# BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

| Coincidental Maximum Load | | |
|---|---|---|
| **Date** | **Time** | **Load(MW)** |
| 12-Jan-22 | 18:00hrs | 492.25 |

| | |
|---|---|
| **Date:** | **May 19, 2022** |
| **Hours:** | **19:00 Hours** |

| Sl. No. | Hydropower Plant | Unit | MW | Transmission Lines and Elements | Load (MW) | Remarks |
|---|---|---|---|---|---|---|
| 1 | **1020MW THP** | Unit- I | 109.69 | 400kV THP - Siliguri Line - I | 0.00 | Unit- II & IV on standby. Unit- VI under shutdown. 400kV THP-Siliguri line I & II under breakdown. |
| | | Unit- II | 0.00 | 400kV THP - Siliguri Line - II | 0.00 | |
| | | Unit- III | 109.06 | 400kV THP - Siliguri Line- IV | 119.87 | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Line - III | 184.01 | |
| | | Unit- V | 89.02 | 400kV Malbase - Siliguri Line | 108.63 | |
| | | Unit- VI | 0.00 | - | - | |
| | | **Total** | **307.77** | **Auxiliary Consumption & Transformation Losses at Generator end** | **1.26%** | |
| 2 | **720MW MHP** | Unit-I | 110.20 | 400kV MHP - Jigmeling Line - I | 0.00 | Unit- III under Shutdown. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby. |
| | | Unit-II | 79.84 | 400kV MHP - Jigmeling Line - II | 0.00 | |
| | | Unit-III | 0.00 | 400kV MHP - Jigmeling Line - III | 133.67 | |
| | | Unit-IV | 80.06 | 400kV MHP - Jigmeling Line - IV | 0.00 | |
| | | - | - | 132kV MHP - Yurmo Line - I | 134.07 | |
| | | - | - | 132kV MHP - Yurmo Line - II | 0.00 | |
| | | - | - | 500MVA, 400/220kV ICT at Jigmeling (HV) | 84.43 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - I **(Interim)** | 77.83 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - II **(Interim)** | 0.00 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - I **(Direct)** | 118.89 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - II **(Direct)** | 0.00 | |
| | | - | - | 80MVA, 220/132kV ICT - I (HV) | 14.62 | |
| | | - | - | 80MVA, 220/132kV ICT - II (HV) | 14.84 | |
| | | - | - | 220kV Tsirang - Jigmeling Line | -46.88 | |
| | | - | - | 132kV Gelephu - Salakati Line | -8.08 | |
| | | **Total** | **270.10** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.87%** | |
| 3 | **336MW CHP** | Unit- I | 77.10 | 220kV CHP - Birpara Line- I | 12.48 | Unit-III & IV on Standby. |
| | | Unit- II | 79.08 | 220kV CHP - Birpara Line- II | 12.50 | |
| | | Unit- III | 0.00 | 220kV CHP - Malbase Line- III | 47.85 | |
| | | Unit- IV | 0.00 | 220kV CHP - Semtokha Line- IV | 64.19 | |
| | | - | - | 220kV Malbase - Birpara Line | -16.10 | |
| | | - | - | 66kV CHP - Chumdo Line | 14.21 | |
| | | - | - | 66kV CHP - Gedu Line | 3.35 | |
| | | - | - | 3x3MVA, 66/11kV TFR | 1.39 | |
| | | **Total** | **156.18** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.13%** | |
| 4 | **24MW BHP (U/S)** | Unit- I | 0.00 | 220kV BHP - Semtokha Line | 44.70 | L/S unit-I & U/S Unit-II on standby. U/S I tripped at 18:43hrs. |
| | | Unit- II | 0.00 | 66kV BHP - Lobeysa Line | 18.85 | |
| | | **Total** | **0.00** | 220kV BHP - Tsirang Line | -55.62 | |
| 5 | **40MW BHP (L/S)** | Unit- I | 0.00 | 5MVA, 66/11kV TFR | 0.59 | |
| | | Unit- II | 8.30 | 30MVA ICT, 220/66kV (HV) | 19.49 | |
| | | **Total** | **8.30** | **Auxiliary Consumption & Transformation Losses at Generator end** | **-2.65%** | |
| 6 | **126MW DHP** | Unit-I | 18.77 | 220kV DHP - Tsirang Line | 18.44 | Unit-II on standby. 220kV DHP_Dagapela Line on Standby. |
| | | Unit-II | 0.00 | 220kV DHP - Dagapela Line | 0.00 | |
| | | - | | 220kV Jigmeling - Dagapela Line | 8.26 | |
| | | - | - | 5MVA, 220/33kV TFR | 0.20 | |
| | | **Total** | **18.77** | **Auxiliary Consumption & Transformation Losses at Gen. end** | **0.69%** | |
| 7 | **60MW KHP** | Unit- I | 16.44 | 132kV KHP - Nangkhor Line | 42.41 | |
| | | Unit-II | 16.54 | 132kV KHP - Kilikhar Line | 22.48 | |
| | | Unit- III | 16.67 | 5MVA, 132/11kV TFR | 0.90 | |
| | | Unit- IV | 16.53 | 132kV Motanga - Rangia Line | 29.14 | |
| | | **Total** | **66.18** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.59%** | |

**Note: Generation-Load Summary (MW) for May 19, 2022 at 19:00hrs.**

| Sl. No | Region | Total Generation (MW) | Total Load [Generation - Export (MW)] | Total Load [Feeder Summation (MW)] | Total Export/Import (MW) | Auxiliary Consumption & Transformation Losses (MW) |
|---|---|---|---|---|---|---|
| 1 | **Western Grid** | 491.02 | 300.52 | 296.51 | 237.38 | 4.01 |
| 2 | **Eastern Grid** | 336.28 | 71.62 | 68.87 | 217.78 | 2.75 |
| **Total** | | **827.30** | **372.14** | **365.38** | **455.16** | **6.76** |

**Note: Generation-Load Summary for May 19, 2021 at 19:00hrs.**

| Sl. No | Region | Total Generation (MW) | Total Load [Generation - Export (MW)] | Total Load [Feeder Summation (MW)] | Total Export/Import (MW) | Auxiliary Consumption & Transformation Losses (MW) |
|---|---|---|---|---|---|---|
| 1 | **Western Grid** | 526.20 | 217.72 | 209.23 | 291.21 | 8.49 |
| 2 | **Eastern Grid** | 404.57 | 68.83 | 66.00 | 353.01 | 2.83 |
| **Total** | | **930.77** | **286.55** | **275.23** | **644.22** | **11.32** |

**NOTE- BHP data collected from site.**

1. The Instantaneous load balance,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

**Coincidental Maximum Load**

| Date: | May 20, 2022 |
|---|---|
| Hours: | 09:00 Hours |

| Date | Time | Load(MW) |
|---|---|---|
| 12-Jan-22 | 18:00hrs | 492.25 |

| Sl. No. | Hydropower Plant | Unit | MW | Transmission Lines and Elements | Load (MW) | Remarks |
|---|---|---|---|---|---|---|
| 1 | 1020MW THP | Unit- I | 109.07 | 400kV THP - Siliguri Line - I | 0.00 | Unit-II & IV on standby. Unit-VI under Shutdown. 400kV THP-Siliguri line I & II under breakdown. |
| | | Unit- II | 0.00 | 400kV THP - Siliguri Line - II | 0.00 | |
| | | Unit- III | 127.94 | 400kV THP - Siliguri Line- IV | 131.93 | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Line - III | 191.42 | |
| | | Unit- V | 89.26 | 400kV Malbase - Siliguri Line | 120.86 | |
| | | Unit- VI | 0.00 | - | - | |
| | | **Total** | **326.27** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.89%** | |
| 2 | 720MW MHP | Unit-I | 139.76 | 400kV MHP - Jigmeling Line - I | 0.00 | Unit-IV on standby. Unit- III under Shutdown. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby. |
| | | Unit-II | 149.81 | 400kV MHP - Jigmeling Line - II | 143.42 | |
| | | Unit-III | 0.00 | 400kV MHP - Jigmeling Line - III | 0.00 | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Line - IV | 143.91 | |
| | | - | - | 132kV MHP - Yurmo Line - I | 0.00 | |
| | | - | - | 132kV MHP - Yurmo Line - II | 0.00 | |
| | | - | - | 500MVA, 400/220kV ICT at Jigmeling (HV) | 64.51 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - I **(Interim)** | 86.99 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - II **(Interim)** | 0.00 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - I **(Direct)** | 131.76 | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - II **(Direct)** | 0.00 | |
| | | - | - | 80MVA, 220/132kV ICT - I (HV) | 10.50 | |
| | | - | - | 80MVA, 220/132kV ICT - II (HV) | 10.74 | |
| | | - | - | 220kV Tsirang - Jigmeling Line | -35.93 | |
| | | - | - | 132kV Gelephu - Salakati Line | -3.14 | |
| | | **Total** | **289.57** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.77%** | |
| 3 | 336MW CHP | Unit- I | 80.09 | 220kV CHP - Birpara Line- I | 18.07 | Unit-III & IV on Standby. |
| | | Unit- II | 80.15 | 220kV CHP - Birpara Line- II | 17.94 | |
| | | Unit- III | 0.00 | 220kV CHP - Malbase Line- III | 55.71 | |
| | | Unit- IV | 0.00 | 220kV CHP - Semtokha Line- IV | 50.83 | |
| | | - | - | 220kV Malbase - Birpara Line | -13.70 | |
| | | - | - | 66kV CHP - Chumdo Line | 11.88 | |
| | | - | - | 66kV CHP - Gedu Line | 4.00 | |
| | | - | - | 3x3MVA, 66/11kV TFR | 0.87 | |
| | | **Total** | **160.24** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.59%** | |
| 4 | 24MW BHP (U/S) | Unit- I | 0.00 | 220kV BHP - Semtokha Line | 47.60 | L/S Unit-I & U/S Unit-I on standby. |
| | | Unit- II | 5.70 | 66kV BHP - Lobeysa Line | 19.06 | |
| | | **Total** | **5.70** | 220kV BHP - Tsirang Line | -47.87 | |
| 5 | 40MW BHP (L/S) | Unit- I | 0.00 | 5MVA, 66/11kV TFR | 0.39 | |
| | | Unit- II | 13.40 | 30MVA ICT, 220/66kV (HV) | 13.86 | |
| | | **Total** | **13.40** | **Auxiliary Consumption & Transformation Losses at Generator end** | **-0.42%** | |
| 6 | 126MW DHP | Unit-I | 20.19 | 220kV DHP - Tsirang Line | 19.99 | Unit-II on standby. 220kV DHP_Dagapela Line on Standby. |
| | | Unit-II | 0.00 | 220kV DHP - Dagapela Line | 0.00 | |
| | | - | - | 220kV Jigmeling - Dagapela Line | 7.75 | |
| | | - | - | 5MVA, 220/33kV TFR | 0.19 | |
| | | **Total** | **20.19** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.05%** | |
| 7 | 60MW KHP | Unit- I | 16.50 | 132kV KHP - Nangkhor Line | 44.82 | |
| | | Unit-II | 16.52 | 132kV KHP - Kilikhar Line | 20.44 | |
| | | Unit- III | 16.53 | 5MVA, 132/11kV TFR | 0.54 | |
| | | Unit- IV | 16.47 | 132kV Motanga - Rangia Line | 29.91 | |
| | | **Total** | **66.02** | **Auxiliary Consumption & Transformation Losses at Generator end** | **0.33%** | |

**Note: Generation-Load Summary (MW) for May 20, 2022 at 09:00hrs.**

| Sl. No | Region | Total Generation (MW) | Total Load [Generation - Export (MW)] | Total Load [Feeder Summation (MW)] | Total Export/Import (MW) | Auxiliary Consumption & Transformation Losses (MW) |
|---|---|---|---|---|---|---|
| 1 | Western Grid | 525.80 | 286.63 | 282.84 | 275.10 | 3.79 |
| 2 | Eastern Grid | 355.59 | 74.14 | 71.68 | 245.52 | 2.46 |
| **Total** | | **881.39** | **360.77** | **354.52** | **520.62** | **6.25** |

**Note: Generation-Load Summary for May 20, 2021 at 09:00hrs.**

| Sl. No | Region | Total Generation (MW) | Total Load [Generation - Export (MW)] | Total Load [Feeder Summation (MW)] | Total Export/Import (MW) | Auxiliary Consumption & Transformation Losses (MW) |
|---|---|---|---|---|---|---|
| 1 | Western Grid | 672.98 | 219.52 | 210.71 | 439.36 | 8.81 |
| 2 | Eastern Grid | 606.74 | 63.53 | 59.03 | 557.31 | 4.50 |
| **Total** | | **1,279.72** | **283.05** | **269.74** | **996.67** | **13.31** |

**NOTE-BHP & all eastern data collected from Site.**

1. The Instantaneous load balance,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.
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2. This report is generated to give an idea of the generation & load flow for the system at a particular instant.