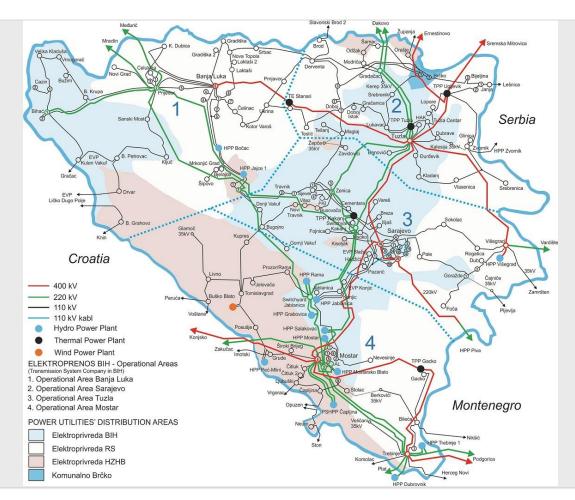
Winter Outlook Report 2019/2020

Saša ŠĆEKIĆ
Head of Licensing and Technical Affairs Department
SERC, Bosnia and Herzegovina

Power System of BIH



Balance Values of the Electric Power Sector of Bosnia and Herzegovina

(GWh)

| Year 2018 | ЕР ВІН | ERS | ЕР НΖНВ | Komunalno Brčko Other entities | ВІН |
|--|----------|----------|----------|-----------------------------------|-----------|
| Generation in hydro power plants | 1,533.61 | 2,729.05 | 1,984.86 | 52.56 | 6,300.08 |
| Generation in thermal power plants | 5,648.34 | 3,249.42 | | 2,056.00 | 10,953.76 |
| Generation in larger wind plants | | | 103,50 | | 103.50 |
| Generation in small and industrial PPs | 63.46 | 50.58 | | 401.61 | 515.65 |
| Generation | 7,245.41 | 6,029.05 | 2,088.35 | 2,510.18 | 17,872.99 |
| Distribution consumption | 4,705.96 | 3,770.48 | 1,392.22 | 270.02 | 10,138.68 |
| Transmission losses | | | | | 398.77 |
| Large customers | 464.34 | 361.65 | 131.09 | 1,646.73 | 2,603.81 |
| PPs self-consumption and pumping | | 11.77 | 137.43 | 3.49 | 152.69 |
| Consumption | 5,089.64 | 4,143.91 | 1,650.44 | 270.02 1,650.22 | 13,293.95 |

Summer 2019 Review



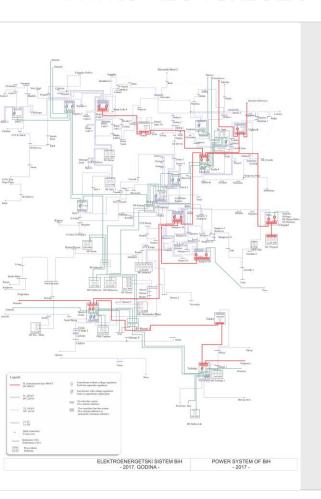
- There were no unexpected situations that affected the power system supply in Bosnia and Herzegovina
- The lowest of 709 MW was registered on July 14, at 6:00 (lower than last year because aluminum factory in Mostar was disconnected on July 10).
- The highest demand was registered on June 27, at 15:00 – 1586 MW.
- Monthly power balances were positive during this period

Winter 2019/2020 Outlook



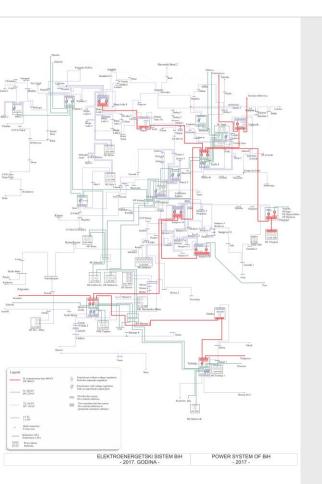
- Positive monthly power balance is expected.
- Demand, compared to the winter 2018/2019, is expected to be lower, as the biggest consumer Aluminum factory in Mostar (approximately 175 MW of demand) will remain disconnected from power system.

Winter 2019/2020 Outlook - network



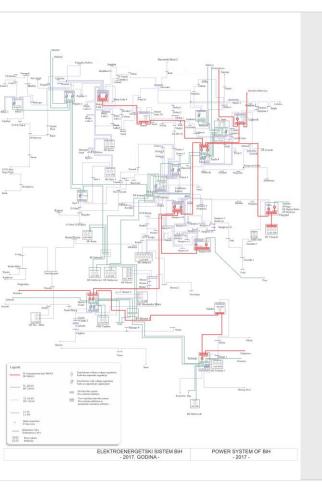
- Operational readiness of the transmission network infrastructure depends on:
 - Planned maintenance
 - Availability of the transmission network elements (power lines and substations)
 - Maintenance work done previously
- There are no planned outages in December (400, 220 and 110 kV)
- Problem of high voltages still present

Winter 2019/2020 Outlook – network (2)



- 400/110 kV, 300 MVA in TS Visegrad transformer out of operation, purchase procedure ongoing, but transformer will not be put into operation during the next year. Being the only transformer in this substation that connects 400 and 110 kV network, security of supply in this region could be endangered. Criteria n-1 is fulfilled in normal operation, but if some elements are out operation that is not the case.
- Two transformers 220/110, 150 MVA in TS Mostar 4 malfunctioned. One is being repaired and the other one will be replaced with a new one. Temporarily, transformer from another substation has been transferred to TS Mostar 4. Security of supply is not endangered. Both transformers are expected to be in the operation by the end of the next year.

Winter 2019/2020 Outlook – network (3)



| ENS | 2015 | 2016 | 2017 | 2018 | 2019/9 |
|-------------|------|------|------|------|--------|
| Non planned | 1,35 | 1,10 | 1,36 | 1,18 | 0,77 |
| Planned | 1,82 | 1,76 | 1,63 | 1,38 | 0,76 |
| Total | 3,17 | 2,86 | 2,99 | 2,56 | 1,53 |

| AIT | 2015 | 2016 | 2017 | 2018 | 2019/9 |
|-------------|--------|--------|--------|--------|--------|
| Non planned | 60,57 | 48,66 | 57,71 | 50,94 | 34,95 |
| Planned | 81,98 | 77,70 | 69,21 | 59,37 | 36,99 |
| Total | 142,55 | 126,36 | 126,92 | 110,29 | 71,94 |

Winter 2019/2020 Outlook - production



- Wind farm VE Jelovaca finished trial work and started operation in July 2019. The first IPP wind farm – owner F.L. Wind d.o.o. Tomislavgrad.
 - 36 MW (18x2 MW) installed power
 - 110 GWh yearly production
- Wind farm VE Mesihovina (EP HZHB) already in operation since 2018.
 - 50.6 MW installed power
 - 165.17 GWh yearly production (in first ten months 2019 production was 128.293 GWh)
- HPP Dubrovnik (BiH+HR 126+108 MW) out of operation since January 2019 due to fire.

