

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

**Coincidental Maximum Load**

**Date:** November 11, 2022  
**Hours:** 18:00 Hours

**Date**      **Time**      **Load(MW)**  
 7-Nov-22      18:11hrs      609.06

| 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   | 180.24       | Unit-I under Shutdown.<br>Unit-II & IV on Standby.<br>400kV Tala-Malbase line under Shutdown.<br>400kV THP- Siliguri Line- II on Standby.   |
|              |                  | Unit- II  | 0.00          | 400kV THP - Siliguri Line - II  | 0.00         |   |
|              |                  | Unit- III   | 127.75        | 400kV THP - Siliguri Line- IV   | 172.83       |   |
|              |                  | Unit- IV  | 0.00          | 400kV THP - Malbase Line - III  | 0.00         |   |
|              |                  | Unit- V   | 128.14        | 400kV Malbase - Siliguri Line   | -73.84       |   |
|              |                  | Unit- VI  | 99.81         | -   | -            |   |
|              |                  | <b>Total</b>  | <b>355.70</b> | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.74%</b> |   |
| 2            | 720MW MHP        | Unit-I  | 118.30        | 400kV MHP - Jigmeling Line - I  | 0.00         | Unit-IV on standby.<br>Unit-III under shutdown.<br>400kV MHP-JLG Line I, II & IV on Standby.<br>132kV MHP_Yurmoo line I not in service.<br>400kV JLG_ALI Direct line II Standby.<br>400kV JLG_ALI Line II (Interim) on Standby. |
|              |                  | Unit-II   | 109.90        | 400kV MHP - Jigmeling Line - II   | 0.00         |   |
|              |                  | Unit-III  | 0.00          | 400kV MHP - Jigmeling Line - III  | 139.30       |   |
|              |                  | Unit-IV   | 0.00          | 400kV MHP - Jigmeling Line - IV   | 0.00         |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - I  | 0.00         |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - II   | 87.01        |   |
|              |                  | -   | -             | 500MVA, 400/220kV ICT at Jigmeling (HV)                                   | 98.74        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Interim)                           | 15.69        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Interim)                          | 0.00         |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Direct)                            | 23.61        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Direct)                           | 0.00         |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - I (HV)   | 11.74        |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - II (HV)  | 12.01        |   |
|              |                  | -   | -             | 220kV Tsirang - Jigmeling Line  | -13.14       |   |
| -            | -                | 132kV Gelephu - Salakati Line   | 2.05          |   |              |   |
| <b>Total</b> | <b>228.20</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.83%</b>  |   |              |   |
| 3            | 336MW CHP        | Unit- I   | 0.00          | 220kV CHP - Birpara Line- I   | 6.83         | Unit-I under Shutdown.  |
|              |                  | Unit- II  | 64.24         | 220kV CHP - Birpara Line- II  | 7.01         |   |
|              |                  | Unit- III   | 66.38         | 220kV CHP - Malbase Line- III   | 65.20        |   |
|              |                  | Unit- IV  | 55.02         | 220kV CHP - Semtokha Line- IV   | 75.92        |   |
|              |                  | -   | -             | 220kV Malbase - Birpara Line  | -38.40       |   |
|              |                  | -   | -             | 66kV CHP - Chumdo Line  | 22.04        |   |
|              |                  | -   | -             | 66kV CHP - Gedu Line  | 5.90         |   |
|              |                  | -   | -             | 3x3MVA, 66/11kV TFR   | 1.84         |   |
| <b>Total</b> | <b>185.64</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.48%</b>  |   |              |   |
| 4            | 24MW BHP (U/S)   | Unit- I   | 6.70          | 220kV BHP - Semtokha Line   | 63.00        |   |
|              |                  | Unit- II  | 6.50          | 66kV BHP - Lobeyssa Line  | 28.54        |   |
|              |                  | <b>Total</b>  | <b>13.20</b>  | 220kV BHP - Tsirang Line  | -52.62       |   |
| 5            | 40MW BHP (L/S)   | Unit- I   | 13.50         | 5MVA, 66/11kV TFR   | 0.73         |   |
|              |                  | Unit- II  | 13.00         | 30MVA ICT, 220/66kV (HV)  | 16.44        |   |
|              |                  | <b>Total</b>  | <b>26.50</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.13%</b> |   |
| 6            | 126MW DHP        | Unit-I  | 43.86         | 220kV DHP - Tsirang Line  | 43.62        |   |
|              |                  | Unit-II   | 0.00          | 220kV DHP - Dagapela Line   | 0.00         |   |
|              |                  | -   | -             | 220kV Jigmeling - Dagapela Line   | 62.75        |   |
|              |                  | -   | -             | 5MVA, 220/33kV TFR  | 0.23         |   |
| <b>Total</b> | <b>43.86</b>     | <b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>      | <b>0.02%</b>  |   |              |   |
| 7            | 60MW KHP         | Unit- I   | 13.08         | 132kV KHP - Nangkhoh Line   | 17.16        | Unit II under Shutdown.   |
|              |                  | Unit-II   | 0.00          | 132kV KHP - Kilikhar Line   | 21.11        |   |
|              |                  | Unit- III   | 13.11         | 5MVA, 132/11kV TFR  | 0.80         |   |
|              |                  | Unit- IV  | 13.10         | 132kV Motanga - Rangia Line   | 16.75        |   |
|              |                  | <b>Total</b>  | <b>39.29</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.56%</b> |   |

**Note: Generation-Load Summary (MW) for November 11, 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 | 624.90                | 383.37                                | 379.78                             | 254.67                   | 3.59   |
| 2            | Eastern Grid | 267.49                | 196.25                                | 194.14                             | 58.10                    | 2.11   |
| <b>Total</b> |              | <b>892.39</b>         | <b>579.62</b>                         | <b>573.92</b>                      | <b>312.77</b>            | <b>5.70</b>  |

**Note: Generation-Load Summary for November 11, 2021 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 | 861.85                | 348.96                                | 355.04                             | 503.63                   | -6.08  |
| 2            | Eastern Grid | 270.81                | 92.06                                 | 90.45                              | 188.01                   | 1.61   |
| <b>Total</b> |              | <b>1,132.66</b>       | <b>441.02</b>                         | <b>445.49</b>                      | <b>691.64</b>            | <b>-4.47</b>                                       |

**NOTE-**

- 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:
  - 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**

**Coincidental Maximum Load**

**Date:** November 12, 2022  
**Hours:** 09:00 Hours

| Date     | Time     | Load(MW) |
|----------|----------|----------|
| 7-Nov-22 | 18:11hrs | 609.06   |

| 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   | 169.80       | Unit-I & II under Shutdown.<br>Unit-IV on Standby.<br>400kV Tala-Malbase line under Shutdown.<br>400kV THP- Siliguri Line- II on Standby.   |
|              |                  | Unit- II  | 0.00          | 400kV THP - Siliguri Line - II  | 0.00         |   |
|              |                  | Unit- III   | 128.45        | 400kV THP - Siliguri Line- IV   | 164.01       |   |
|              |                  | Unit- IV  | 0.00          | 400kV THP - Malbase Line - III  | 0.00         |   |
|              |                  | Unit- V   | 107.89        | 400kV Malbase - Siliguri Line   | -62.06       |   |
|              |                  | Unit- VI  | 99.56         | -   | -            |   |
|              |                  | <b>Total</b>  | <b>335.90</b> | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.62%</b> |   |
| 2            | 720MW MHP        | Unit-I  | 110.22        | 400kV MHP - Jigmeling Line - I  | 0.00         | Unit-IV on standby.<br>Unit-III under shutdown.<br>400kV MHP-JLG Line I, II & IV on Standby.<br>132kV MHP_Yurmoo line I not in service.<br>400kV JLG_ALI Direct line II Standby.<br>400kV JLG_ALI Line II (Interim) on Standby. |
|              |                  | Unit-II   | 109.80        | 400kV MHP - Jigmeling Line - II   | 0.00         |   |
|              |                  | Unit-III  | 0.00          | 400kV MHP - Jigmeling Line - III  | 142.87       |   |
|              |                  | Unit-IV   | 0.00          | 400kV MHP - Jigmeling Line - IV   | 0.00         |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - I  | 0.00         |   |
|              |                  | -   | -             | 132kV MHP - Yurmo Line - II   | 75.97        |   |
|              |                  | -   | -             | 500MVA, 400/220kV ICT at Jigmeling (HV)                                   | 80.20        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Interim)                           | 23.79        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Interim)                          | 0.00         |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - I (Direct)                            | 37.35        |   |
|              |                  | -   | -             | 400kV Jigmeling - Alipurduar Line - II (Direct)                           | 0.00         |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - I (HV)   | 7.00         |   |
|              |                  | -   | -             | 80MVA, 220/132kV ICT - II (HV)  | 7.10         |   |
|              |                  | -   | -             | 220kV Tsirang - Jigmeling Line  | -4.38        |   |
| -            | -                | 132kV Gelephu - Salakati Line   | 1.91          |   |              |   |
| <b>Total</b> | <b>220.02</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.54%</b>  |   |              |   |
| 3            | 336MW CHP        | Unit- I   | 0.00          | 220kV CHP - Birpara Line- I   | 4.01         | Unit-I under shutdown.<br>Unit-III under breakdown.   |
|              |                  | Unit- II  | 90.00         | 220kV CHP - Birpara Line- II  | 3.83         |   |
|              |                  | Unit- III   | 0.00          | 220kV CHP - Malbase Line- III   | 70.65        |   |
|              |                  | Unit- IV  | 75.32         | 220kV CHP - Semtokha Line- IV   | 60.03        |   |
|              |                  | -   | -             | 220kV Malbase - Birpara Line  | -48.09       |   |
|              |                  | -   | -             | 66kV CHP - Chumdo Line  | 17.57        |   |
|              |                  | -   | -             | 66kV CHP - Gedu Line  | 6.85         |   |
|              |                  | -   | -             | 3x3MVA, 66/11kV TFR   | 1.16         |   |
| <b>Total</b> | <b>165.32</b>    | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.74%</b>  |   |              |   |
| 4            | 24MW BHP (U/S)   | Unit- I   | 6.60          | 220kV BHP - Semtokha Line   | 63.01        |   |
|              |                  | Unit- II  | 6.40          | 66kV BHP - Lobeysa Line   | 25.08        |   |
|              |                  | <b>Total</b>  | <b>13.00</b>  | 220kV BHP - Tsirang Line  | -48.44       |   |
| 5            | 40MW BHP (L/S)   | Unit- I   | 13.60         | 5MVA, 66/11kV TFR   | 0.39         |   |
|              |                  | Unit- II  | 13.60         | 30MVA ICT, 220/66kV (HV)  | 12.74        |   |
|              |                  | <b>Total</b>  | <b>27.20</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.40%</b> |   |
| 6            | 126MW DHP        | Unit-I  | 44.36         | 220kV DHP - Tsirang Line  | 44.14        | Unit-II on Standby.<br>220kV DHP_Dagapela Line on Standby.  |
|              |                  | Unit-II   | 0.00          | 220kV DHP - Dagapela Line   | 0.00         |   |
|              |                  | -   | -             | 220kV Jigmeling - Dagapela Line   | 61.50        |   |
|              |                  | -   | -             | 5MVA, 220/33kV TFR  | 0.20         |   |
| <b>Total</b> | <b>44.36</b>     | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>0.05%</b>  |   |              |   |
| 7            | 60MW KHP         | Unit- I   | 12.71         | 132kV KHP - Nangkhoh Line   | 20.55        | Unit IV under standby.  |
|              |                  | Unit-II   | 12.66         | 132kV KHP - Kilikhar Line   | 16.72        |   |
|              |                  | Unit- III   | 12.69         | 5MVA, 132/11kV TFR  | 0.38         |   |
|              |                  | Unit- IV  | 0.00          | 132kV Motanga - Rangia Line   | 13.57        |   |
|              |                  | <b>Total</b>  | <b>38.06</b>  | <b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b> | <b>1.08%</b> |   |

**Note: Generation-Load Summary (MW) for November 12, 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 | 585.78                | 358.66                                | 355.17                             | 231.50                   | 3.49   |
| 2            | Eastern Grid | 258.08                | 177.08                                | 175.49                             | 76.62                    | 1.59   |
| <b>Total</b> |              | <b>843.86</b>         | <b>535.74</b>                         | <b>530.66</b>                      | <b>308.12</b>            | <b>5.08</b>  |

**Note: Generation-Load Summary for November 12, 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 | 829.63                | 288.03                                | 294.30                             | 522.85                   | -6.27  |
| 2            | Eastern Grid | 260.34                | 65.47                                 | 64.51                              | 213.62                   | 0.96   |
| <b>Total</b> |              | <b>1,089.97</b>       | <b>353.50</b>                         | <b>358.81</b>                      | <b>736.47</b>            | <b>-5.31</b>                                       |

**NOTE-**

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