	60.30	400kV MHP - Jigmeling Line - I	158.56	+	Unit-III under breakdown. Unit-IV under AMP. 400kV MHP_JLG Line II,III & IV Standby. 400kV JLG_ALI line II Standby. 132kV MHP_Yurmoo line I & II are not in service.
		Unit-II	99.90	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)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	157.60	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	8.60	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	8.70	+	
		-	-	220kV Tsirang - Jigmeling Line	20.55	+	
		-	-	132kV Gelephu - Salakati Line	-25.95	-	
<b>Total</b>	<b>160.20</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.024%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	-13.38	-	Unit-I Standby. Unit-IV under AMP. 220kV CHP_BIR line II standby.
		Unit- II	43.22	220kV CHP - Birpara Line- II	0.00		
		Unit- III	43.74	220kV CHP - Malbase Line- III	12.74	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	66.06	+	
		-	-	220kV Malbase - Birpara Line	-31.00	-	
		-	-	66kV CHP - Chumdo Line	14.89	+	
		-	-	66kV CHP - Gedu Line	2.55	+	
		-	-	3x3MVA, 66/11kV TFR	1.80	+	
<b>Total</b>	<b>86.96</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.645%</b>			
4	24MW BHP (U/S)	Unit- I	4.10	220kV BHP - Semtokha Line	0.45	+	U/S Unit-II Standby. L/S Unit-II AMP
		Unit- II	0.00	66kV BHP - Lobeysa Line	12.10	+	
		<b>Total</b>	<b>4.10</b>	220kV BHP - Tsirang Line	-0.34	-	
	40MW BHP (L/S)	Unit- I	8.80	5MVA, 66/11kV TFR	0.88	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	8.80	+	
<b>Total</b>	<b>8.80</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-1.473%</b>			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	14.21	+	Unit-I Standby.
		Unit-II	14.49	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.10	+	
		-	-	5MVA, 220/33kV TFR	0.08	+	
		<b>Total</b>	<b>14.49</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.380%</b>	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	12.33	+	Unit-I & II Standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	16.84	+	
		Unit- III	15.04	5MVA, 132/11kV TFR	0.65	+	
		Unit- IV	15.02	132kV Motanga - Rangia Line	3.31	+	
		<b>Total</b>	<b>30.06</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.798%</b>	

**Note: Generation-Load Summary (MW) for April 18, 2021 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	283.57	259.30	254.14	3.72	5.16
2	Eastern Grid	190.26	75.85	73.97	134.96	1.88
<b>Total</b>		<b>473.83</b>	<b>335.15</b>	<b>328.11</b>	<b>138.68</b>	<b>7.04</b>

**Note: Generation-Load Summary for April 18, 2020 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	484.75	238.23	229.68	246.52	8.55
2	Eastern Grid	284.39	45.66	43.74	238.73	1.92
<b>Total</b>		<b>769.14</b>	<b>283.89</b>	<b>273.42</b>	<b>485.25</b>	<b>10.47</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

Date:	April 19, 2021
Hours:	09:00 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	81.59	400kV THP - Siliguri Line - I	51.50	+	Unit II & III on standby. Unit IV & VI under AMP. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Line - III	104.54	+	
		Unit- V	79.95	400kV Malbase - Siliguri Line	36.67	+	
		Unit- VI	0.00		-	-	
		<b>Total</b>	<b>161.54</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>3.405%</b>	
2	720MW MHP	Unit-I	110.30	400kV MHP - Jigmeling Line - I	189.99	+	Unit-III under breakdown & Unit-IV under AMP. 400kV MHP-JLG Line II ,III & IV on standby. 400kV JLG_ALI line II on Standby. 132kV MHP_Yurmoo lines not in service.
		Unit-II	80.21	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)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	187.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	4.30		
		-	-	80MVA, 220/132kV ICT - II (HV)	4.30		
				220kV Tsirang - Jigmeling Line	9.66	+	
				132kV Gelephu - Salakati Line	-14.58	-	
<b>Total</b>	<b>190.51</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.273%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.79	+	Unit-I on Standby. Unit-IV under AMP. 220kV CHP-BIR line II standby.
		Unit- II	51.17	220kV CHP - Birpara Line- II	0.00		
		Unit- III	50.46	220kV CHP - Malbase Line- III	61.88	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	26.19	+	
		-	-	220kV Malbase - Birpara Line	-46.59	-	
		-	-	66kV CHP - Chumdo Line	8.28	+	
		-	-	66kV CHP - Gedu Line	3.60		
		-	-	3x3MVA, 66/11kV TFR	0.90	+	
<b>Total</b>	<b>101.63</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-0.010%</b>			
4	24MW BHP (U/S)	Unit- I	4.40	220kV BHP - Semtokha Line	10.10	+	U/S Unit-II Standby. L/S Unit-II under Shutdown
		Unit- II	0.00	66kV BHP - Lobeyasa Line	9.10	+	
		<b>Total</b>	<b>4.40</b>	220kV BHP - Tsirang Line	-6.23	-	
	40MW BHP (L/S)	Unit- I	9.40	5MVA, 66/11kV TFR	0.88	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	5.58	+	
<b>Total</b>	<b>9.40</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-0.362%</b>			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	15.05	+	Unit-I standby.
		Unit-II	15.26	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR	0.08	+	
		<b>Total</b>	<b>15.26</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.852%</b>	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	21.99	+	Unit-I standby.
		Unit-II	12.08	132kV KHP - Kilikhar Line	13.56	+	
		Unit- III	12.02	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	12.13	132kV Motanga - Rangia Line	4.25	+	
		<b>Total</b>	<b>36.23</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.938%</b>	

**Note: Generation-Load Summary (MW) for April 19, 2021 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	292.23	240.20	235.53	42.37	4.67
2	Eastern Grid	226.74	58.93	58.07	177.47	0.86
<b>Total</b>		<b>518.97</b>	<b>299.13</b>	<b>293.60</b>	<b>219.84</b>	<b>5.53</b>

**Note: Generation-Load Summary for April 19, 2020 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	447.49	200.08	192.38	247.41	7.70
2	Eastern Grid	387.90	38.51	37.04	349.39	1.47
<b>Total</b>		<b>835.39</b>	<b>238.59</b>	<b>229.42</b>	<b>596.80</b>	<b>9.17</b>

**NOTE- BHP & MHP 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.