Value proposition of improved TSO-DSO communication and interaction

IEA ISGAN annex 6 – IEA PVPS joint workshop
The use of variable renewables as flexible resources to support grid operation and Power Transmission and Distribution Interaction
Hubert Lemmens, Vienna 18 May 2015

Elia Group - reliable and resilient networks

Ownership
Elia
- 100% of 380-150kV network
- 94% of high voltage network (70-30kV)

50Hertz
- 100% of 380-220kV network
- 34% of the German 380kV network
- 19% owner of the German 220kV network

Installed capacity wind and PV Belgium [MW]
A worldwide network of over 150 experts working together on topics of common interest
- Integration of Distributed Resources
- Grid Infrastructure
- Finance and Regulation
- Communication and IT Systems
- Mutual Assistance and Crisis Management

A voluntary association regrouping some of the 17 largest Grid Operators in the world, delivering power to over 3.5 billion customers from 6 continents

A common goal: Security, Reliability and Resilience at a sustainable cost for all

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Which data to communicate?

- **Grid related data, (topology, characteristics): enabling**
  - improved situational awareness

- **Load/ generation data: enabling:**
  - Optimized grid planning
  - Improved situational awareness
  - Congestion management
  - Improved asset use
  - Optimized defense and restoration plans

- **In different timeframes: long term, day ahead, real time.**
Which data to communicate?

• Market data (partially available on PX):
  – Day ahead, intraday, real time prices
  – Enabling market parties to optimize generation/load portfolio

• Metering data, enabling:
  – Real time pricing
  – Imbalance settlement
  – Ancillary Services settlement

Stakeholder value

• Grid users:
  – Lower Energy cost
  – Lower Grid usage fee
  – Improved reliability
  – New electricity applications

• Regulators:
  – Improved market functioning
  – Higher customer satisfaction
Stakeholder value

- **Market players:**
  - Lower balancing costs
  - Increased market liquidity
  - Additional risk hedging options

- **Renewable generators:**
  - Additional income from Ancillary services
  - Lower barriers for penetration
  - Improved reliability

- **Distribution system operators:**
  - Reduced operational risk
  - Improved asset performance
  - Reduced financial risk

- **Transmission system operators:**
  - Access to cheaper balancing resources
  - Improved asset performance
  - Reduced financial risk
  - Improved reliability
  - Optimized defence and restoration plans.

However, at the expense of increased complexity
Conclusion

• Distributed RES integration requires new relationships between TSO’s and DSO’s

• Enhanced information exchange and collaboration brings value to the grid users

• Increased efforts from grid operators have to be compensated by adequate grid tariffs.

Thank You!