

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>May 4, 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	118.98	400kV THP - Siliguri Line - I	84.61		Unit-II & VI on standby. Unit-III & IV under AMP. 400kV THP_SIL Line II & 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	154.47	+	
		Unit- V	119.42	400kV Malbase - Siliguri Line	64.22	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>238.40</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-0.285%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	99.78	+	Unit-I under AMP. Unit -III under breakdown. 400kV MHP-JLG Line II & 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	50.15	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	150.55	400kV MHP - Jigmeling Line - IV	100.34	+	
		-	-	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	197.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	10.30	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.30	+	
		-	-	220kV Tsirang - Jigmeling Line	22.59	+	
		-	-	132kV Gelephu - Salakati Line	-17.60	-	
<b>Total</b>	<b>200.70</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.289%</b>			
3	336MW CHP	Unit- I	64.67	220kV CHP - Birpara Line- I	8.85	+	Unit-II on standby. Unit-IV under AMP.
		Unit- II	0.00	220kV CHP - Birpara Line- II	8.87	+	
		Unit- III	61.83	220kV CHP - Malbase Line- III	37.81	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	51.73	+	
		-	-	220kV Malbase - Birpara Line	-14.81	-	
		-	-	66kV CHP - Chumdo Line	13.03	+	
		-	-	66kV CHP - Gedu Line	4.36	+	
		-	-	3x3MVA, 66/11kV TFR	1.80	+	
<b>Total</b>	<b>126.50</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.040%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	2.89	+	U/S Unit-I & L/S Unit-II on standby
		Unit- II	6.90	66kV BHP - Lobeyasa Line	13.46	+	
		<b>Total</b>	<b>6.90</b>	220kV BHP - Tsirang Line	2.36	+	
	40MW BHP (L/S)	Unit- I	13.10	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	6.56	+	
<b>Total</b>	<b>13.10</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.000%</b>			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	23.96	+	Unit-I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	24.19	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.80	+	
		-	-	5MVA, 220/33kV TFR	0.20	+	
		<b>Total</b>	<b>24.19</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.124%</b>	
6	60MW KHP	Unit- I	14.04	132kV KHP - Nangkhor Line	23.01	+	Unit- IV Standby.
		Unit-II	14.06	132kV KHP - Kilikhar Line	18.18	+	
		Unit- III	14.11	5MVA, 132/11kV TFR	0.58	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	7.25	+	
		<b>Total</b>	<b>42.21</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.042%</b>	

**Note: Generation-Load Summary (MW) for May 04, 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	409.09	234.76	236.76	151.74	-2.00
2	Eastern Grid	242.91	78.05	77.03	187.45	1.02
<b>Total</b>		<b>652.00</b>	<b>312.81</b>	<b>313.79</b>	<b>339.19</b>	<b>-0.98</b>

**Note: Generation-Load Summary for May 04, 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	760.29	219.32	206.14	508.02	13.18
2	Eastern Grid	352.57	59.60	55.65	325.92	3.95
<b>Total</b>		<b>1,112.86</b>	<b>278.92</b>	<b>261.79</b>	<b>833.94</b>	<b>17.13</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

Date:	May 5, 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	137.73	400kV THP - Siliguri Line - I	115.17	+	Unit-II & VI on standby. Unit-III & IV under AMP. 400kV THP_SIL Line II & 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	167.19	+	
		Unit- V	149.45	400kV Malbase - Siliguri Line	95.38	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>287.18</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.678%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	104.72	+	Unit-I under AMP. Unit -III under breakdown. 400kV MHP-JLG Line II & 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	80.17	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	130.42	400kV MHP - Jigmeling Line - IV	105.41	+	
		-	-	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	208.30	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	9.20	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	9.30	+	
		-	-	220kV Tsirang - Jigmeling Line	19.53	+	
		-	-	132kV Gelephu - Salakati Line	-11.07	-	
<b>Total</b>	<b>210.59</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.218%</b>			
3	336MW CHP	Unit- I	74.31	220kV CHP - Birpara Line- I	18.31	+	
		Unit- II	0.00	220kV CHP - Birpara Line- II	18.27	+	
		Unit- III	76.33	220kV CHP - Malbase Line- III	65.27	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	33.94	+	
		-	-	220kV Malbase - Birpara Line	-20.58	-	
		-	-	66kV CHP - Chumdo Line	8.25	+	
		-	-	66kV CHP - Gedu Line	5.07	+	
		-	-	3x3MVA, 66/11kV TFR	0.90	+	
<b>Total</b>	<b>150.64</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.418%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	4.70	+	U/S Unit-I & L/S Unit-II on standby
		Unit- II	5.30	66kV BHP - Lobeyasa Line	9.80	+	
		<b>Total</b>	<b>5.30</b>	220kV BHP - Tsirang Line	0.96	+	
	40MW BHP (L/S)	Unit- I	11.40	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	5.76	+	
<b>Total</b>	<b>11.40</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.096%</b>			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	19.68	+	Unit-I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	19.94	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR	0.29	+	
		<b>Total</b>	<b>19.94</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-0.150%</b>	
6	60MW KHP	Unit- I	10.07	132kV KHP - Nangkhor Line	16.33	+	Unit- IV standby.
		Unit-II	10.09	132kV KHP - Kilikhar Line	13.16	+	
		Unit- III	10.06	5MVA, 132/11kV TFR	0.35	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	5.84	+	
		<b>Total</b>	<b>30.22</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.257%</b>	

**Note: Generation-Load Summary (MW) for May 05, 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	474.46	228.38	223.51	226.55	4.87
2	Eastern Grid	240.81	57.27	56.43	203.07	0.84
<b>Total</b>		<b>715.27</b>	<b>285.65</b>	<b>279.94</b>	<b>429.62</b>	<b>5.71</b>

**Note: Generation-Load Summary for May 05, 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	891.90	202.18	192.08	657.58	10.10
2	Eastern Grid	435.95	47.51	43.74	420.58	3.77
<b>Total</b>		<b>1,327.85</b>	<b>249.69</b>	<b>235.82</b>	<b>1,078.16</b>	<b>13.87</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.

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