

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

| | |
|--------|----------------|
| Date: | March 12, 2020 |
| Hours: | 19:00 Hours |

| Date | Time | Load(MW) |
|-----------|----------|----------|
| 27-Dec-18 | 18:18hrs | 399.35MW |

| Sl. No. | Hydropower Plant | Unit | MW | Name of Feeders | Load (MW) | Sign | Remarks |
|--------------|------------------|--|---------------|--|--------------|------|--|
| 1 | 1020MW THP | Unit- I | 0.00 | 400kV THP - Siliguri Fdr- I | 0.00 | | Unit-III & V at standby. Unit- I, IV& 400kV Feeder I under AMP. 400kV THP_SILI II Standby |
| | | Unit- II | 149.93 | 400kV THP - Siliguri Fdr- II | 0.00 | | |
| | | Unit- III | 0.00 | 400kV THP - Siliguri Fdr- IV | 60.77 | + | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Fdr- III | 154.57 | + | |
| | | Unit- V | 0.00 | 400kV Malbase - Siliguri | 44.00 | + | |
| | | Unit- VI | 70.67 | - | - | - | |
| | | Total | 220.60 | Error at Station/Auxiliary Consumption/Losses | 5.26 | | |
| 2 | 720MW MHP | Unit-I | 0.00 | 400kV MHP - Jigmeling Fdr - I | 0.00 | | Unit-I & II under standby. & Unit-IV underbreak down 400kV MHP-JLG I,II & III Standby. |
| | | Unit-II | 0.00 | 400kV MHP - Jigmeling Fdr - II | 0.00 | + | |
| | | Unit-III | 98.20 | 400kV MHP - Jigmeling Fdr - III | 0.00 | | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Fdr - IV | 96.50 | + | |
| | | - | - | 200MVA, 400/132kV ICT | | | |
| | | - | - | (Local Load) | | | |
| | | Total | 98.20 | Error at Station/Auxiliary Consumption/Losses | 1.70 | | |
| 3 | 336MW CHP | Unit- I | 0.00 | 220kV CHP - Birpara Fdr- I | 0.00 | | Unit-I & III under shutdown. 220kV CHP-Birpara Fdr I standby. 220kV CHP-Malbase Fdr III under AMP. |
| | | Unit- II | 50.80 | 220kV CHP - Birpara Fdr- II | 8.87 | + | |
| | | Unit- III | 0.00 | 220kV CHP - Malbase Fdr- III | 0.00 | + | |
| | | Unit- IV | 50.50 | 220kV CHP - Sementokha Fdr- IV | 68.11 | + | |
| | | - | - | 220kV Malbase - Birpara Fdr. | -53.00 | - | |
| | | - | - | 66kV CHP - Chumdo Fdr. | 13.99 | + | |
| | | - | - | 66kV CHP - Gedu Fdr. | 6.65 | + | |
| | | - | - | 3x3MVA, 66/11kV TFR | 1.97 | + | |
| Total | 101.30 | Error at Station/Auxiliary Consumption/Losses | 1.71 | | | | |
| 4 | 24MW BHP (U/S) | Unit- I | 4.84 | 220kV BHP - Sementokha Fdr. | -11.48 | - | U/S Unit-II and LS Unit II under shutdown. |
| | | Unit- II | 0.00 | 66kV BHP - Lobeysha Fdr. | 13.14 | + | |
| | | Total | 4.84 | 220kV BHP - Tsirang Fdr. | 12.21 | + | |
| | 40MW BHP (L/S) | Unit- I | 10.40 | 5MVA, 66/11kV TFR | 0.97 | + | |
| | | Unit- II | 0.00 | 30MVA ICT, 220/66kV | | | |
| Total | 10.40 | Error at Station/Auxiliary Consumption/Losses | 0.40 | | | | |
| 5 | 126MW DHPC | Unit-I | 16.22 | 220kV DHPC - Tsirang Fdr. | 16.01 | + | Unit II under maintenance |
| | | Unit-II | 0.00 | 220kV Jigmeling - Dagapela Fdr. | | | |
| | | - | - | 5MVA, 220/33kV TFR | | | |
| | | Total | 16.22 | Error at Station/Auxiliary Consumption/Losses | 0.21 | | |
| 6 | 60MW KHP | Unit- I | 11.60 | 132kV KHP - Nangkhon Fdr- I | 10.74 | + | Unit- III & IV Annual Maintenance |
| | | Unit-II | 11.08 | 132kV KHP - Kilikhar Fdr- II | 12.28 | + | |
| | | Unit- III | 0.00 | 5MVA, 132/11kV TFR | 0.40 | + | |
| | | Unit- IV | 0.00 | 132kV Gelephu - Salakati Fdr. | -21.46 | - | |
| | | - | - | 132kV Motanga - Rangia Fdr. | -22.13 | - | |
| | | - | - | 220kV Tsirang - Jigmeling | 25.29 | + | |
| | | Total | 22.68 | Error at Station/Auxiliary Consumption/Losses | -0.74 | | |

Note: Load summary on March 12, 2020 at 19:00hrs.

| Sl. No | Region | Total Generation (MW) | Total Load [Generation - Export (MW)] | Total Load [Feeder Summation (MW)] | Total Export/Import | Load Balance |
|--------|--------------|-----------------------|---------------------------------------|------------------------------------|---------------------|--------------|
| 1 | Western Grid | 353.36 | 267.43 | 259.85 | 60.64 | 7.58 |
| 2 | Eastern Grid | 120.88 | 93.26 | 92.30 | 52.91 | 0.96 |
| | Total | 474.24 | 360.69 | 352.15 | 113.55 | 8.54 |

Note: Load Summary on March 12, 2019 at 19:00hrs

| Sl. No | Region | 19:00Hrs Load (MW) | Day Peak Load (MW) | Month Peak Load (MW) |
|--------|-----------------|--------------------|--------------------|----------------------|
| 1 | Western Grid | 238.37 | 272.29 | 286.38 |
| 2 | Eastern Grid | 49.81 | 62.57 | 62.64 |
| | National | 288.18 | 334.86 | 349.02 |

NOTES: KHP, CHP and Malbase loads 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.
 - 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

| | |
|--------|----------------|
| Date: | March 13, 2020 |
| Hours: | 09:00 Hours |

| Date | Time | Load(MW) |
|-----------|----------|----------|
| 27-Dec-18 | 18:18hrs | 399.35MW |

| Sl. No. | Hydropower Plant | Unit | MW | Name of Feeders | Load (MW) | Sign | Remarks |
|--------------|------------------|--|---------------|--|-------------|------|--|
| 1 | 1020MW THP | Unit- I | 0.00 | 400kV THP - Siliguri Fdr- I | 0.00 | | Unit- III,IV & V standby. Unit-I under shutdown. 400kV THP_SILI-I under AMP 400kV THP-SIL II Standby |
| | | Unit- II | 59.81 | 400kV THP - Siliguri Fdr- II | 0.00 | | |
| | | Unit- III | 0.00 | 400kV THP - Siliguri Fdr- IV | 23.08 | + | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Fdr- III | 103.61 | + | |
| | | Unit- V | 0.00 | 400kV Malbase - Siliguri | 6.00 | + | |
| | | Unit- VI | 70.71 | - | - | - | |
| | | Total | 130.52 | Error at Station/Auxiliary Consumption/Losses | 3.83 | | |
| 2 | 720MW MHP | Unit-I | 97.00 | 400kV MHP - Jigmeling Fdr - I | 0.00 | | Unit-II & III under standby, Unit-IV under shutdown. 400kV MHP-JLG I,II & III Standby. |
| | | Unit-II | 0.00 | 400kV MHP - Jigmeling Fdr - II | 0.00 | + | |
| | | Unit-III | 0.00 | 400kV MHP - Jigmeling Fdr - III | 0.00 | | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Fdr - IV | 96.78 | + | |
| | | - | - | 200MVA, 400/132kV ICT | | | |
| | | - | - | (Local Load) | | | |
| | | Total | 97.00 | Error at Station/Auxiliary Consumption/Losses | 0.22 | | |
| 3 | 336MW CHP | Unit- I | 0.00 | 220kV CHP - Birpara Fdr- I | 0.00 | + | Unit-I & III under shutdown. 220kV CHP-Birpara Fdr I under standby. 220kV CHP-Malbase Fdr III under AMP. |
| | | Unit- II | 32.50 | 220kV CHP - Birpara Fdr- II | 13.55 | + | |
| | | Unit- III | 0.00 | 220kV CHP - Malbase Fdr- III | 0.00 | + | |
| | | Unit- IV | 33.00 | 220kV CHP - Sementokha Fdr- IV | 34.43 | + | |
| | | - | - | 220kV Malbase - Birpara Fdr. | -64.00 | - | |
| | | - | - | 66kV CHP - Chumdo Fdr. | 8.85 | + | |
| | | - | - | 66kV CHP - Gedu Fdr. | 6.59 | + | |
| | | - | - | 3x3MVA, 66/11kV TFR | 1.15 | + | |
| Total | 65.50 | Error at Station/Auxiliary Consumption/Losses | 0.93 | | | | |
| 4 | 24MW BHP (U/S) | Unit- I | 5.07 | 220kV BHP - Sementokha Fdr. | 8.47 | - | U/S Unit-II and LS Unit II under shutdown. |
| | | Unit- II | 0.00 | 66kV BHP - Lobeysa Fdr. | 11.12 | + | |
| | | Total | 5.07 | 220kV BHP - Tsirang Fdr. | -4.58 | + | |
| | 40MW BHP (L/S) | Unit- I | 10.47 | 5MVA, 66/11kV TFR | 0.55 | + | |
| | | Unit- II | 0.00 | 30MVA ICT, 220/66kV | | | |
| Total | 10.47 | Error at Station/Auxiliary Consumption/Losses | -0.02 | | | | |
| 5 | 126MW DHPC | Unit-I | 17.24 | 220kV DHPC - Tsirang Fdr. | 17.03 | + | Unit II under maintenance |
| | | Unit-II | 0.00 | 220kV Jigmeling - Dagapela Fdr. | | | |
| | | - | - | 5MVA, 220/33kV TFR | | | |
| | | Total | 17.24 | Error at Station/Auxiliary Consumption/Losses | 0.21 | | |
| 6 | 60MW KHP | Unit- I | 12.61 | 132kV KHP - Nangkhor Fdr- I | 13.43 | + | Unit-III & IV AMP |
| | | Unit-II | 10.38 | 132kV KHP - Kilikhar Fdr- II | 8.99 | + | |
| | | Unit- III | 0.00 | 5MVA, 132/11kV TFR | 0.30 | + | |
| | | Unit- IV | 0.00 | 132kV Gelephu - Salakati Fdr. | -18.61 | - | |
| | | - | - | 132kV Motanga - Rangia Fdr. | -15.85 | - | |
| | | - | - | 220kV Tsirang - Jigmeling | 10.26 | + | |
| | | Total | 22.99 | Error at Station/Auxiliary Consumption/Losses | 0.27 | | |

Note: Load summary on March 13, 2020 at 09:00hrs.

| Sl. No | Region | Total Generation (MW) | Total Load [Generation - Export (MW)] | Total Load [Feeder Summation (MW)] | Total Export/Import | Load Balance |
|--------|--------------|-----------------------|---------------------------------------|------------------------------------|---------------------|--------------|
| 1 | Western Grid | 228.80 | 239.91 | 234.96 | -21.37 | 4.95 |
| 2 | Eastern Grid | 119.99 | 67.93 | 67.44 | 62.32 | 0.49 |
| | Total | 348.79 | 307.84 | 302.40 | 40.95 | 5.44 |

Note: Load Summary on March 13, 2019 at 09:00hrs

| Sl. No | Region | 09:00Hrs Load (MW) | Day Peak Load (MW) | Month Peak Load (MW) |
|--------|-----------------|--------------------|--------------------|----------------------|
| 1 | Western Grid | 227.35 | 259.71 | 286.38 |
| 2 | Eastern Grid | 48.90 | 57.10 | 62.64 |
| | National | 276.25 | 316.81 | 349.02 |

NOTES: KHP ,JLG and Malbase loads 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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