

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

| | |
|--------|----------------|
| Date: | March 26, 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 | 69.83 | + | Unit-V standby. Unit-I,III & IV under shutdown. 400kV THP-SIL II & IV Standby |
| | | Unit- II | 159.35 | 400kV THP - Siliguri Fdr- II | 0.00 | | |
| | | Unit- III | 0.00 | 400kV THP - Siliguri Fdr- IV | 0.00 | | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Fdr- III | 145.01 | + | |
| | | Unit- V | 0.00 | 400kV Malbase - Siliguri | 48.79 | + | |
| | | Unit- VI | 60.76 | - | - | - | |
| | | Total | 220.11 | Error at Station/Auxiliary Consumption/Losses | 5.27 | | |
| 2 | 720MW MHP | Unit-I | 0.00 | 400kV MHP - Jigmeling Fdr - I | 0.00 | | Unit I, II Under Standby and Unit-IV under shutdown. 400kV MHP-JLG I,II & III Standby. |
| | | Unit-II | 0.00 | 400kV MHP - Jigmeling Fdr - II | 0.00 | | |
| | | Unit-III | 125.12 | 400kV MHP - Jigmeling Fdr - III | 0.00 | | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Fdr - IV | 124.54 | + | |
| | | - | - | 200MVA, 400/132kV ICT | | | |
| | | - | - | (Local Load) | | | |
| | | Total | 125.12 | Error at Station/Auxiliary Consumption/Losses | 0.58 | | |
| 3 | 336MW CHP | Unit- I | 0.00 | 220kV CHP - Birpara Fdr- I | -0.10 | - | Unit-I & III under shutdown. |
| | | Unit- II | 57.59 | 220kV CHP - Birpara Fdr- II | -0.10 | - | |
| | | Unit- III | 0.00 | 220kV CHP - Malbase Fdr- III | 46.77 | + | |
| | | Unit- IV | 58.80 | 220kV CHP - Sementokha Fdr- IV | 50.21 | + | |
| | | - | - | 220kV Malbase - Birpara Fdr. | -35.03 | - | |
| | | - | - | 66kV CHP - Chumdo Fdr. | 12.42 | + | |
| | | - | - | 66kV CHP - Gedu Fdr. | 3.73 | + | |
| | | - | - | 3x3MVA, 66/11kV TFR | 1.81 | + | |
| Total | 116.39 | Error at Station/Auxiliary Consumption/Losses | 1.65 | | | | |
| 4 | 24MW BHP (U/S) | Unit- I | 4.78 | 220kV BHP - Sementokha Fdr. | 0.66 | + | U/S Unit-II and LS Unit II under shutdown. |
| | | Unit- II | 0.00 | 66kV BHP - Lobeyasa Fdr. | 11.70 | + | |
| | | Total | 4.78 | 220kV BHP - Tsirang Fdr. | 1.36 | + | |
| | 40MW BHP (L/S) | Unit- I | 9.91 | 5MVA, 66/11kV TFR | 0.76 | + | |
| | | Unit- II | 0.00 | 30MVA ICT, 220/66kV | | | |
| Total | 9.91 | Error at Station/Auxiliary Consumption/Losses | 0.21 | | | | |
| 5 | 126MW DHPC | Unit-I | 15.81 | 220kV DHPC - Tsirang Fdr. | 15.59 | + | Unit-II under maintenance |
| | | Unit-II | 0.00 | 220kV Jigmeling - Dagapela Fdr. | | | |
| | | - | - | 5MVA, 220/33kV TFR | | | |
| | | Total | 15.81 | Error at Station/Auxiliary Consumption/Losses | 0.22 | | |
| 6 | 60MW KHP | Unit- I | 0.00 | 132kV KHP - Nangkhon Fdr- I | 15.23 | + | Unit-I & IV under AM. |
| | | Unit-II | 16.50 | 132kV KHP - Kilikhar Fdr- II | 15.35 | + | |
| | | Unit- III | 16.50 | 5MVA, 132/11kV TFR | 0.44 | + | |
| | | Unit- IV | 0.00 | 132kV Gelephu - Salakati Fdr. | -15.79 | - | |
| | | - | - | 132kV Motanga - Rangia Fdr. | 4.41 | + | |
| | | - | - | 220kV Tsirang - Jigmeling | 13.70 | + | |
| | | Total | 33.00 | Error at Station/Auxiliary Consumption/Losses | 1.98 | | |

Note: Load summary on March 26, 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 | 367.00 | 269.91 | 262.56 | 83.39 | 7.35 |
| 2 | Eastern Grid | 158.12 | 58.66 | 56.10 | 113.16 | 2.56 |
| | Total | 525.12 | 328.57 | 318.66 | 196.55 | 9.91 |

Note: Load Summary on March 26, 2019 at 19:00hrs

| Sl. No | Region | 19:00Hrs Load (MW) | Day Peak Load (MW) | Month Peak Load (MW) |
|--------|-----------------|--------------------|--------------------|----------------------|
| 1 | Western Grid | 278.12 | 280.39 | 286.38 |
| 2 | Eastern Grid | 50.70 | 50.85 | 62.64 |
| | National | 328.82 | 331.24 | 349.02 |

NOTES:KHP,MHP 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.

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| Date: | March 27, 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 | 37.36 | + | Unit-V standby. Unit-I, III & IV under shutdown. 400kV THP-SIL II & IV Standby |
| | | Unit- II | 79.93 | 400kV THP - Siliguri Fdr- II | 0.00 | | |
| | | Unit- III | 0.00 | 400kV THP - Siliguri Fdr- IV | 0.00 | | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Fdr- III | 98.96 | + | |
| | | Unit- V | 0.00 | 400kV Malbase - Siliguri | 22.98 | + | |
| | | Unit- VI | 60.77 | - | - | - | |
| | | Total | 140.70 | Error at Station/Auxiliary Consumption/Losses | 4.38 | | |
| 2 | 720MW MHP | Unit-I | 0.00 | 400kV MHP - Jigmeling Fdr - I | 0.00 | | Unit-I & II 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 | 159.00 | 400kV MHP - Jigmeling Fdr - III | 0.00 | | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Fdr - IV | 157.10 | + | |
| | | - | - | 200MVA, 400/132kV ICT | | | |
| | | - | - | (Local Load) | | | |
| | | Total | 159.00 | Error at Station/Auxiliary Consumption/Losses | 1.90 | | |
| 3 | 336MW CHP | Unit- I | 0.00 | 220kV CHP - Birpara Fdr- I | -2.17 | - | Unit-I & III under shutdown. |
| | | Unit- II | 37.47 | 220kV CHP - Birpara Fdr- II | -2.11 | - | |
| | | Unit- III | 0.00 | 220kV CHP - Malbase Fdr- III | 46.69 | + | |
| | | Unit- IV | 40.31 | 220kV CHP - Sementokha Fdr- IV | 21.48 | + | |
| | | - | - | 220kV Malbase - Birpara Fdr. | -38.65 | - | |
| | | - | - | 66kV CHP - Chumdo Fdr. | 7.94 | + | |
| | | - | - | 66kV CHP - Gedu Fdr. | 3.22 | + | |
| | | - | - | 3x3MVA, 66/11kV TFR | 1.12 | + | |
| | | Total | 77.78 | Error at Station/Auxiliary Consumption/Losses | 1.61 | | |
| 4 | 24MW BHP (U/S) | Unit- I | 5.14 | 220kV BHP - Sementokha Fdr. | 13.32 | + | U/S Unit-II and LS Unit II under shutdown. |
| | | Unit- II | 0.00 | 66kV BHP - Lobeysa Fdr. | 10.06 | + | |
| | | Total | 5.14 | 220kV BHP - Tsirang Fdr. | -7.61 | - | |
| | 40MW BHP (L/S) | Unit- I | 10.90 | 5MVA, 66/11kV TFR | 0.45 | + | |
| | | Unit- II | | 30MVA ICT, 220/66kV | | | |
| Total | 10.90 | Error at Station/Auxiliary Consumption/Losses | -0.18 | | | | |
| 5 | 126MW DHPC | Unit-I | 16.61 | 220kV DHPC - Tsirang Fdr. | 16.41 | + | Unit II under maintenance |
| | | Unit-II | 0.00 | 220kV Jigmeling - Dagapela Fdr. | | | |
| | | - | - | 5MVA, 220/33kV TFR | | | |
| | | Total | 16.61 | Error at Station/Auxiliary Consumption/Losses | 0.20 | | |
| 6 | 60MW KHP | Unit- I | 0.00 | 132kV KHP - Nangkhon Fdr- I | 19.51 | + | Unit-I & IV AMP. |
| | | Unit-II | 16.50 | 132kV KHP - Kilikhar Fdr- II | 12.48 | + | |
| | | Unit- III | 16.50 | 5MVA, 132/11kV TFR | 0.30 | + | |
| | | Unit- IV | 0.00 | 132kV Gelephu - Salakati Fdr. | -11.42 | - | |
| | | - | - | 132kV Motanga - Rangia Fdr. | 2.00 | + | |
| | | - | - | 220kV Tsirang - Jigmeling | 7.17 | + | |
| | | Total | 33.00 | Error at Station/Auxiliary Consumption/Losses | 0.71 | | |

Note: Load summary on March 27, 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 | 251.13 | 226.55 | 220.54 | 17.41 | 6.01 |
| 2 | Eastern Grid | 192.00 | 51.49 | 48.88 | 147.68 | 2.61 |
| | Total | 443.13 | 278.04 | 269.42 | 165.09 | 8.62 |

Note: Load Summary on March 27, 2019 at 09:00hrs

| Sl. No | Region | 09:00Hrs Load (MW) | Day Peak Load (MW) | Month Peak Load (MW) |
|--------|-----------------|--------------------|--------------------|----------------------|
| 1 | Western Grid | 254.13 | 279.00 | 286.38 |
| 2 | Eastern Grid | 43.75 | 54.06 | 62.64 |
| | National | 297.88 | 333.06 | 349.02 |

NOTES: KHP, MHP load 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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