

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>May 14, 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	0.00	400kV THP - Siliguri Line - I	139.20	+	Unit-I & III under AMP. 400kV THP_SIL Line II & IV on Standby.
		Unit- II	61.12	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	62.71	400kV THP - Malbase Line - III	196.59	+	
		Unit- V	70.52	400kV Malbase - Siliguri Line	116.27	+	
		Unit- VI	140.47	-	-	-	
		<b>Total</b>	<b>334.82</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-0.290%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit-I on standby. Unit -III under breakdown. 400kV MHP-JLG Line I & III on standby. 132kV MHP_Yurmo line I & II not in service. 400/220kV ICT at JLG not in service. 400kV JLG_ALI line II on standby.
		Unit-II	84.85	400kV MHP - Jigmeling Line - II	117.05	+	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	150.68	400kV MHP - Jigmeling Line - IV	117.27	+	
		-	-	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	232.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	10.10	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.10	+	
		-	-	220kV Tsirang - Jigmeling Line	21.87	+	
		-	-	132kV Gelephu - Salakati Line	-17.61	-	
<b>Total</b>	<b>235.53</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.514%</b>			
3	336MW CHP	Unit- I	50.36	220kV CHP - Birpara Line- I	24.33	+	Unit-II on standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	24.38	+	
		Unit- III	60.16	220kV CHP - Malbase Line- III	60.82	+	
		Unit- IV	58.19	220kV CHP - Semtokha Line- IV	40.17	+	
		-	-	220kV Malbase - Birpara Line	-6.31	-	
		-	-	66kV CHP - Chumdo Line	11.00	+	
		-	-	66kV CHP - Gedu Line	4.98	+	
		-	-	3x3MVA, 66/11kV TFR	1.50	+	
<b>Total</b>	<b>168.71</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.907%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	6.10	+	U/S Unit-I & L/S Unit I on standby.
		Unit- II	6.60	66kV BHP - Lobeyasa Line	8.00	+	
		<b>Total</b>	<b>6.60</b>	220kV BHP - Tsirang Line	5.46	+	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	14.60	30MVA ICT, 220/66kV (HV)	-2.34	-	
<b>Total</b>	<b>14.60</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>3.491%</b>			
5	126MW DHP	Unit-I	20.21	220kV DHP - Tsirang Line	20.01	+	Unit-II on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.60	+	
		-	-	5MVA, 220/33kV TFR	0.01	+	
		<b>Total</b>	<b>20.21</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.940%</b>	
6	60MW KHP	Unit- I	11.06	132kV KHP - Nangkhor Line	24.15	+	
		Unit-II	11.05	132kV KHP - Kilikhar Line	19.15	+	
		Unit- III	11.07	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	11.14	132kV Motanga - Rangia Line	20.01	+	
		<b>Total</b>	<b>44.32</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.627%</b>	

**Note: Generation-Load Summary (MW) for May 14, 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	544.94	225.20	225.31	297.87	-0.11
2	Eastern Grid	279.85	67.12	65.19	234.60	1.93
<b>Total</b>		<b>824.79</b>	<b>292.32</b>	<b>290.50</b>	<b>532.47</b>	<b>1.82</b>

**Note: Generation-Load Summary for May 14, 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	485.64	225.94	218.03	226.97	7.91
2	Eastern Grid	245.00	65.07	62.94	212.66	2.13
<b>Total</b>		<b>730.64</b>	<b>291.01</b>	<b>280.97</b>	<b>439.63</b>	<b>10.04</b>

**NOTE-BHP & MHP data collected 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>May 15, 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	0.00	400kV THP - Siliguri Line - I	117.26	+	Unit-I & III under AMP. 400kV THP_SIL Line II & IV on Standby.
		Unit- II	67.28	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	61.83	400kV THP - Malbase Line - III	156.90	+	
		Unit- V	71.47	400kV Malbase - Siliguri Line	101.32	+	
		Unit- VI	79.78		-	-	
		<b>Total</b>	<b>280.36</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.211%</b>	
2	720MW MHP	Unit-I	60.35	400kV MHP - Jigmeling Line - I	0.00		Unit -III under breakdown. 400kV MHP-JLG Line I & III on standby. 132kV MHP_Yurmoo line I & II not in service. 400/220kV ICT at JLG not in service. 400kV JLG_ALI line II on standby.
		Unit-II	65.14	400kV MHP - Jigmeling Line - II	127.21	+	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	130.72	400kV MHP - Jigmeling Line - IV	127.38	+	
		-	-	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	252.70	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	5.10	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	5.10	+	
		-	-	220kV Tsirang - Jigmeling Line	11.14	+	
		-	-	132kV Gelephu - Salakati Line	-7.43	-	
<b>Total</b>	<b>256.21</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.632%</b>			
3	336MW CHP	Unit- I	55.75	220kV CHP - Birpara Line- I	24.91	+	Unit- II on standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	25.19	+	
		Unit- III	48.84	220kV CHP - Malbase Line- III	74.71	+	
		Unit- IV	51.87	220kV CHP - Semtokha Line- IV	18.78	+	
		-	-	220kV Malbase - Birpara Line	-15.79	-	
		-	-	66kV CHP - Chumdo Line	7.33	+	
		-	-	66kV CHP - Gedu Line	4.26	+	
		-	-	3x3MVA, 66/11kV TFR	0.90	+	
<b>Total</b>	<b>156.46</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.243%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	17.27	+	U/S Unit-I & L/S Unit-I under standby.
		Unit- II	6.20	66kV BHP - Lobeyasa Line	6.90	+	
		<b>Total</b>	<b>6.20</b>	220kV BHP - Tsirang Line	-5.47	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	13.10	30MVA ICT, 220/66kV (HV)	1.58	+	
<b>Total</b>	<b>13.10</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-1.503%</b>			
5	126MW DHP	Unit-I	17.76	220kV DHP - Tsirang Line	17.64	+	Unit-II on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR	0.12	+	
		<b>Total</b>	<b>17.76</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.000%</b>	
6	60MW KHP	Unit- I	11.96	132kV KHP - Nangkhor Line	30.50	+	
		Unit-II	11.98	132kV KHP - Kilikhar Line	15.93	+	
		Unit- III	11.96	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	11.43	132kV Motanga - Rangia Line	19.95	+	
		<b>Total</b>	<b>47.33</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.268%</b>	

**Note: Generation-Load Summary (MW) for May 15, 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	473.88	209.85	204.46	252.89	5.39
2	Eastern Grid	303.54	49.46	47.24	265.22	2.22
<b>Total</b>		<b>777.42</b>	<b>259.31</b>	<b>251.70</b>	<b>518.11</b>	<b>7.61</b>

**Note: Generation-Load Summary for May 15, 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	488.33	199.92	191.32	268.16	8.60
2	Eastern Grid	380.64	48.53	46.89	352.36	1.64
<b>Total</b>		<b>868.97</b>	<b>248.45</b>	<b>238.21</b>	<b>620.52</b>	<b>10.24</b>

**NOTE-BHP, LG & MHP data collected 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.
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