

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>March 29, 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	70.07	400kV THP - Siliguri Line - I	26.47	+	Unit III Standby. Unit IV, V & VI AMP 400kV THP-SIL Line II & IV on Standby.
		Unit- II	69.11	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	107.55	+	
		Unit- V	0.00	400kV Malbase - Siliguri Line	7.86	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>139.18</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>3.707%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit I & IV on Standby. Unit-III under breakdown. 400kV MHP-JLG Line I ,II & III on standby. 400kV JLG_ALI line II on Standby. 132kV MHP_Yurmo lines not in service.
		Unit-II	110.12	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	109.83	+	
		-	-	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	108.60	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	2.50	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	2.50	+	
		-	-	220kV Tsirang - Jigmeling Line	7.57	+	
<b>Total</b>	<b>110.12</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.263%</b>			
3	336MW CHP	Unit- I	37.53	220kV CHP - Birpara Line- I	-18.50	-	Unit-III on Standby. Unit IV under AMP. 220kV CHP-BIR line II on Standby.
		Unit- II	32.72	220kV CHP - Birpara Line- II	0.00		
		Unit- III	0.00	220kV CHP - Malbase Line- III	15.25	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	52.82	+	
		-	-	220kV Malbase - Birpara Line	-41.50	-	
		-	-	66kV CHP - Chumdo Line	13.95	+	
		-	-	66kV CHP - Gedu Line	3.97	+	
		-	-	3x3MVA, 66/11kV TFR		+	
<b>Total</b>	<b>70.25</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>3.929%</b>			
4	24MW BHP (U/S)	Unit- I	4.60	220kV BHP - Semtokha Line	6.00	+	U/S & L/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeysa Line	12.00	+	
		<b>Total</b>	<b>4.60</b>	220kV BHP - Tsirang Line	-4.79	-	
	40MW BHP (L/S)	Unit- I	9.60	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	0.00	30MVA ICT, 220/66kV			
<b>Total</b>	<b>9.60</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.634%</b>			
5	126MW DHP	Unit-I	15.43	220kV DHP - Tsirang Line	15.22	+	Unit-II AMP
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.40	+	
		-	-	5MVA, 220/33kV TFR			
<b>Total</b>	<b>15.43</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.361%</b>			
6	60MW KHP	Unit- I	11.48	132kV KHP - Nangkhor Line	8.59	+	Unit-IV standby. Unit-III under AMP.
		Unit-II	11.53	132kV KHP - Kilikhar Line	13.60	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.42	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Line	-26.87	-	
		-	-	132kV Motanga - Rangia Line	-4.85	-	
<b>Total</b>	<b>23.01</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.738%</b>			

**Note: Generation-Load Summary (MW) for March 29, 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	239.06	257.16	251.34	-25.67	5.82
2	Eastern Grid	133.13	63.82	63.13	76.88	0.69
<b>Total</b>		<b>372.19</b>	<b>320.98</b>	<b>314.47</b>	<b>51.21</b>	<b>6.51</b>

**Note: Generation-Load Summary for March 29, 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	466.74	234.46	228.08	204.19	6.38
2	Eastern Grid	176.00	64.00	60.73	140.09	3.27
<b>Total</b>		<b>642.74</b>	<b>298.46</b>	<b>288.81</b>	<b>344.28</b>	<b>9.65</b>

**NOTE-MHP & BHP 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:	March 30, 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	70.17	400kV THP - Siliguri Line - I	32.07	+	Unit-III on standby. Unit-IV, V & VI under AMP 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	71.17	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	104.00	+	
		Unit- V	0.00	400kV Malbase - Siliguri Line	15.24	+	
		Unit- VI	0.00	-	-	-	
		<b>Total</b>	<b>141.34</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>3.729%</b>	
2	720MW MHP	Unit-I	78.97	400kV MHP - Jigmeling Line - I	0.00		Unit II under maintenance. Unit-IV on Standby. Unit-III under breakdown. 400kV MHP-JLG Line I, II & III on standby. 400kV JLG_ALI line II on Standby. 132kV MHP_Yurmoo lines not in service.
		Unit-II	0.00	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	78.00	+	
		-	-	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	77.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	3.70	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	3.80	+	
		-	-	220kV Tsirang - Jigmeling Line	11.84	+	
<b>Total</b>	<b>78.97</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.228%</b>			
3	336MW CHP	Unit- I	35.35	220kV CHP - Birpara Line- I	-14.59	-	Unit-III & 220kV CHP-BIR line II on Standby. Unit-IV under AMP.
		Unit- II	42.12	220kV CHP - Birpara Line- II	0.00		
		Unit- III	0.00	220kV CHP - Malbase Line- III	34.48	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	39.93	+	
		-	-	220kV Malbase - Birpara Line	-49.73	-	
		-	-	66kV CHP - Chumdo Line	10.46	+	
		-	-	66kV CHP - Gedu Line	4.39	+	
		-	-	3x3MVA, 66/11kV TFR	1.20	+	
<b>Total</b>	<b>77.47</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.065%</b>			
4	24MW BHP (U/S)	Unit- I	4.60	220kV BHP - Semtokha Line	7.10	+	U/S & L/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeyssa Line	11.00	+	
	<b>Total</b>	<b>4.60</b>	220kV BHP - Tsirang Line	-4.16	-		
	40MW BHP (L/S)	Unit- I	10.30	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	0.00	30MVA ICT, 220/66kV			
<b>Total</b>	<b>10.30</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.403%</b>			
5	126MW DHP	Unit-I	15.23	220kV DHP - Tsirang Line	15.02	+	Unit-II under AMP
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.40	+	
		-	-	5MVA, 220/33kV TFR			
<b>Total</b>	<b>15.23</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.379%</b>			
6	60MW KHP	Unit- I	10.09	132kV KHP - Nangkhor Line	7.37	+	Unit-IV standby. Unit-III under AMP.
		Unit-II	10.06	132kV KHP - Kilikhar Line	12.18	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.35	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Line	-27.97	-	
		-	-	132kV Motanga - Rangia Line	4.38	+	
<b>Total</b>	<b>20.15</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.221%</b>			

**Note: Generation-Load Summary (MW) for March 30, 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	248.94	254.11	248.37	-17.01	5.74
2	Eastern Grid	99.12	57.55	56.33	53.41	1.22
<b>Total</b>		<b>348.06</b>	<b>311.66</b>	<b>304.70</b>	<b>36.40</b>	<b>6.96</b>

**Note: Generation-Load Summary for March 30, 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	373.45	210.09	203.50	151.31	6.59
2	Eastern Grid	213.00	42.90	41.57	182.15	1.33
<b>Total</b>		<b>586.45</b>	<b>252.99</b>	<b>245.07</b>	<b>333.46</b>	<b>7.92</b>

**NOTE- MHP & BHP 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.