

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

Maximum Load/Demand till Date

Date:	December 9, 2020
Hours:	19:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Fdr- I	0.00		Unit-I & II under shutdown. Unit-IV & V on standby. 400kV THP-SIL Fdr I under shutdown. 400kV THP-SIL Fdr IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	97.31	+	
		Unit- III	119.75	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	156.57	+	
		Unit- V	0.00	400kV Malbase - Siliguri	76.00	+	
		Unit- VI	139.77	-	-	-	
		<b>Total</b>	<b>259.52</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.173%</b>		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit-I on standby. Unit-II under shutdown. Unit-III under breakdown. 400kV MHP-JLG Fdr I & III on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	69.85	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	140.56	400kV MHP - Jigmeling Fdr - IV	70.05	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>140.56</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.470%</b>		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	9.41	+	Unit I & II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	9.10	+	
		Unit- III	63.11	220kV CHP - Malbase Fdr- III	46.72	+	
		Unit- IV	66.63	220kV CHP - Semtokha Fdr- IV	45.84	+	
		-	-	220kV Malbase - Birpara Fdr.	-21.00	-	
		-	-	66kV CHP - Chumdo Fdr.	15.69	+	
		-	-	66kV CHP - Gedu Fdr.	3.37	+	
		-	-	3x3MVA, 66/11kV TFR	2.05	+	
		<b>Total</b>	<b>129.74</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-1.881%</b>		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	19.30	+	U/S Unit-I & L/S Unit-I on standby.
		Unit- II	9.25	66kV BHP - Lobeysa Fdr.	16.58	+	
		<b>Total</b>	<b>9.25</b>	220kV BHP - Tsirang Fdr.	-8.40	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.80	+	
		Unit- II	19.27	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>19.27</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.842%</b>		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	32.28	+	Unit-I on standby.
		Unit-II	32.50	220kV Jigmeling - Dagapela Fdr.	2.40	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>32.50</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.677%</b>		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	12.80	+	Unit-I under Annual Maintenance. Unit-IV on Standby.
		Unit-II	14.45	132kV KHP - Kilikhar Fdr- II	14.90	+	
		Unit- III	14.29	5MVA, 132/11kV TFR	0.38	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Fdr.	-16.83	-	
		-	-	132kV Motanga - Rangia Fdr.	6.20	+	
		-	-	220kV Tsirang - Jigmeling	19.98	+	
		<b>Total</b>	<b>28.74</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.296%</b>		

**Note: Generation-Load Summary for December 09, 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	450.28	259.48	258.22	170.82	1.26
2	Eastern Grid	169.30	60.01	58.69	129.27	1.32
	<b>Total</b>	<b>619.58</b>	<b>319.49</b>	<b>316.91</b>	<b>300.09</b>	<b>2.58</b>

**Note: Generation-Load Summary for December 09, 2019 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	386.45	293.85	282.87	79.6	10.98
2	Eastern Grid	165.66	88.39	84.89	90.27	3.50
	<b>Total</b>	<b>552.11</b>	<b>382.24</b>	<b>367.76</b>	<b>169.87</b>	<b>14.48</b>

**NOTE-MHP,MAL,KHP & MOT 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**

<b>Date:</b>	<b>December 10, 2020</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	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Fdr- I	0.00		Unit-I & II under shutdown. Unit-IV & V on standby. 400kV THP-SIL Fdr I under shutdown. 400kV THP-SIL Fdr IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	100.31	+	
		Unit- III	119.64	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	153.31	+	
		Unit- V	0.00	400kV Malbase - Siliguri	83.00	+	
		Unit- VI	139.49	-	-	-	
		<b>Total</b>	<b>259.13</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.126%</b>		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit-I on standby. Unit-II under shutdown. Unit-III under breakdown. 400kV MHP-JLG Fdr I & III on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	77.23	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	155.56	400kV MHP - Jigmeling Fdr - IV	77.37	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>155.56</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.617%</b>		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	16.73	+	Unit-I & II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	16.87	+	
		Unit- III	63.11	220kV CHP - Malbase Fdr- III	52.90	+	
		Unit- IV	66.63	220kV CHP - Semtokha Fdr- IV	23.72	+	
		-	-	220kV Malbase - Birpara Fdr.	-12.24	-	
		-	-	66kV CHP - Chumdo Fdr.	11.39	+	
		-	-	66kV CHP - Gedu Fdr.	3.25	+	
		-	-	3x3MVA, 66/11kV TFR	1.40	+	
		<b>Total</b>	<b>129.74</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.682%</b>		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	26.12	+	U/S Unit-I & L/S Unit-I on standby.
		Unit- II	9.20	66kV BHP - Lobeysa Fdr.	14.69	+	
	<b>Total</b>	<b>9.20</b>	<b>220kV BHP - Tsirang Fdr.</b>	<b>-12.95</b>	<b>-</b>		
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.60	+	
Unit- II		19.23	30MVA ICT, 220/66kV				
		<b>Total</b>	<b>19.23</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.106%</b>		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	32.00	+	Unit-I on standby.
		Unit-II	32.23	220kV Jigmeling - Dagapela Fdr.	2.00	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>32.23</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.714%</b>		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	12.86	+	Unit-I under Annual Maintenance. Unit-IV on Standby.
		Unit-II	13.05	132kV KHP - Kilikhar Fdr- II	12.09	+	
		Unit- III	13.05	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Fdr.	-11.53	-	
		-	-	132kV Motanga - Rangia Fdr.	3.93	+	
		-	-	220kV Tsirang - Jigmeling	16.94	+	
		<b>Total</b>	<b>26.10</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>3.092%</b>		

**Note: Generation-Load summary for December 10, 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	449.53	227.92	220.73	204.67	7.19
2	Eastern Grid	181.66	51.60	49.83	147.00	1.77
	<b>Total</b>	<b>631.19</b>	<b>279.52</b>	<b>270.56</b>	<b>351.67</b>	<b>8.96</b>

**Note: Generation-Load Summary for December 10, 2019 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	374.00	278.03	270.25	87.39	7.78
2	Eastern Grid	207.23	64.32	63.31	151.49	1.01
	<b>Total</b>	<b>581.23</b>	<b>342.35</b>	<b>333.56</b>	<b>238.88</b>	<b>8.79</b>

**NOTE: Data collected from MHPA,MAL, KHP & MOT**

- 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.
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