

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

| | |
|---------------|---------------------|
| Date: | May 27, 2021 |
| Hours: | 19:00 Hours |

| Date | Time | Load(MW) |
|-------------|-------------|-----------------|
| 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 | 188.48 | 400kV THP - Siliguri Line - I | 273.63 | + | |
| | | Unit- II | 184.42 | 400kV THP - Siliguri Line - II | 271.17 | + | |
| | | Unit- III | 186.61 | 400kV THP - Siliguri Line- IV | 264.51 | + | |
| | | Unit- IV | 187.36 | 400kV THP - Malbase Line - III | 286.95 | + | |
| | | Unit- V | 187.75 | 400kV Malbase - Siliguri Line | 254.17 | + | |
| | | Unit- VI | 180.80 | - | - | - | |
| | | Total | 1,115.42 | Error at Station/Auxiliary Consumption/Losses | | 1.718% | |
| 2 | 720MW MHP | Unit-I | 197.79 | 400kV MHP - Jigmeling Line - I | 0.00 | | Unit -III under breakdown. 400kV MHP-JLG Line I & III on standby. 132kV MHP_Yurmoo line I & II not in service. 400/220kV ICT at JLG in service. |
| | | Unit-II | 196.17 | 400kV MHP - Jigmeling Line - II | 294.01 | + | |
| | | Unit-III | 0.00 | 400kV MHP - Jigmeling Line - III | 0.00 | | |
| | | Unit-IV | 198.39 | 400kV MHP - Jigmeling Line - IV | 294.57 | + | |
| | | - | - | 132kV MHP - Yurmo Line - I | 0.00 | | |
| | | - | - | 132kV MHP - Yurmo Line - II | 0.00 | | |
| | | - | - | 500MVA, 400/220kV ICT at Jigmeling (HV) | 0.00 | | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - I | 290.20 | + | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - II | 290.20 | + | |
| | | - | - | 80MVA, 220/132kV ICT - I (HV) | 44.80 | + | |
| | | - | - | 80MVA, 220/132kV ICT - II (HV) | 44.80 | + | |
| | | - | - | 220kV Tsirang - Jigmeling Line | 91.40 | + | |
| | | - | - | 132kV Gelephu - Salakati Line | 43.92 | + | |
| Total | 592.35 | Error at Station/Auxiliary Consumption/Losses | | 0.636% | | | |
| 3 | 336MW CHP | Unit- I | 91.38 | 220kV CHP - Birpara Line- I | 116.29 | + | 66kV CHP-Watsa section under shutdown. |
| | | Unit- II | 90.83 | 220kV CHP - Birpara Line- II | 116.08 | + | |
| | | Unit- III | 91.43 | 220kV CHP - Malbase Line- III | 159.80 | + | |
| | | Unit- IV | 91.66 | 220kV CHP - Semtokha Line- IV | -38.23 | - | |
| | | - | - | 220kV Malbase - Birpara Line | 67.90 | + | |
| | | - | - | 66kV CHP - Chumdo Line | 0.00 | | |
| | | - | - | 66kV CHP - Gedu Line | 8.67 | + | |
| | | - | - | 3x3MVA, 66/11kV TFR | 1.30 | + | |
| Total | 365.30 | Error at Station/Auxiliary Consumption/Losses | | 0.381% | | | |
| 4 | 24MW BHP (U/S) | Unit- I | 12.30 | 220kV BHP - Semtokha Line | 85.00 | + | |
| | | Unit- II | 12.20 | 66kV BHP - Lobeyasa Line | 9.10 | + | |
| | | Total | 24.50 | 220kV BHP - Tsirang Line | -29.95 | - | |
| | 40MW BHP (L/S) | Unit- I | 20.40 | 5MVA, 66/11kV TFR | 0.90 | + | |
| | | Unit- II | 20.60 | 30MVA ICT, 220/66kV (HV) | 14.53 | + | |
| Total | 41.00 | Error at Station/Auxiliary Consumption/Losses | | 0.687% | | | |
| 5 | 126MW DHP | Unit-I | 63.33 | 220kV DHP - Tsirang Line | 126.01 | + | 220kV DHP_Dagapela Line on standby. |
| | | Unit-II | 63.17 | 220kV DHP - Dagapela Line | 0.00 | | |
| | | - | - | 220kV Jigmeling - Dagapela Line | 1.70 | + | |
| | | - | - | 5MVA, 220/33kV TFR | 0.20 | + | |
| | | Total | 126.50 | Error at Station/Auxiliary Consumption/Losses | | 0.229% | |
| 6 | 60MW KHP | Unit- I | 16.46 | 132kV KHP - Nangkhor Line | 35.75 | + | |
| | | Unit-II | 16.37 | 132kV KHP - Kilikhar Line | 29.05 | + | |
| | | Unit- III | 16.50 | 5MVA, 132/11kV TFR | 0.23 | + | |
| | | Unit- IV | 16.46 | 132kV Motanga - Rangia Line | 55.70 | + | |
| | | Total | 65.79 | Error at Station/Auxiliary Consumption/Losses | | 1.152% | |

Note: Generation-Load Summary (MW) for May 27, 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 | 1,672.72 | 217.57 | 197.98 | 1,363.75 | 19.59 |
| 2 | Eastern Grid | 658.14 | 69.52 | 64.99 | 680.02 | 4.53 |
| Total | | 2,330.86 | 287.09 | 262.97 | 2,043.77 | 24.12 |

Note: Generation-Load Summary for May 27, 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 | 1,304.58 | 217.23 | 205.51 | 1,034.37 | 11.72 |
| 2 | Eastern Grid | 819.60 | 51.88 | 47.20 | 820.70 | 4.68 |
| Total | | 2,124.18 | 269.11 | 252.71 | 1,855.07 | 16.40 |

NOTE-BHP & MHP data collected site

1. 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:

- 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

Maximum Load/Demand till Date

| | |
|---------------|---------------------|
| Date: | May 28, 2021 |
| Hours: | 09:00 Hours |

| Date | Time | Load(MW) |
|-------------|-------------|-----------------|
| 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 | 187.22 | 400kV THP - Siliguri Line - I | 281.54 | + | |
| | | Unit- II | 186.66 | 400kV THP - Siliguri Line - II | 279.03 | + | |
| | | Unit- III | 187.76 | 400kV THP - Siliguri Line- IV | 274.42 | + | |
| | | Unit- IV | 189.44 | 400kV THP - Malbase Line - III | 275.01 | + | |
| | | Unit- V | 186.46 | 400kV Malbase - Siliguri Line | 262.01 | + | |
| | | Unit- VI | 187.01 | - | - | - | |
| | | Total | 1,124.55 | Error at Station/Auxiliary Consumption/Losses | | 1.294% | |
| 2 | 720MW MHP | Unit-I | 197.75 | 400kV MHP - Jigmeling Line - I | 0.00 | | Unit-III under breakdown. 400kV MHP-JLG Line I & III on standby. 132kV MHP_Yurmo line I & II not in service. |
| | | Unit-II | 196.66 | 400kV MHP - Jigmeling Line - II | 294.35 | + | |
| | | Unit-III | 0.00 | 400kV MHP - Jigmeling Line - III | 0.00 | | |
| | | Unit-IV | 198.38 | 400kV MHP - Jigmeling Line - IV | 294.87 | + | |
| | | - | - | 132kV MHP - Yurmo Line - I | 0.00 | | |
| | | - | - | 132kV MHP - Yurmo Line - II | 0.00 | | |
| | | - | - | 500MVA, 400/220kV ICT at Jigmeling (HV) | 0.00 | + | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - I | 290.88 | + | |
| | | - | - | 400kV Jigmeling - Alipurduar Line - II | 288.70 | + | |
| | | - | - | 80MVA, 220/132kV ICT - I (HV) | 38.90 | + | |
| | | - | - | 80MVA, 220/132kV ICT - II (HV) | 39.00 | + | |
| | | - | - | 220kV Tsirang - Jigmeling Line | 78.89 | + | |
| | | - | - | 132kV Gelephu - Salakati Line | 43.80 | + | |
| | | Total | 592.79 | Error at Station/Auxiliary Consumption/Losses | | 0.602% | |
| 3 | 336MW CHP | Unit- I | 91.60 | 220kV CHP - Birpara Line- I | 125.80 | + | 66kV CHP-Watsa section under shutdown. |
| | | Unit- II | 91.08 | 220kV CHP - Birpara Line- II | 125.56 | + | |
| | | Unit- III | 91.81 | 220kV CHP - Malbase Line- III | 178.81 | + | |
| | | Unit- IV | 91.78 | 220kV CHP - Semtokha Line- IV | -76.00 | - | |
| | | - | - | 220kV Malbase - Birpara Line | 60.00 | + | |
| | | - | - | 66kV CHP - Chumdo Line | 0.00 | | |
| | | - | - | 66kV CHP - Gedu Line | 8.20 | + | |
| | | - | - | 3x3MVA, 66/11kV TFR | 0.70 | + | |
| Total | 366.27 | Error at Station/Auxiliary Consumption/Losses | | 0.874% | | | |
| 4 | 24MW BHP (U/S) | Unit- I | 11.70 | 220kV BHP - Semtokha Line | 76.57 | + | |
| | | Unit- II | 11.40 | 66kV BHP - Lobeyasa Line | 26.80 | + | |
| | | Total | 23.10 | 220kV BHP - Tsirang Line | -43.96 | - | |
| | 40MW BHP (L/S) | Unit- I | 19.10 | 5MVA, 66/11kV TFR | 0.89 | + | |
| | | Unit- II | 19.10 | 30MVA ICT, 220/66kV (HV) | 4.64 | + | |
| Total | 38.20 | Error at Station/Auxiliary Consumption/Losses | | 1.631% | | | |
| 5 | 126MW DHP | Unit-I | 63.57 | 220kV DHP - Tsirang Line | 126.22 | + | 220kV DHP_Dagapela Line on standby. |
| | | Unit-II | 63.17 | 220kV DHP - Dagapela Line | 0.00 | | |
| | | - | - | 220kV Jigmeling - Dagapela Line | 0.90 | + | |
| | | - | - | 5MVA, 220/33kV TFR | 0.27 | + | |
| | | Total | 126.74 | Error at Station/Auxiliary Consumption/Losses | | 0.197% | |
| 6 | 60MW KHP | Unit- I | 16.45 | 132kV KHP - Nangkhor Line | 37.62 | + | |
| | | Unit-II | 16.52 | 132kV KHP - Kilikhar Line | 27.42 | + | |
| | | Unit- III | 16.50 | 5MVA, 132/11kV TFR | 0.21 | + | |
| | | Unit- IV | 16.56 | 132kV Motanga - Rangia Line | 59.37 | + | |
| | | Total | 66.03 | Error at Station/Auxiliary Consumption/Losses | | 1.181% | |

Note: Generation-Load Summary (MW) for May 28, 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 | 1,678.86 | 191.61 | 173.51 | 1,408.36 | 18.10 |
| 2 | Eastern Grid | 658.82 | 54.96 | 50.61 | 682.75 | 4.35 |
| Total | | 2,337.68 | 246.57 | 224.12 | 2,091.11 | 22.45 |

Note: Generation-Load Summary for May 28, 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 | 1,094.11 | 204.81 | 193.49 | 845.87 | 11.32 |
| 2 | Eastern Grid | 546.35 | 39.15 | 36.15 | 550.63 | 3.00 |
| Total | | 1,640.46 | 243.96 | 229.64 | 1,396.50 | 14.32 |

NOTE-BHP & MHP data collected site

1. 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:

- 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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