



Renewable energy development  
in Republic of Moldova  
from TSO perspective

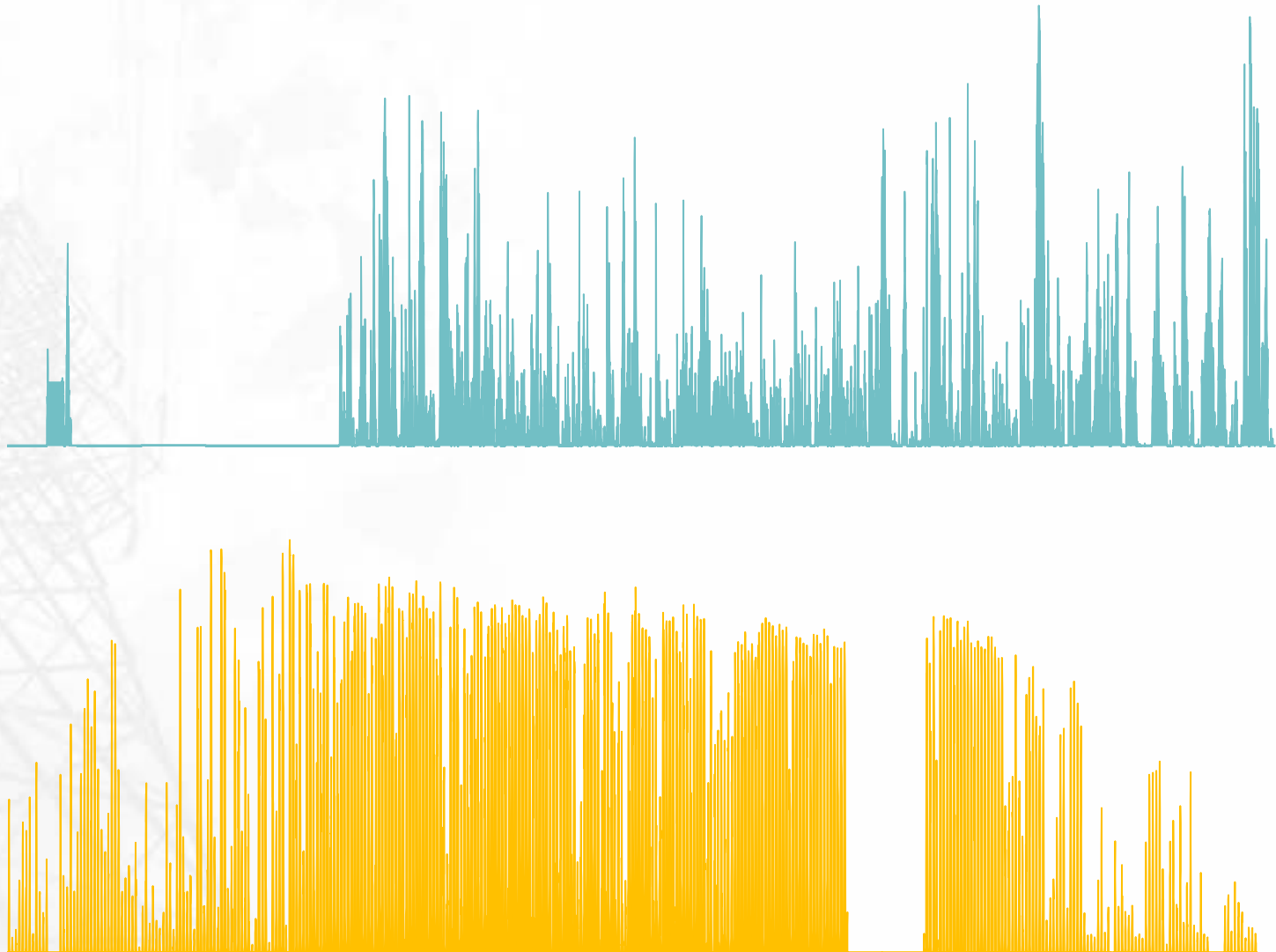
14 November 2019  
Chisinau

# Current status and challenges

- Distributed generation (more than 45 MW)
  - Only 6.74 MW are connected to Moldelectrica grid
  - Mainly outdated wind production installation
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- Voltage control related challenges
  - Data exchange challenges (real time and hourly metering profiles)
  - No procedures for checking grid requirements compliance

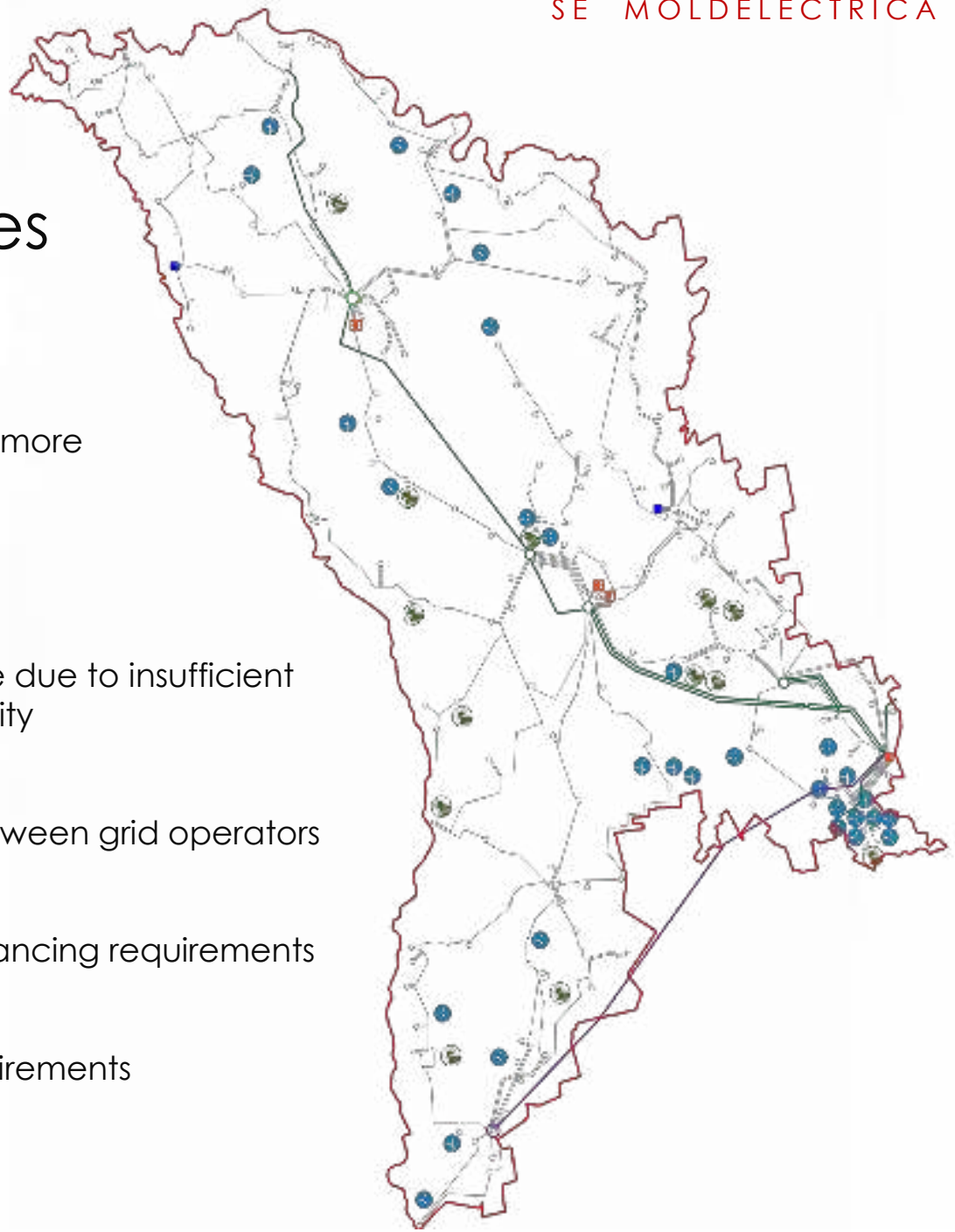


# Current status – wind and solar sample



# Grid connection status and challenges

- Grid connection permits for more than 1000 MW
- Mainly wind
- More than 300 MW in queue due to insufficient transmission capacity
- Insufficient coordination between grid operators
- Uncertainties regarding balancing requirements
- No common technical requirements



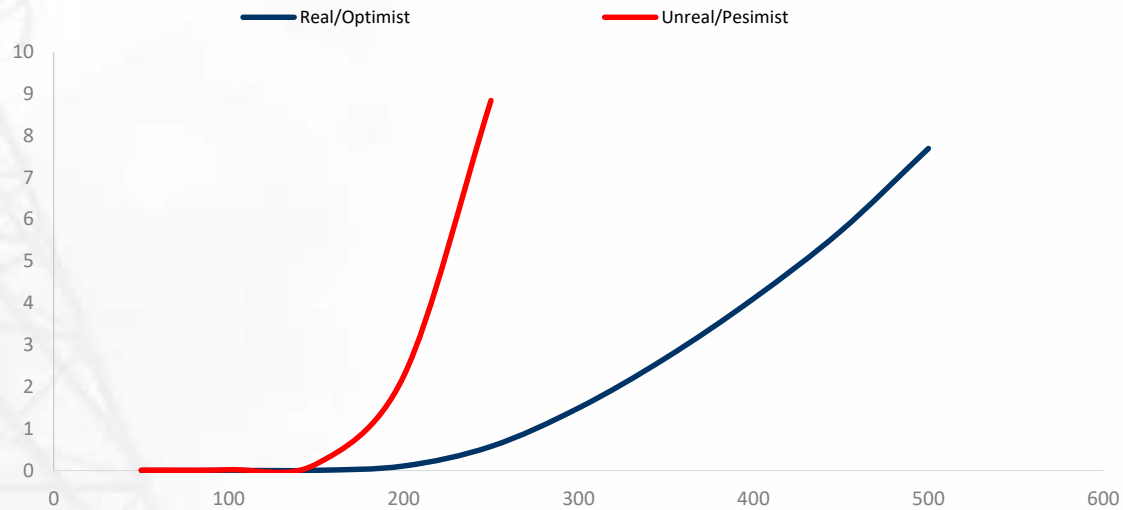
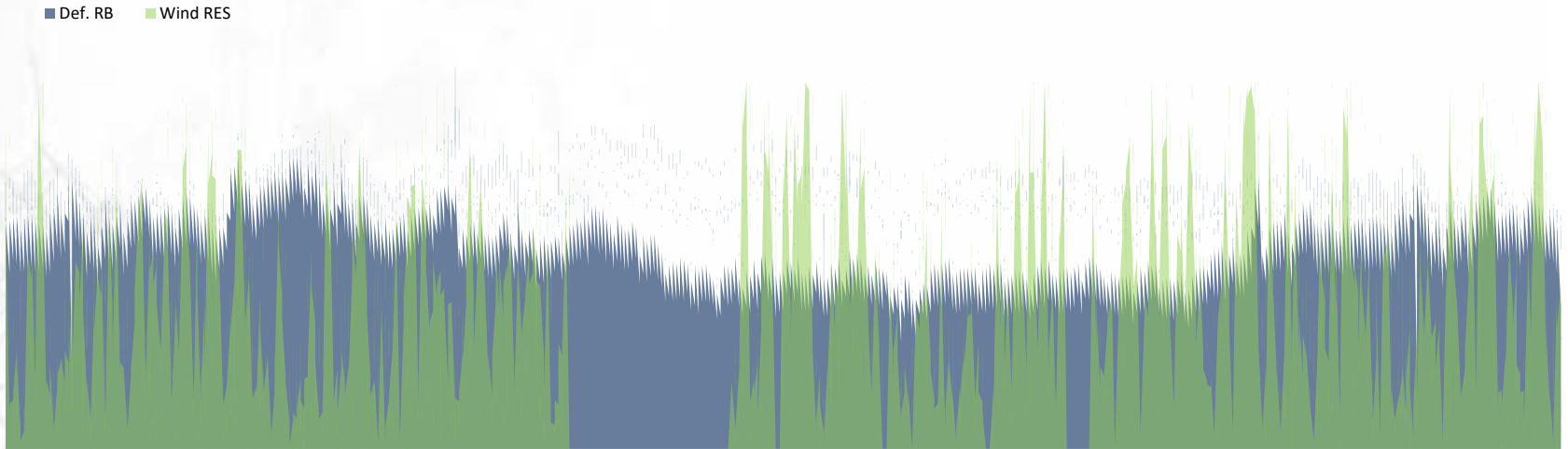
# Future expected developments

- Additional minimum 168 MW
- ENTSO-E network codes adoption (RfG, DCC, HVDC)  
established a common framework for technical requirements
- BRP mechanism implementation  
Implements a mechanism for balance responsibility

# Expected challenges - overview

- Higher imbalances due to intermittence and poor load forecast
- Off-peak hours load
- Certification for network code compliance
- Higher need for FRR and RR due to expected increased imbalances
- Limited options for balancing and reserve services
- Generation forecast

# Expected challenges – low off-peak load (1)



# Expected challenges – low off-peak load (2)

More must-runs (CHP) = Less room for RES (Wind)

More RES = More flexibility requirements

- Export RES (sell during excess hours)
- Increase off-peak load (market signals, storage)
- Decrease must-runs (less cogeneration)
- RES technology mix (more solar, biomass, biogas)



# Expected challenges – balancing (1)

More RES = More flexibility requirements

Balancing mechanism = Reserves + Balancing energy

Automatic Frequency Restoration Reserve dimensioning

- Deterministic approach = 250 MW upward/100 MW downward  
(200 MW in case of common dimensioning with PS of Ukraine)
- Empiric approach = 35MW      $R = \sqrt{a * L_{max} + b^2} - b [MW]$
- Statistical approach = depends on actual imbalance variation

Implementation of aFRR (Automatic Generation Control) = Unit certification

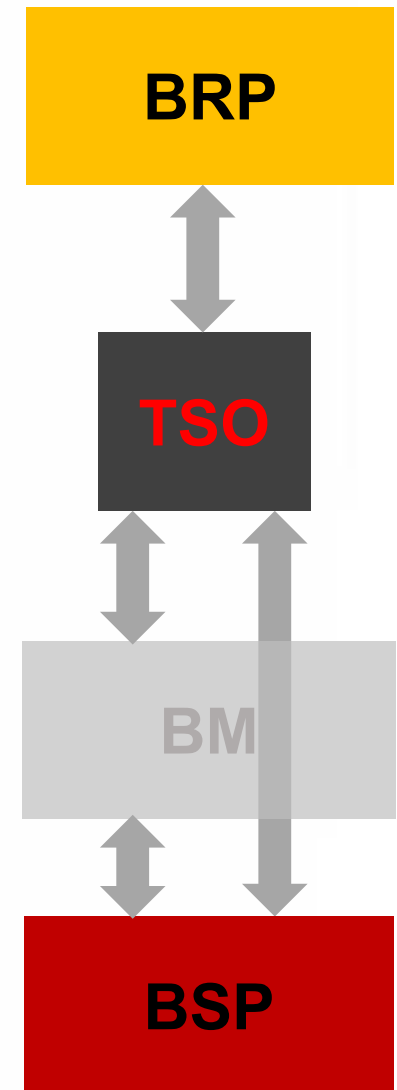
# Expected challenges – balancing (2)

Financial settlement of unintentional deviation = better forecast

Implementation of Balancing Responsibility mechanism

Possible Balancing Service Providers

MGRES  
Import from PS of UA and/or RO  
CHP-2



Thank You