

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

Maximum Load/Demand till Date

Date:	April 21, 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	99.16	400kV THP - Siliguri Line - I	46.60	+	Unit- III under AMP. Unit-II, 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	147.13	+	
		Unit- V	99.98	400kV Malbase - Siliguri Line	22.21	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>199.14</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.717%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	+	Unit I Standby Unit-III under breakdown. 400kV MHP_JLG Line I & III Standby. 132kV MHP_Yurmo line I & II are not in service. 400/220kV ICT at JLG not in service
		Unit-II	70.19	400kV MHP - Jigmeling Line - II	67.63		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	65.53	400kV MHP - Jigmeling Line - IV	67.76	+	
		-	-	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	66.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	65.40	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	4.50	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	4.50	+	
		-	-	220kV Tsirang - Jigmeling Line	11.14	+	
		-	-	132kV Gelephu - Salakati Line	-39.33	-	
<b>Total</b>	<b>135.72</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.243%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	7.68	+	Unit-I Standby. Unit-IV under AMP. 220kV CHP_BIR line II standby.
		Unit- II	47.49	220kV CHP - Birpara Line- II	0.00		
		Unit- III	44.58	220kV CHP - Malbase Line- III	18.25	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	46.37	+	
		-	-	220kV Malbase - Birpara Line	-1.66	-	
		-	-	66kV CHP - Chumdo Line	11.82	+	
		-	-	66kV CHP - Gedu Line	4.04	+	
		-	-	3x3MVA, 66/11kV TFR	1.50	+	
<b>Total</b>	<b>92.07</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.618%</b>			
4	24MW BHP (U/S)	Unit- I	4.30	220kV BHP - Semtokha Line	2.03	-	U/S Unit-II .& L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	0.00	66kV BHP - Lobeyasa Line	10.40	+	
		<b>Total</b>	<b>4.30</b>	220kV BHP - Tsirang Line	0.00	+	
	40MW BHP (L/S)	Unit- I	9.00	5MVA, 66/11kV TFR	0.85	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	8.20	+	
<b>Total</b>	<b>9.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.150%</b>			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	14.26	+	Unit-I Standby.
		Unit-II	14.46	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.00	+	
		-	-	5MVA, 220/33kV TFR	0.24	+	
		<b>Total</b>	<b>14.46</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>-0.277%</b>	
6	60MW KHP	Unit- I	11.11	132kV KHP - Nangkhor Line	7.21	+	Unit-III and Unit-IV Standby.
		Unit-II	11.08	132kV KHP - Kilikhar Line	14.07	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.41	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-4.18	-	
		<b>Total</b>	<b>22.19</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.267%</b>	

**Note: Generation-Load Summary (MW) for April 21, 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	318.97	233.00	227.20	74.83	5.80
2	Eastern Grid	157.91	80.36	79.53	88.69	0.83
<b>Total</b>		<b>476.88</b>	<b>313.36</b>	<b>306.73</b>	<b>163.52</b>	<b>6.63</b>

**Note: Generation-Load Summary for April 21, 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	473.45	220.94	211.51	252.51	9.43
2	Eastern Grid	231.44	57.87	55.97	173.57	1.90
<b>Total</b>		<b>704.89</b>	<b>278.81</b>	<b>267.48</b>	<b>426.08</b>	<b>11.33</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.

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>April 22, 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	99.13	400kV THP - Siliguri Line - I	44.96	+	Unit II, IV & VI on standby. Unit III 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	119.52	+	
		Unit- V	70.32	400kV Malbase - Siliguri Line	26.11	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>169.45</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.933%</b>		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit -III under breakdown Unit-I & IV on standby 400kV MHP-JLG Line I, II & III on standby. 400kV JLG_ALI line II on Standby. 132kV MHP_Yurmo lines not in service. 400/220kV ICT at JLG not in service
		Unit-II	149.97	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	148.38	+	
		-	-	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	144.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	5.60	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	5.60	+	
		-	-	220kV Tsirang - Jigmeling Line	12.37	+	
		-	-	132kV Gelephu - Salakati Line	-23.24	-	
<b>Total</b>	<b>149.97</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.060%</b>				
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.01	+	Unit-I on Standby. Unit-IV under AMP. 220kV CHP-BIR line II standby.
		Unit- II	40.40	220kV CHP - Birpara Line- II	0.00		
		Unit- III	44.20	220kV CHP - Malbase Line- III	37.27	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	33.44	+	
		-	-	220kV Malbase - Birpara Line	-28.28	-	
		-	-	66kV CHP - Chumdo Line	8.38	+	
		-	-	66kV CHP - Gedu Line	3.58	+	
		-	-	3x3MVA, 66/11kV TFR	1.00	+	
<b>Total</b>	<b>84.60</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.087%</b>				
4	24MW BHP (U/S)	Unit- I	4.52	220kV BHP - Semtokha Line	2.52	+	U/S Unit-II .& L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	0.00	66kV BHP - Lobeyasa Line	10.30	+	
		<b>Total</b>	<b>4.52</b>	220kV BHP - Tsirang Line	0.00	+	
	40MW BHP (L/S)	Unit- I	9.10	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	7.10	+	
<b>Total</b>	<b>9.10</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.661%</b>				
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	14.03	+	Unit-I standby.
		Unit-II	14.26	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.00	+	
		-	-	5MVA, 220/33kV TFR	0.07	+	
		<b>Total</b>	<b>14.26</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.122%</b>		
6	60MW KHP	Unit- I	10.13	132kV KHP - Nangkhor Line	8.86	+	Unit-III & IV standby.
		Unit-II	10.16	132kV KHP - Kilikhar Line	10.71	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.25	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.84	+	
		<b>Total</b>	<b>20.29</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.316%</b>		

**Note: Generation-Load Summary (MW) for April 22, 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	281.93	226.76	221.80	42.80	4.96
2	Eastern Grid	170.26	61.03	58.97	121.60	2.06
<b>Total</b>		<b>452.19</b>	<b>287.79</b>	<b>280.77</b>	<b>164.40</b>	<b>7.02</b>

**Note: Generation-Load Summary for April 22, 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	337.16	207.13	200.54	130.03	6.59
2	Eastern Grid	265.16	52.10	49.40	213.06	2.70
<b>Total</b>		<b>602.32</b>	<b>259.23</b>	<b>249.94</b>	<b>343.09</b>	<b>9.29</b>

**NOTE- BHP, KHP & 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.