



Introduction to Connection Network Codes

Implementation of electricity network codes in the Energy
Community
Vienna, 25/04/2017

3rd Package Network Codes

Connection Codes

- Requirements for Generators (RFG)
- Demand Connection Code (DCC)
- HVDC Connections (HVDC)

Market Codes

- Capacity Allocation & Congestion Management (CACM)
- Forward Capacity Allocation (FCA)
- Balancing Network Code (EB)

Operational Codes

- Operational Security (OS)
- Operational Planning & Scheduling (OPS)
- Load Frequency Control and Reserves (LFCR)
- System Operation (SO)
- Emergency and Restoration (ER)

- Lay down requirements for grid connection to the interconnected system, of NEW:

RfG

Power-generating facilities:

- *Synchronous modules*
- *Power park modules*
- *Offshore modules*

DCC

Demand facilities or units

- *transmission-connected demand facilities*
- *transmission-connected distribution facilities*
- *distribution systems, including closed distribution systems*
- *demand units (used to provide demand response services to system operators)*

HVDC

HVDC facilities

- *HVDC-connected systems*
- *DC-connected power park modules*

■ Also aimed to :

- Ensure fair **conditions of competition** in the internal electricity market
- Ensure **system security**
- Ensure the **integration of renewable electricity sources**
- Facilitate Union-wide **trade in electricity**
- Make **appropriate use of the facilities' capabilities** in a transparent and non-discriminatory manner
- Provide a **level playing field** throughout the Union

■ Not applicable for :

- **Islands of Member States** of which the systems are not operated synchronously
- **Temporary or backup devices** operating in parallel mode (under specified conditions)
- **Storage devices** except pump-storage modules (under specified conditions)

■ Implementation aspects:

- *Entered into force (published):*

RfG
27 April 2016

DCC
18 August 2016

HVDC
8 September 2016

- **Guidance** on implementation – non-binding, **ENTSO-E** to prepare **6 months** after entry into force
- **Monitoring** of implementation – according to Articles 8 and 8 of Regulation EC 714/2009 – performed by ENTSO-E, data submitted by the TSO, **ACER** to prepare a list of relevant data **12 months** after entry into force
- **Derogations** – granted by NRA (or other authority) upon request from the facility operator or TSO, **NRA** to publish criteria and procedure **9 months** after entry into force (subject to a review by the EC) and maintain a Register of derogations, **ACER** to monitor the derogations
- **Application to existing facilities** – under specified conditions and upon proposal by the TSO and NRA decision – based on cost-benefit analysis
- **Compliance** – assessed by the NRA, including testing and simulation of the compliance criteria based on specified procedures (disconnection and reconnection)

■ Connection (technical) requirements:

- **Exhaustive requirements** – fully defined in the NCs - no further national specification needed
- **Non-exhaustive requirements** – NCs do not contain all the information necessary to apply the requirement immediately and needs further specification at national level – amending technical regulations (national grid codes) may be required
 - **project specific** non-exhaustive requirements
 - non-exhaustive requirements at a **synchronous system** or **national level**
- **Interrelated requirements** – HVDC heavily relies on RfG technical requirements
- **Typical technical requirements:**
 - **Frequency** (deviation) requirements
 - **Voltage** (deviation) requirements
 - **Short circuit** requirements
 - **Power** requirements (active, reactive)
 - **Protection and control**
 - **Information exchange** (notifications)
- **Specific requirements** (e.g. subsynchronous torsional interaction damping capability of HVDC)

■ Requirements for **adaption**:

- *Standard adaption – (EU → Energy Community, EC → ECS, Member State → Contracting Party)*
- *Special requirements for **MD**, **UA**, and **GE** (proposals)*
 - *exemption of non-synchronous networks / islands – (reference to Continental Europe synchronous area)*
 - *application of “agreed European standards and technical specifications” – (on national level)*
- *No duplication of already imposed obligations to EU authorities (EC, ENTSO-E, ACER) or MSs*
- *References to ENTSO-E and ACER in agreed format*
- *Adapted reference for entry into force, no adjustment of embedded deadlines and stipulated procedures*
- *No general adjustment of the specified technical requirements*
- *Reference to general EU law (e.g. confidentiality) – reference to corresponding national law*
- *Reference to the Third Package acquis and TYNDP – applied “as adapted by the EnC MC”*



*Thank you
for your attention!*

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