

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>June 14, 2020</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	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	170.00	400kV THP - Siliguri Fdr- I	238.00	+	
		Unit- II	170.00	400kV THP - Siliguri Fdr- II	236.00	+	
		Unit- III	140.00	400kV THP - Siliguri Fdr- IV	229.00	+	
		Unit- IV	170.00	400kV THP - Malbase Fdr- III	268.00	+	
		Unit- V	170.00	400kV Malbase - Siliguri	219.00	+	
		Unit- VI	170.00	-	-	-	
		<b>Total</b>	<b>990.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>19.00</b>		
2	720MW MHP	Unit-I	197.86	400kV MHP - Jigmeling Fdr - I	198.69	+	Unit-III & 400kV MHP-JLG III Standby
		Unit-II	197.96	400kV MHP - Jigmeling Fdr - II	198.42	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	197.71	400kV MHP - Jigmeling Fdr - IV	193.19	+	
		-	-	200MVA, 400/132kV ICT	0.00		
		-	-	(Local Load)			
		<b>Total</b>	<b>593.53</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>3.23</b>		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	90.50	+	Unit-I under shutdown till 30th June, 2020.
		Unit- II	92.00	220kV CHP - Birpara Fdr- II	89.70	+	
		Unit- III	92.00	220kV CHP - Malbase Fdr- III	136.60	+	
		Unit- IV	92.00	220kV CHP - Semtokha Fdr- IV	-54.00	-	
		-	-	220kV Malbase - Birpara Fdr.	46.00	+	
		-	-	66kV CHP - Chumdo Fdr.	3.10	+	
		-	-	66kV CHP - Gedu Fdr.	6.80	+	
		-	-	3x3MVA, 66/11kV TFR	1.10	+	
		<b>Total</b>	<b>276.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.20</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Fdr.	56.60	+	
		Unit- II	12.20	66kV BHP - Lobeysa Fdr.	14.60	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Fdr.	-13.67	-	
	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.99	+	
		Unit- II	20.90	30MVA ICT, 220/66kV	0.00		
		<b>Total</b>	<b>41.30</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>7.28</b>		
5	126MW DHPC	Unit-I	60.31	220kV DHPC - Tsirang Fdr.	119.94	+	
		Unit-II	60.16	220kV Jigmeling - Dagapela Fdr.	1.17	+	
		-	-	5MVA, 220/33kV TFR	0.00		
		<b>Total</b>	<b>120.47</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.53</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	38.52	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	26.26	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	43.60	+	
		-	-	132kV Motanga - Rangia Fdr.	59.17	+	
		-	-	220kV Tsirang - Jigmeling	84.90	+	
<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.92</b>				

**Note: Generation-Load Summary for June 14, 2020 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import	Load Balance
1	Western Grid	1,452.27	219.17	191.33	1,148.20	27.84
2	Eastern Grid	659.53	51.36	47.21	693.07	4.15
	<b>Total</b>	<b>2,111.80</b>	<b>270.53</b>	<b>238.54</b>	<b>1,841.27</b>	<b>31.99</b>

**Note: Generation-Load Summary for June 14, 2019 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import	Load Balance
1	Western Grid	674.59	205.99	197.55	436.20	8.44
2	Eastern Grid	65.70	63.20	62.80	34.90	0.40
	<b>Total</b>	<b>740.29</b>	<b>269.19</b>	<b>260.35</b>	<b>471.10</b>	<b>8.84</b>

**NOTE: All Loads and generation 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>June 15, 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	187.00	400kV THP - Siliguri Fdr- I	271.00	+	
		Unit- II	187.00	400kV THP - Siliguri Fdr- II	268.00	+	
		Unit- III	187.00	400kV THP - Siliguri Fdr- IV	259.00	+	
		Unit- IV	187.00	400kV THP - Malbase Fdr- III	304.00	+	
		Unit- V	187.00	400kV Malbase - Siliguri	253.00	+	
		Unit- VI	187.00	-	-	-	
		<b>Total</b>	<b>1,122.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>20.00</b>		
2	720MW MHP	Unit-I	197.12	400kV MHP - Jigmeling Fdr - I	198.48	+	Unit-III & 400kV MHP-JLG III Standby
		Unit-II	197.80	400kV MHP - Jigmeling Fdr - II	198.09	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	197.81	400kV MHP - Jigmeling Fdr - IV	192.95	+	
		-	-	200MVA, 400/132kV ICT	0.00		
		-	-	(Local Load)			
		<b>Total</b>	<b>592.73</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>3.21</b>		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	88.60	+	Unit-I under shutdown till 30th June, 2020.
		Unit- II	92.00	220kV CHP - Birpara Fdr- II	88.02	+	
		Unit- III	92.00	220kV CHP - Malbase Fdr- III	131.64	+	
		Unit- IV	92.00	220kV CHP - Semtokha Fdr- IV	-43.14	-	
		-	-	220kV Malbase - Birpara Fdr.	45.00	+	
		-	-	66kV CHP - Chumdo Fdr.	2.10	+	
		-	-	66kV CHP - Gedu Fdr.	6.60	+	
		-	-	3x3MVA, 66/11kV TFR	0.82	+	
		<b>Total</b>	<b>276.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.36</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Fdr.	70.30	+	
		Unit- II	12.30	66kV BHP - Lobeysa Fdr.	16.50	+	
		<b>Total</b>	<b>24.60</b>	220kV BHP - Tsirang Fdr.	-18.16	-	
	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.92	+	
		Unit- II	20.90	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.30</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-3.66</b>		
5	126MW DHPC	Unit-I	40.31	220kV DHPC - Tsirang Fdr.	82.04	+	
		Unit-II	42.21	220kV Jigmeling - Dagapela Fdr.			
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>82.52</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.48</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	40.76	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	23.03	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	35.80	+	
		-	-	132kV Motanga - Rangia Fdr.	54.77	+	
		-	-	220kV Tsirang - Jigmeling	61.80	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.91</b>		

**Note: Generation-Load summary for June 15, 2020 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import	Load Balance
1	Western Grid	1,546.42	212.00	193.82	1,272.62	18.18
2	Eastern Grid	658.73	40.44	35.32	680.09	5.12
	<b>Total</b>	<b>2,205.15</b>	<b>252.44</b>	<b>229.14</b>	<b>1,952.71</b>	<b>23.30</b>

**Note: Generation-Load Summary for June 15, 2019 at 09:00hrs**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import	Load Balance
1	Western Grid	519.16	219.92	217.48	273.91	2.44
2	Eastern Grid	65.84	53.51	52.82	37.66	0.69
	<b>Total</b>	<b>585.00</b>	<b>273.43</b>	<b>270.30</b>	<b>311.57</b>	<b>3.13</b>

**NOTES: All load and generation 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.
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