

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>April 9, 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	0.00	400kV THP - Siliguri Line - I	45.82		Unit I, II & III Standby. Unit IV AMP 400kV THP-SIL Line II & 400kV THP-SIL 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	140.31	+	
		Unit- V	129.75	400kV Malbase - Siliguri Line	22.87		
		Unit- VI	60.30	-	-	-	
		<b>Total</b>	<b>190.05</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.063%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit I on Standby. Unit-III under breakdown. Unit-IV under AMP. 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	120.16	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	118.17	+	
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	94.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - I	22.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	30.60	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.60	+	
		-	-	220kV Tsirang - Jigmeling Line	-32.50	-	
		-	-	132kV Gelephu - Salakati Line	0.37	-	
<b>Total</b>	<b>120.16</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.656%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	9.10	-	Unit I on standby. Unit IV under AMP. 220kV CHP-BIR line II on Standby.
		Unit- II	35.74	220kV CHP - Birpara Line- II	0.00		
		Unit- III	35.17	220kV CHP - Malbase Line- III	27.24	-	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	15.50	+	
		-	-	220kV Malbase - Birpara Line	-6.98	-	
		-	-	66kV CHP - Chumdo Line	12.54	+	
		-	-	66kV CHP - Gedu Line	4.00	+	
		-	-	3x3MVA, 66/11kV TFR	1.53	+	
<b>Total</b>	<b>70.91</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.410%</b>			
4	24MW BHP (U/S)	Unit- I	4.80	220kV BHP - Semtokha Line	41.90	+	U/S Unit-II on standby. L/S Unit-II on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	11.40	+	
		<b>Total</b>	<b>4.80</b>	220kV BHP - Tsirang Line	-38.99	-	
	40MW BHP (L/S)	Unit- I	10.40	5MVA, 66/11kV TFR	0.42	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	9.00		
<b>Total</b>	<b>10.40</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>3.092%</b>			
5	126MW DHP	Unit-I	15.37	220kV DHP - Tsirang Line	15.15	+	Unit-II AMP
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.00	+	
		-	-	5MVA, 220/33kV TFR	0.12	+	
		<b>Total</b>	<b>15.37</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.651%</b>	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	7.66	+	Unit- I & III standby.
		Unit-II	13.11	132kV KHP - Kilikhar Line	17.66	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.58	+	
		Unit- IV	13.08	132kV Motanga - Rangia Line	11.64	+	
		<b>Total</b>	<b>26.19</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.115%</b>	

**Note: Generation-Load Summary (MW) for April 09, 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	291.53	253.22	249.73	70.81	3.49
2	Eastern Grid	146.35	79.44	77.16	34.41	2.28
<b>Total</b>		<b>437.88</b>	<b>332.66</b>	<b>326.89</b>	<b>105.22</b>	<b>5.77</b>

**Note: Generation-Load Summary for April 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	368.95	263.21	250.09	95.35	13.12
2	Eastern Grid	254.29	56.63	54.32	208.05	2.31
<b>Total</b>		<b>623.24</b>	<b>319.84</b>	<b>304.41</b>	<b>303.40</b>	<b>15.43</b>

**NOTE-BHP, Motanga & MHP data collected 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>April 10, 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	0.00	400kV THP - Siliguri Line - I	59.32	+	Unit-I under breakdown. Unit II & III on standby. Unit-IV under AMP. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby. 400kV MAL_SIL Line under AMP
		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	126.55	+	
		Unit- V	130.19	400kV Malbase - Siliguri Line	40.48	+	
		Unit- VI	60.40	-	-	-	
		<b>Total</b>	<b>190.59</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.477%</b>	
2	720MW MHP	Unit-I	189.71	400kV MHP - Jigmeling Line - I	0.00		Unit-II & III under breakdown. Unit-IV under AMP. 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	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	188.35	+	
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	80.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - I	104.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	23.00	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.10	+	
		-	-	220kV Tsirang - Jigmeling Line	-34.33	-	
		-	-	132kV Gelephu - Salakati Line	7.69	+	
		<b>Total</b>	<b>189.71</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>0.717%</b>	
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	8.64	+	Unit-I on Standby. Unit IV under AMP. 220kV CHP-BIR line II on Standby.
		Unit- II	36.77	220kV CHP - Birpara Line- II	0.00	+	
		Unit- III	35.34	220kV CHP - Malbase Line- III	56.54	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	-7.82	-	
		-	-	220kV Malbase - Birpara Line	-26.89	-	
		-	-	66kV CHP - Chumdo Line	8.16	+	
		-	-	66kV CHP - Gedu Line	4.18	+	
		-	-	3x3MVA, 66/11kV TFR	0.90	+	
<b>Total</b>	<b>72.11</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>2.094%</b>			
4	24MW BHP (U/S)	Unit- I	4.90	220kV BHP - Semtokha Line	50.31	+	U/S & L/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	11.30	+	
		<b>Total</b>	<b>4.90</b>	220kV BHP - Tsirang Line	-49.14	-	
	40MW BHP (L/S)	Unit- I	9.30	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)			
<b>Total</b>	<b>9.30</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>5.845%</b>			
5	126MW DHP	Unit-I	14.99	220kV DHP - Tsirang Line	14.68	+	Unit-II under AMP
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.00	+	
		-	-	5MVA, 220/33kV TFR	0.12	+	
		<b>Total</b>	<b>14.99</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.268%</b>	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	17.18	+	Unit-I & III standby.
		Unit-II	16.06	132kV KHP - Kilikhar Line	14.27	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	16.07	132kV Motanga - Rangia Line	12.47	+	
		<b>Total</b>	<b>32.13</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>		<b>1.183%</b>	

**Note: Generation-Load Summary (MW) for April 10, 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	291.89	244.67	238.42	81.55	6.25
2	Eastern Grid	221.84	62.95	61.21	124.56	1.74
<b>Total</b>		<b>513.73</b>	<b>307.62</b>	<b>299.63</b>	<b>206.11</b>	<b>7.99</b>

**Note: Generation-Load Summary for April 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	421.61	214.13	208.20	207.48	5.93
2	Eastern Grid	202.90	48.81	43.72	154.09	5.09
<b>Total</b>		<b>624.51</b>	<b>262.94</b>	<b>251.92</b>	<b>361.57</b>	<b>11.02</b>

**NOTE- BHP & 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.
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