

DSO Technical Expert Group Preliminary Views on Demand Connection Code

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- **General remarks**
- **Reactive power requirements at TSO-DSO
Connection point(s)**
- **Demand side response**

DSO Technical Expert Group for the DCC

- **Formally set-up on the basis of ENTSO-E invitation letter**
 - 20th European Electricity Regulatory Forum expressed importance of involvement of DSOs in development of network codes
 - ENTSO-E invited DSO associations to appoint technical experts
 - Experts bring in their experience on request of the ENTSO-E DT
 - Minutes of working sessions are published on ENTSO-E website
- **Experiences**
 - Open discussion with ENTSO-E drafting team – DCC was first example and created best practice for other codes
 - In the final proposal, DSO TEG's views considered in a limited way

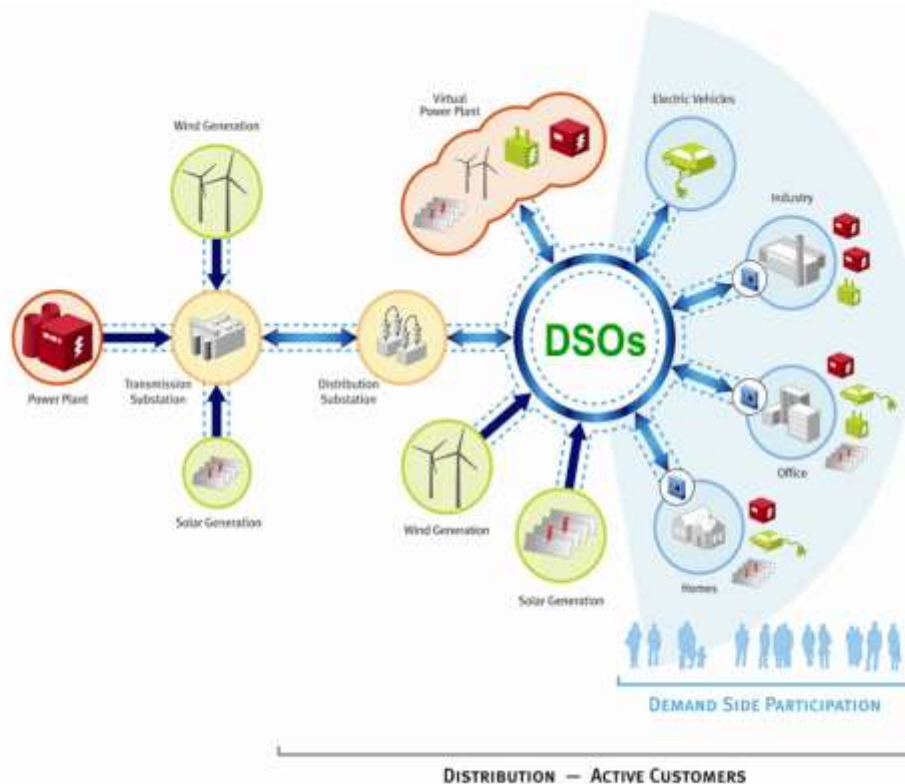
General Remarks

- Focus on cross-border issues
- Development of transmission network is key for System Security!
- Cost benefit analysis for deviating requirements is necessary*
- Cost recovery for network operators
- Efficient & non-discriminatory derogation process
- Clear definitions



*ACER Framework Guidelines, 2.1

General Remarks (ctnd) – Key role of DSOs



Source: EURELECTRIC 10 Steps to Smart Grids

From a 'passive carrier' to **active distribution system manager & neutral market facilitator**

- Challenge from integration of increasing amount of DER and connection of new applications
- From one direction flow to bidirectional flows – some DSO grids become generators
- Development of co-operation at TSO-DSO interface – mutual support beneficial
- DSO to use market based solutions for management of constraints in his network

Definitions: Significant Demand Facility

→ As currently defined, 'Significant Demand' includes all domestic appliances

- Household loads without DSR are not frequency dependent & thus have very limited direct cross-border impact
- Significant demand is load and connected directly to a transmission system
- The DCC should only set requirements for technical capabilities from a frequency dependent perspective

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Reactive power requirements at TSO-DSO connection point

Transmission connected distribution networks shall be capable of to maintain approximately 0 MVar exchange for a load exchange of no higher than 25% of the maximum import capacity at the TSO-DSO connection point (Art. 10.1.b)

Only available technical solution = installation of reactive power compensation at each TSO-DSO connection point (CP)

- DSOs often do not have access to operation of compensators at CPs
- Implies substantial capital & maintenance cost for DSOs
- Is not appropriate for connection with several connection points
- Is inflexible in case of emergency & in presence of volatile production RES in the system requires continuous adaption of capacities at the connection points

Reactive power requirements (ctnd)

The system has to be considered as one from engineering point of view

All available solutions need to be taken into account:

Contribution of generators to reactive power management

- Well proven solution – to be further used

TSOs to install reactive power compensation units

- Often least cost options

Loads & distributed generation to provide for reactive power response

- Generators in MV & LV Grid to contribute to voltage & reactive power management

But no CBA as required by ACER FG has been made!

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Demand side response – general remarks

- **Strategies to fulfil system reserve needs:**
 - Comprehensive cost benefit analysis based on fair and equal treatment of demand side resources in the market is necessary
 - Take into account DSO networks needs
- **Demand response should offer market-driven balancing, reserve and other services**
 - On equal terms+ in competition with services offered by generation
 - TSOs & DSOs, in cooperation with demand service providers and consumers, should define technical modalities for participation in the balancing, reserve and other system services markets (Art. 12 of the new EU energy efficiency directive)
- **Outcomes of SG demonstration projects = key contribution**

DSR capabilities should not be a condition to network connection!

Other network codes to define additional capabilities
necessary for joining the market?

DCC

Requirements
necessary for
granting connection
of the demand facility

Balancing

Market design for
DSR services not
restricted to those
aiming at system
security ->
requirements
necessary for
participation in DSR
programme

System operation

Requirements
necessary for
activation of system
services provided by
DSR

Compliance & derogation processes in the network code should not apply for DSR capabilities

- Tremendous burden for European DSOs
(= socialization of substantial system costs via network tariffs)
- Unnecessary involvement at customer premises

Therefore the solution should include:

- Design of DSR markets & appropriate methodologies for DSR integration
- Setting European standards that should be used for testing compliance with DSR requirements
- DSOs to have the right to require any information necessary to check the DSR facility's impact on the DSOs network

Conclusions

- Close co-operation between TSOs and DSOs to achieve most cost-efficient solutions for operation at the TSO-DSO connection point should be the governing principle. E.g for reactive power compensation flexibility is needed for most efficient solution for a given situation
- DSR requirements must not be set as precondition for customers' connection to the networks
- Market design for a large scale DSR services markets needs further development & should be addressed i.e. in the balancing network code
- European standards should be used to avoid huge inefficiencies

Thank You For Your Attention!

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