



Online Webinar  
What can we learn from the COVID-19 pandemic  
for the renewable energy transition?

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# Speakers



## Jef Beerten

- COVID-19 – The impact on the power system



## Hakan Ergun

- What can we learn from the COVID-19 pandemic for the renewable energy transition?





# COVID-19 – The impact on the power system

Jef Beerten – KU Leuven / EnergyVille

# COVID-19 & the power system

## Impact on the electricity infrastructure and system operators

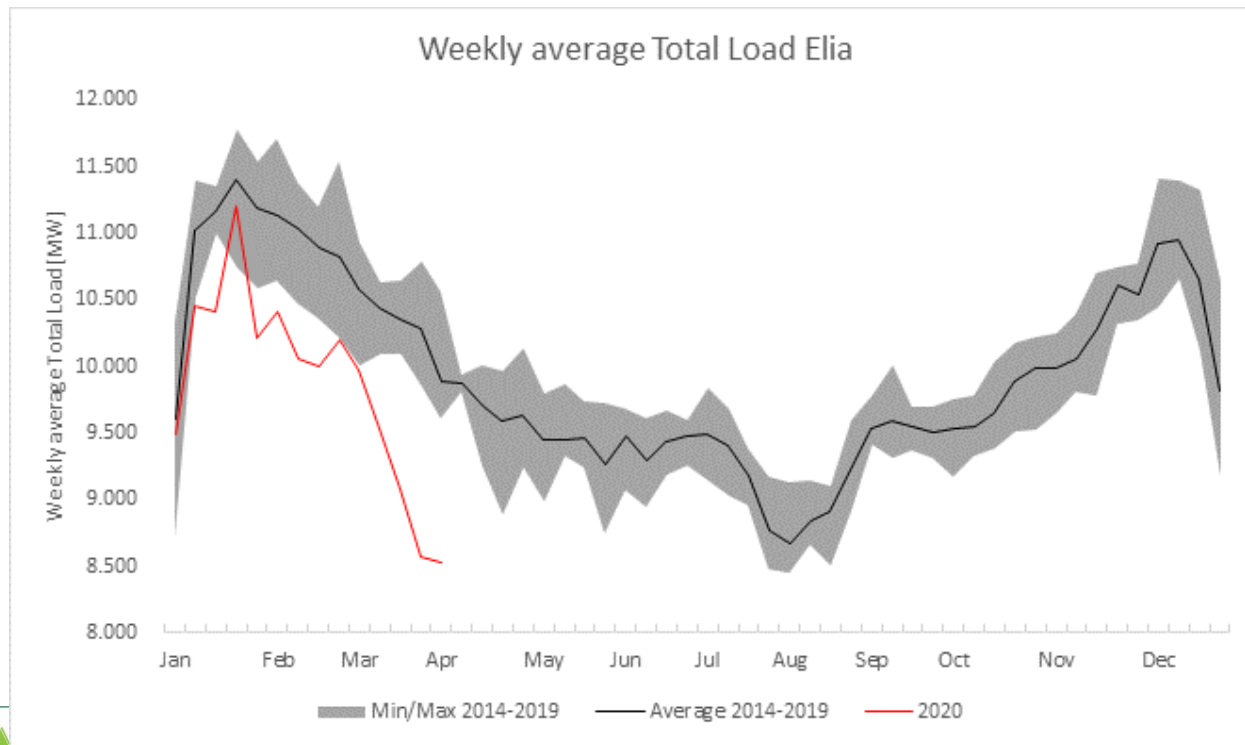
- Power system loading
- Management of the crisis
- Critical personnel
- Maintenance & construction projects
- Technical challenges in grid operation



# Power system loading

Industry slowing, less public transport, offices closed, ...

- General trend: significant reduction in peak demands and power system loading



- Example: loading in Belgian power system
- Drop in demand as a result of impact of governmental measures (5-10% on 12/3, 10-15% on 17/3 and 15-25% on 23/3);



Source: [https://www.elia.be/en/company/covid-19\\_elia-s-initiatives](https://www.elia.be/en/company/covid-19_elia-s-initiatives)

# Power system loading

- General trend: significant reduction in peak demand and power system loading
- Noticeable reported regional differences
  - Impacted by severity of restrictions
  - Beginning of April:
    - Italy (28%), France (26%), Spain (25%)
    - Elia (Belgium, 16%) vs 50 Hertz (Germany, 8%)



Reported load reductions in Italy, France and Spain from <https://www.eurelectric.org/covid-19/>  
And Elia & 50 Herz control zone from [https://www.elia.be/en/company/covid-19\\_elia-s-initiatives](https://www.elia.be/en/company/covid-19_elia-s-initiatives)

# Management of the crisis

- Special task-forces put in place with system operators
  - E.g. Elia and 50Hertz: task forces at transversal level
- Regular teleconferences of system operators with national authorities
  - Verify continuation of core activities and services
- Regular communication with relevant stakeholders in energy sector
  - Between TSO-DSO
  - Generation companies, energy market players
  - IT & Telecom providers (ensure continuity of services)



# Management of the crisis

- The crisis is experienced as a major challenge, managed in accordance with system operators' planning and business continuity process
  - Coordination within international organizations (e.g. ENTSO-E, E.DSO)
    - Evaluate experience in handling of unprecedented situation
  - International coordination and collaboration to develop regional scenarios for risk preparedness frameworks



# Management of the crisis

## Overview of measures taken

- Hygiene and sanitary measures
- Travel restrictions
- Organizational measures

# Management of the crisis

## Overview of measures taken

- **Hygiene and sanitary measures**
  - Intensified cleaning & disinfection
  - Scanning temperature
  - No handshaking
  - Keeping distance
  - PPE masks for employees where applicable
    - Maintenance of grid elements & outdoor equipment
    - Contact with external service providers
- Travel restrictions
- Organizational measures



# Management of the crisis

## Overview of measures taken

- Hygiene and sanitary measures
- **Travel restrictions**
  - Impacting both national and international travel by TSO personnel
- Organizational measures

# Management of the crisis

## Overview of measures taken

- Hygiene and sanitary measures
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- **Organizational measures**



# Critical personnel

- Working from home is largely the norm worldwide for personnel working at administrative sites
- Except for
  - Control center personnel
  - Intervention teams
  - Other supporting personnel for business continuity (security, IT, ...)



# Critical personnel

## Control centers & control center personnel

- General trend: most stringent measures in Europe & in the rest of the world
- Strictly limited access to control center
- Varying reported measures for control centers & personnel, including
  - Additional hygiene and contact measures for personnel
  - Additional cleaning and disinfection of workstations and other shared facilities
  - Not using public transport anymore, companies organizing transport when required
  - Rotating shifts between different control centers
  - Teleworking for the control center personnel for all non-shift activities
  - At some DSOs: Identifying skilled operators with past control room experience (e.g. retired)
  - Sequestration reported in some parts of the world, but in general not applicable to Europe

# Critical personnel

## Intervention teams for field operations

- Adjusted work plans to accommodate physical distancing
  - Separated shift schedules to keep crews separated from one another
  - Different protocols for jobs requiring more than one crew member
  
- Rules in place for quarantining employees exposed to or with symptoms

# Maintenance and construction projects

- General trend: reduction of work plans for field work
  - Entso-e reports that new connection and development projects might be affected with some delays, depending on duration and severity of COVID-19 crisis
  - Supply chain is not yet considered to be a major issue
    - This might worsen in case of enduring transportation and travel restrictions
- Updated procedures are being shaped for phase after lockdown
  - Not only limited to own personnel, but also involving external contractors
- Differences noticeable in adjusting work plans for TSOs
  - For example:
    - Elia stopped work on construction sites after governmental measures
    - At 50Hertz, work on construction sites is much less impacted
- Also for DSOs different activity levels reported (E.DSO)
  - Ranging from continuing essential activities (and potentially urgent interventions), over limited operational activity to high level maintained





# Technical grid operation challenges

- Low loading conditions combined with relatively high levels of RES penetration
  - Voltages control challenges reported in some world regions
  - Concerns w.r.t. system strength at some points in the networks
- Note: In Europe, Entso-e reports regular operation without significant challenges due to voltage, system strength or concerns over inertia
  - Some TSO's report higher system voltages, but they are still within normal system state values
- Accompanying changes in loading patterns
  - Can cause additional challenges for load forecasting



# Conclusion

- System operators have responded quickly to pandemic situation
  - Amongst others through the establishment of special task forces, close coordination with national authorities and other system operators
  - Measures taken to keep control center staff and other critical personnel safe and healthy
- Power systems are reported to largely have remained in normal state, with lower loading conditions similar to weekends and bank holidays



# Further reference

- A comprehensive overview of worldwide impact and best practices can be found at:

[https://resourcecenter.ieee-pes.org/technical-publications/white-paper/PES\\_TP\\_COVID19\\_050120.html](https://resourcecenter.ieee-pes.org/technical-publications/white-paper/PES_TP_COVID19_050120.html)

