

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

**Coincidental Maximum Load**

**Date:** January 16, 2023  
**Hours:** 18:00 Hours

**Date**      **Time**      **Load(MW)**  
 28-Dec-22    18:03:26hrs    629.23

| Sl. No.      | Hydropower Plant | Unit  | MW            | Transmission Lines and Elements   | Load (MW)     | Remarks   |
|--------------|------------------|---|---------------|---|---------------|---|
| 1            | 1020MW THP       | Unit- I   | 0.00          | 400kV THP - Siliguri Line - I   | 0.00          | Unit-I, II & III under Shutdown.<br>Unit-V on Standby.<br>400kV THP- Siliguri Line I on Standby<br>400kV Tala-Siliguri line IV under Shutdown.  |
|              |                  | Unit- II  | 0.00          | 400kV THP - Siliguri Line - II  | 79.80         |   |
|              |                  | Unit- III   | 0.00          | 400kV THP - Siliguri Line- IV   | 0.00          |   |
|              |                  | Unit- IV  | 122.97        | 400kV THP - Malbase Line - III  | 169.41        |   |
|              |                  | Unit- V   | 0.00          | 400kV Malbase - Siliguri Line   | 55.06         |   |
|              |                  | Unit- VI  | 128.91        | -   | -             |   |
|              |                  | <b>Total</b>  | <b>251.88</b> | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>1.06%</b>  |   |
| 2            | 720MW MHP        | Unit-I  | 0.00          | 400kV MHP - Jigmeling Line - I  | 0.00          | Unit-I under Breakdown.<br>Unit-III under Shutdown.<br>400kV MHP-JLG Line I,II & III on Standby.<br>132kV MHP_Yurmo Line- I not in service.<br>400kV JLG_ALI line- II (Direct) on Standby.<br>400kV JLG_ALI Line- I (Interim) on Standby. |
|              |                  | Unit-II   | 84.86         | 400kV MHP - Jigmeling Line - II   | 0.00          |   |
|              |                  | Unit-III  | 0.00          | 400kV MHP - Jigmeling Line - III  | 0.00          |   |
|              |                  | Unit-IV   | 85.08         | 400kV MHP - Jigmeling Line - IV   | 86.24         |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - I  | 0.00          |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - II   | 82.42         |   |
|              |                  | -   | -             | 500MVA, 400/220kV ICT at Jigmeling (HV)                                   | 129.83        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Interim)                           | 0.00          |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Interim)                          | -16.73        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Direct)                            | -26.85        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Direct)                           | 0.00          |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - I (HV)   | 3.07          |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - II (HV)  | 3.15          |   |
|              |                  | -   | -             | 220kV Tsirang - Jigmeling Line  | -60.61        |   |
| -            | -                | 132kV Gelephu - Salakati Line   | -17.88        |   |               |   |
| <b>Total</b> | <b>169.94</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.75%</b>  |   |               |   |
| 3            | 336MW CHP        | Unit- I   | 0.00          | 220kV CHP - Birpara Line- I   | -12.25        | Unit-I on Standby.<br>Unit-II under Shutdown.<br>220kV CHP_Birpara Line II on Standby.  |
|              |                  | Unit- II  | 0.00          | 220kV CHP - Birpara Line- II  | 0.00          |   |
|              |                  | Unit- III   | 68.28         | 220kV CHP - Malbase Line- III   | 33.08         |   |
|              |                  | Unit- IV  | 64.08         | 220kV CHP - Semtokha Line- IV   | 77.55         |   |
|              |                  | -   | -             | 220kV Malbase - Birpara Line  | -45.22        |   |
|              |                  | -   | -             | 66kV CHP - Chumdo Line  | 23.64         |   |
|              |                  | -   | -             | 66kV CHP - Gedu Line  | 7.67          |   |
|              |                  | -   | -             | 3x3MVA, 66/11kV TFR   | 1.01          |   |
| <b>Total</b> | <b>132.36</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>1.25%</b>  |   |               |   |
| 4            | 24MW BHP (U/S)   | Unit- I   | 0.00          | 220kV BHP - Semtokha Line   | 70.74         | L/S & U/S Unit-I on Standby.  |
|              |                  | Unit- II  | 6.60          | 66kV BHP - Lobeyasa Line  | 27.64         |   |
|              |                  | <b>Total</b>  | <b>6.60</b>   | <b>220kV BHP - Tsirang Line</b>   | <b>-78.45</b> |   |
| 5            | 40MW BHP (L/S)   | Unit- I   | 0.00          | 5MVA, 66/11kV TFR   | 0.83          | L/S & U/S Unit-I on Standby.  |
|              |                  | Unit- II  | 13.60         | 30MVA ICT, 220/66kV (HV)  | 21.80         |   |
|              |                  | <b>Total</b>  | <b>13.60</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>-2.77%</b> |   |
| 6            | 126MW DHP        | Unit-I  | 22.52         | 220kV DHP - Tsirang Line  | 22.26         | Unit-II under shutdown.<br>220kV DHP_Dagapela Line on Standby.  |
|              |                  | Unit-II   | 0.00          | 220kV DHP - Dagapela Line   | 0.00          |   |
|              |                  | -   | -             | 220kV Jigmeling - Dagapela Line   | 62.75         |   |
|              |                  | -   | -             | 5MVA, 220/33kV TFR  | 0.25          |   |
| <b>Total</b> | <b>22.52</b>     | <b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>      | <b>0.04%</b>  |   |               |   |
| 7            | 60MW KHP         | Unit- I   | 15.05         | 132kV KHP - Nangkhoh Line   | 11.29         | Unit-III under Shutdown.<br>Unit-IV on Standby.   |
|              |                  | Unit-II   | 15.10         | 132kV KHP - Kilikhar Line   | 17.61         |   |
|              |                  | Unit- III   | 0.00          | 5MVA, 132/11kV TFR  | 0.86          |   |
|              |                  | Unit- IV  | 0.00          | 132kV Motanga - Rangia Line   | 0.00          |   |
|              |                  | <b>Total</b>  | <b>30.15</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>1.29%</b>  |   |

**Note: Generation-Load Summary (MW) for January 16, 2023 at 18:00hrs.**

| 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 | 426.96                | 410.18                                | 406.40                             | 77.39                    | 3.78   |
| 2            | Eastern Grid | 200.09                | 200.94                                | 199.27                             | -61.46                   | 1.67   |
| <b>Total</b> |              | <b>627.05</b>         | <b>611.12</b>                         | <b>605.67</b>                      | <b>15.93</b>             | <b>5.45</b>  |

**Note: Generation-Load Summary for January 16, 2022 at 18:00hrs.**

| 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 | 232.16                | 349.30                                | 348.70                             | -67.97                   | 0.60   |
| 2            | Eastern Grid | 247.23                | 105.32                                | 103.23                             | 92.74                    | 2.09   |
| <b>Total</b> |              | <b>479.39</b>         | <b>454.62</b>                         | <b>451.93</b>                      | <b>24.77</b>             | <b>2.69</b>  |

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:** January 17, 2023  
**Hours:** 09:00 Hours

**Date:** 28-Dec-22      **Time:** 18:03:26hrs      **Load(MW):** 629.23

| Sl. No.      | Hydropower Plant | Unit  | MW            | Transmission Lines and Elements   | Load (MW)     | Remarks   |
|--------------|------------------|---|---------------|---|---------------|---|
| 1            | 1020MW THP       | Unit- I   | 0.00          | 400kV THP - Siliguri Line - I   | 0.00          | Unit-I, II & III under Shutdown.<br>Unit-V on Standby.<br>400kV THP- Siliguri Line I on Standby<br>400kV Tala-Siliguri line IV under Shutdown.  |
|              |                  | Unit- II  | 0.00          | 400kV THP - Siliguri Line - II  | 75.95         |   |
|              |                  | Unit- III   | 0.00          | 400kV THP - Siliguri Line- IV   | 0.00          |   |
|              |                  | Unit- IV  | 124.51        | 400kV THP - Malbase Line - III  | 164.41        |   |
|              |                  | Unit- V   | 0.00          | 400kV Malbase - Siliguri Line   | 50.50         |   |
|              |                  | Unit- VI  | 118.81        | -   | -             |   |
|              |                  | <b>Total</b>  | <b>243.32</b> | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>1.22%</b>  |   |
| 2            | 720MW MHP        | Unit-I  | 0.00          | 400kV MHP - Jigmeling Line - I  | 0.00          | Unit-I under Breakdown.<br>Unit-III under Shutdown.<br>400kV MHP-JLG Line I,II & III on Standby.<br>132kV MHP_Yurmo Line- I not in service.<br>400kV JLG_ALI line- II (Direct) on Standby.<br>400kV JLG_ALI Line- I (Interim) on Standby. |
|              |                  | Unit-II   | 79.82         | 400kV MHP - Jigmeling Line - II   | 0.00          |   |
|              |                  | Unit-III  | 0.00          | 400kV MHP - Jigmeling Line - III  | 0.00          |   |
|              |                  | Unit-IV   | 80.05         | 400kV MHP - Jigmeling Line - IV   | 77.14         |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - I  | 0.00          |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - II   | 81.48         |   |
|              |                  | -   | -             | 500MVA, 400/220kV ICT at Jigmeling (HV)                                   | 116.86        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Interim)                           | 0.00          |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Interim)                          | -16.00        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Direct)                            | -24.60        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Direct)                           | 0.00          |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - I (HV)   | 6.09          |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - II (HV)  | 6.26          |   |
|              |                  | -   | -             | 220kV Tsirang - Jigmeling Line  | -42.99        |   |
| -            | -                | 132kV Gelephu - Salakati Line   | -11.31        |   |               |   |
| <b>Total</b> | <b>159.87</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.78%</b>  |   |               |   |
| 3            | 336MW CHP        | Unit- I   | 0.00          | 220kV CHP - Birpara Line- I   | -10.90        | Unit-I on Standby.<br>Unit-II under Shutdown.<br>220kV CHP_Birpara Line II on Standby.  |
|              |                  | Unit- II  | 0.00          | 220kV CHP - Birpara Line- II  | 0.00          |   |
|              |                  | Unit- III   | 68.29         | 220kV CHP - Malbase Line- III   | 33.96         |   |
|              |                  | Unit- IV  | 61.22         | 220kV CHP - Semtokha Line- IV   | 74.93         |   |
|              |                  | -   | -             | 220kV Malbase - Birpara Line  | -43.68        |   |
|              |                  | -   | -             | 66kV CHP - Chumdo Line  | 20.56         |   |
|              |                  | -   | -             | 66kV CHP - Gedu Line  | 8.93          |   |
|              |                  | -   | -             | 3x3MVA, 66/11kV TFR   | 0.82          |   |
| <b>Total</b> | <b>129.51</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.93%</b>  |   |               |   |
| 4            | 24MW BHP (U/S)   | Unit- I   | 0.00          | 220kV BHP - Semtokha Line   | 61.20         | L/S & U/S unit-I on Standby   |
|              |                  | Unit- II  | 6.80          | 66kV BHP - Lobeyasa Line  | 24.96         |   |
|              |                  | <b>Total</b>  | <b>6.80</b>   | <b>220kV BHP - Tsirang Line</b>   | <b>-62.05</b> |   |
| 5            | 40MW BHP (L/S)   | Unit- I   | 0.00          | 5MVA, 66/11kV TFR   | 0.71          | L/S & U/S unit-I on Standby   |
|              |                  | Unit- II  | 18.10         | 30MVA ICT, 220/66kV (HV)  | 19.09         |   |
|              |                  | <b>Total</b>  | <b>18.10</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.32%</b>  |   |
| 6            | 126MW DHP        | Unit-I  | 22.31         | 220kV DHP - Tsirang Line  | 22.08         | Unit-II under Shutdown.<br>220kV DHP_Dagapela Line on Standby.  |
|              |                  | Unit-II   | 0.00          | 220kV DHP - Dagapela Line   | 0.00          |   |
|              |                  | -   | -             | 220kV Jigmeling - Dagapela Line   | 61.68         |   |
|              |                  | -   | -             | 5MVA, 220/33kV TFR  | 0.20          |   |
| <b>Total</b> | <b>22.31</b>     | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.13%</b>  |   |               |   |
| 7            | 60MW KHP         | Unit- I   | 14.08         | 132kV KHP - Nangkhoh Line   | 12.04         | Unit-III under Shutdown.<br>Unit-IV on Standby.   |
|              |                  | Unit-II   | 14.10         | 132kV KHP - Kilikhar Line   | 15.19         |   |
|              |                  | Unit- III   | 0.00          | 5MVA, 132/11kV TFR  | 0.57          |   |
|              |                  | Unit- IV  | 0.00          | 132kV Motanga - Rangia Line   | 0.10          |   |
|              |                  | <b>Total</b>  | <b>28.18</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>1.35%</b>  |   |

**Note: Generation-Load Summary (MW) for January 17, 2023 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 | 420.04                | 391.16                                | 386.88                             | 71.87                    | 4.28   |
| 2            | Eastern Grid | 188.05                | 196.87                                | 195.24                             | -51.81                   | 1.63   |
| <b>Total</b> |              | <b>608.09</b>         | <b>588.03</b>                         | <b>582.12</b>                      | <b>20.06</b>             | <b>5.91</b>  |

**Note: Generation-Load Summary for January 17, 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 | 218.41                | 321.92                                | 321.89                             | -69.49                   | 0.03   |
| 2            | Eastern Grid | 221.39                | 87.33                                 | 86.27                              | 100.04                   | 1.06   |
| <b>Total</b> |              | <b>439.80</b>         | <b>409.25</b>                         | <b>408.16</b>                      | <b>30.55</b>             | <b>1.09</b>  |

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