

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

| | |
|--------|----------------|
| Date: | April 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 | 149.02 | 400kV THP - Siliguri Fdr- I | 84.79 | + | Unit- II & V standby. Unit-III & IV under shutdown. 400kV THP-SIL II standby |
| | | Unit- II | 0.00 | 400kV THP - Siliguri Fdr- II | 0.00 | | |
| | | Unit- III | 0.00 | 400kV THP - Siliguri Fdr- IV | 78.41 | + | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Fdr- III | 151.08 | + | |
| | | Unit- V | 0.00 | 400kV Malbase - Siliguri | 63.00 | + | |
| | | Unit- VI | 170.08 | - | - | - | |
| | | Total | 319.10 | Error at Station/Auxiliary Consumption/Losses | 4.82 | | |
| 2 | 720MW MHP | Unit-I | 0.00 | 400kV MHP - Jigmeling Fdr - I | 149.09 | + | Unit-II & IV Standby & Unit I AMP. 400kV MHP-JLG II,III & IV Standby. |
| | | Unit-II | 0.00 | 400kV MHP - Jigmeling Fdr - II | 0.00 | | |
| | | Unit-III | 150.00 | 400kV MHP - Jigmeling Fdr - III | 0.00 | | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Fdr - IV | 0.00 | | |
| | | - | - | 200MVA, 400/132kV ICT | | | |
| | | - | - | (Local Load) | | | |
| | | Total | 150.00 | Error at Station/Auxiliary Consumption/Losses | 0.91 | | |
| 3 | 336MW CHP | Unit- I | 0.00 | 220kV CHP - Birpara Fdr- I | 46.43 | + | Unit-I, IV & 220kV CHP-Mal under shutdown. |
| | | Unit- II | 72.07 | 220kV CHP - Birpara Fdr- II | 46.15 | + | |
| | | Unit- III | 75.97 | 220kV CHP - Malbase Fdr- III | 0.00 | | |
| | | Unit- IV | 0.00 | 220kV CHP - Semtokha Fdr- IV | 33.99 | + | |
| | | - | - | 220kV Malbase - Birpara Fdr. | -58.71 | - | |
| | | - | - | 66kV CHP - Chumdo Fdr. | 10.28 | + | |
| | | - | - | 66kV CHP - Gedu Fdr. | 8.03 | + | |
| | | Total | 148.04 | Error at Station/Auxiliary Consumption/Losses | 1.51 | | |
| 4 | 24MW BHP (U/S) | Unit- I | 0.00 | 220kV BHP - Semtokha Fdr. | 12.55 | + | U/S Unit-I & L/S Unit I standby |
| | | Unit- II | 4.27 | 66kV BHP - Lobeysha Fdr. | 11.33 | + | |
| | | Total | 4.27 | 220kV BHP - Tsirang Fdr. | -14.64 | - | |
| | 40MW BHP (L/S) | Unit- I | 0.00 | 5MVA, 66/11kV TFR | 0.78 | + | |
| | | Unit- II | 9.67 | 30MVA ICT, 220/66kV | | | |
| Total | 9.67 | Error at Station/Auxiliary Consumption/Losses | 3.92 | | | | |
| 5 | 126MW DHPC | Unit-I | 14.16 | 220kV DHPC - Tsirang Fdr. | 13.89 | + | Unit-II Standby |
| | | Unit-II | 0.00 | 220kV Jigmeling - Dagapela Fdr. | | | |
| | | - | - | 5MVA, 220/33kV TFR | | | |
| | | Total | 14.16 | Error at Station/Auxiliary Consumption/Losses | 0.27 | | |
| 6 | 60MW KHP | Unit- I | 15.02 | 132kV KHP - Nangkhon Fdr- I | 18.16 | + | Unit-III & Unit-IV standby.220kV JLG- TSI-JLG line faulty |
| | | Unit-II | 0.00 | 132kV KHP - Kilikhar Fdr- II | 10.59 | + | |
| | | Unit- III | 15.03 | 5MVA, 132/11kV TFR | 0.38 | + | |
| | | Unit- IV | 0.00 | 132kV Gelephu - Salakati Fdr. | -22.77 | - | |
| | | - | - | 132kV Motanga - Rangia Fdr. | 1.00 | + | |
| | | - | - | 220kV Tsirang - Jigmeling | 0.00 | | |
| | | Total | 30.05 | Error at Station/Auxiliary Consumption/Losses | 0.92 | | |

Note: Load summary on April 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 | 495.24 | 235.17 | 224.65 | 260.07 | 10.52 |
| 2 | Eastern Grid | 180.05 | 52.73 | 50.90 | 127.32 | 1.83 |
| | Total | 675.29 | 287.90 | 275.55 | 387.39 | 12.35 |

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

| Sl. No | Region | 19:00Hrs Load (MW) | Day Peak Load (MW) | Month Peak Load (MW) |
|--------|-----------------|--------------------|--------------------|----------------------|
| 1 | Western Grid | 269.07 | 269.07 | 286.38 |
| 2 | Eastern Grid | 56.11 | 56.11 | 62.64 |
| | National | 325.18 | 325.18 | 349.02 |

NOTES:KHP & TSI feeder 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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Maximum Load/Demand till Date

| | |
|--------|----------------|
| Date: | April 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 | 129.33 | 400kV THP - Siliguri Fdr- I | 46.73 | + | Unit- II & V standby. Unit-III & IV under shutdown. 400kV THP-SIL II standby. |
| | | Unit- II | 0.00 | 400kV THP - Siliguri Fdr- II | 0.00 | | |
| | | Unit- III | 0.00 | 400kV THP - Siliguri Fdr- IV | 44.16 | + | |
| | | Unit- IV | 0.00 | 400kV THP - Malbase Fdr- III | 103.71 | + | |
| | | Unit- V | 0.00 | 400kV Malbase - Siliguri | 32.47 | + | |
| | | Unit- VI | 70.23 | - | - | - | |
| | | Total | 199.56 | Error at Station/Auxiliary Consumption/Losses | 4.96 | | |
| 2 | 720MW MHP | Unit-I | 0.00 | 400kV MHP - Jigmeling Fdr - I | 164.37 | + | Unit-II & IV Standby & Unit I AMP. 400kV MHP-JLG II,IV & III Standby. |
| | | Unit-II | 0.00 | 400kV MHP - Jigmeling Fdr - II | 0.00 | | |
| | | Unit-III | 165.00 | 400kV MHP - Jigmeling Fdr - III | 0.00 | | |
| | | Unit-IV | 0.00 | 400kV MHP - Jigmeling Fdr - IV | 0.00 | | |
| | | - | - | 200MVA, 400/132kV ICT | | | |
| | | - | - | (Local Load) | | | |
| | | Total | 165.00 | Error at Station/Auxiliary Consumption/Losses | 0.63 | | |
| 3 | 336MW CHP | Unit- I | 0.00 | 220kV CHP - Birpara Fdr- I | 36.53 | + | Unit-I & IV under shutdown. 220kV CHP-MAL under shutdown |
| | | Unit- II | 30.66 | 220kV CHP - Birpara Fdr- II | 36.42 | + | |
| | | Unit- III | 73.74 | 220kV CHP - Malbase Fdr- III | 0.00 | | |
| | | Unit- IV | 0.00 | 220kV CHP - Sementokha Fdr- IV | 14.91 | + | |
| | | - | - | 220kV Malbase - Birpara Fdr. | -62.78 | - | |
| | | - | - | 66kV CHP - Chumdo Fdr. | 6.35 | + | |
| | | - | - | 66kV CHP - Gedu Fdr. | 7.93 | + | |
| | | Total | 104.40 | Error at Station/Auxiliary Consumption/Losses | 1.27 | | |
| 4 | 24MW BHP (U/S) | Unit- I | 0.00 | 220kV BHP - Sementokha Fdr. | 18.52 | + | U/S Unit-I under standby and LS Unit I under standby. |
| | | Unit- II | 4.38 | 66kV BHP - Lobeysa Fdr. | 8.89 | + | |
| | | Total | 4.38 | 220kV BHP - Tsirang Fdr. | -14.64 | - | |
| | 40MW BHP (L/S) | Unit- I | 0.00 | 5MVA, 66/11kV TFR | 0.41 | + | |
| | | Unit- II | 9.24 | 30MVA ICT, 220/66kV | | | |
| Total | 9.24 | Error at Station/Auxiliary Consumption/Losses | 0.44 | | | | |
| 5 | 126MW DHPC | Unit-I | 0.00 | 220kV DHPC - Tsirang Fdr. | 15.74 | + | Unit I standby. |
| | | Unit-II | 15.95 | 220kV Jigmeling - Dagapela Fdr. | | | |
| | | - | - | 5MVA, 220/33kV TFR | | | |
| | | Total | 15.95 | Error at Station/Auxiliary Consumption/Losses | 0.21 | | |
| 6 | 60MW KHP | Unit- I | 12.87 | 132kV KHP - Nangkhon Fdr- I | 22.50 | + | Unit-III & Unit-IV standby.220kV JLG- TSI-JLG line faulty |
| | | Unit-II | 0.00 | 132kV KHP - Kilikhar Fdr- II | 4.13 | + | |
| | | Unit- III | 15.05 | 5MVA, 132/11kV TFR | 0.20 | + | |
| | | Unit- IV | 0.00 | 132kV Gelephu - Salakati Fdr. | -14.97 | - | |
| | | - | - | 132kV Motanga - Rangia Fdr. | 1.74 | + | |
| | | - | - | 220kV Tsirang - Jigmeling | 0.00 | | |
| | | Total | 27.92 | Error at Station/Auxiliary Consumption/Losses | 1.09 | | |

Note: Load summary on April 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 | 333.53 | 200.00 | 193.12 | 133.53 | 6.88 |
| 2 | Eastern Grid | 192.92 | 41.78 | 40.06 | 151.14 | 1.72 |
| | Total | 526.45 | 241.78 | 233.18 | 284.67 | 8.60 |

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

| Sl. No | Region | 09:00Hrs Load (MW) | Day Peak Load (MW) | Month Peak Load (MW) |
|--------|-----------------|--------------------|--------------------|----------------------|
| 1 | Western Grid | 227.42 | 264.12 | 286.38 |
| 2 | Eastern Grid | 40.97 | 56.11 | 62.64 |
| | National | 268.39 | 320.23 | 349.02 |

NOTES: KHP and TSI 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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