Terms of Reference for
DSO2TSO Task force of the ECDSO-E Coordination Group

1. BACKGROUND

DSO2TSO TF is established in order to deal with the overall Smart Grid concept, focusing on improved DSO2TSO communication, forecasts, planning and system operations, proposing the measures which will increase efficiency of the overall energy system and bring possibility for small prosumers to take proactive part in the overall market activities in a future.

On-going transition from centrally organized and operated power systems with centralized generators towards more and more decentralised systems brings new challenges before network operators and directly impacts DSO-TSO relationships as well.

Emergence of new actors and functionalities, connection of distributed energy resources – DER resources (distributed power generation, storage, flexible demands, electric vehicles), development of IT and communication technologies, smart grids and smart meters roll-out, changes of demand and generation patterns, customers engagement (prosumers, aggregators) are some of the key drivers of the power sector transition.

Consequently, DSO-TSO relationships and coordination mechanisms with regard to the power system planning, operation and restoration have to evolve to meet the power system long term needs, to effectively integrate distributed energy resources and to facilitate emergence of new market participants.

2. OBJECTIVE

The overall objective is to ensure that DSO and TSO roles and responsibilities are clearly defined, to enhance mutual coordination and performance of business processes which are impacted by the on-going power sector transition, and to provide conditions for exploiting DER flexibility at the local and power system level.

3. PURPOSE

The purpose of the DSO2TSO TF is to provide an assessment and substantiated positions on the future DSO and TSO coordination mechanisms which are adjusted to power sector transition, particularly addressing responsibility for execution of business processes, enhanced network visibility and effective integration of DER resources.

For these purposes, it is envisaged that DSO2TSO TF shall cooperate with interested TSO's experts on the relevant issues of mutual interest.

4. SCOPE OF WORK

DSO2TSO TF scope of work shall include following areas of interest:

1. DSO and TSO roles and responsibilities,
2. DSO and TSO relationships and coordination,
3. DER flexibility potential and services,
4. Network visibility and information exchange,

5. Regulatory framework – DSOs and DER flexibility.

4-1 DSO and TSO roles and responsibilities

TSO and DSO have to maintain overall system security and stability in the changing environment which brings new challenges related to the increasing number and capacity of small scale DER resources with enhanced flexibility. To add to the complexity, new market participants also emerge, such as aggregators, energy communities, virtual power plants etc. Changed environment is followed ~~with~~ by~~the~~ increased interaction at the TSO to DSO interfaces regarding the operational planning and power system operation.

DSO2TSO TF shall address DSO and TSO competences in changed technical and regulatory environment and clarify their roles and responsibilities in respect of:

- network management (network control, DG dispatching rules, voltage control),
- provision of system services (voltage, frequency, inertia etc.) by DER resources,
- DER certification for system services,
- DER flexibility activation and imbalance settlement,
- demand side response with aggregators involvement,
- congestion management,
- power system restoration.

While performing this task, DSO2TSO TF shall to the extent possible take into account relevant provisions of the Grid codes, ACER and CEER publications and positions paper, and ENTSO-E technical publications as well.

4-2 DSO and TSO relationships and coordination

DSO and TSO operational arrangements have to be revised and adjusted to harness available flexibility at the distribution level through enabling small scale DER resources to access all power markets (energy, system services, balancing).

DSO2TSO TF shall identify all business processes and actions performed by particular network operator, which directly or indirectly impact other network operator activities, while taking due consideration to the power system operation and flexibility market design.

DSO2TSO TF shall address following non-exhaustive list of operational DSO-TSO arrangements to be revised:

- long-term and operational network planning (with particular emphasis on forecasting uncertainty, residual demand volatility in presence of DG's, impact on demand duration curves, coordination of outages affecting DGs etc.),
- connection requirements for generators,
- frequency management and provision of system services,
- reactive power management and voltage control,
- grid losses forecasting, procurement and imbalance settlement,
- demand side response with aggregators involvement,
- resolving congestions caused by DGs,
- DER flexibility activation and imbalance settlement,
- power system restoration and DSOs provision of remedial actions.

For each stated operational arrangement, DSO2TSO TF shall provide high level process description and respectively identify key aspects to be revised and adjusted.

DSO2TSO TF shall elaborate and provide a standard set of relevant areas to be covered and incorporated in TSO-DSO operation agreement.

4-3 DER flexibility potential, ~~and~~ services and market integration

DSO2TSO TF shall address:

- impact of DER integration on existing providers of flexibility,
- demand for flexibility from new sources,
- flexibility potential of various DER sources from technical point of view,
- DER's market integration.

To fulfil these tasks, DSO2TSO TF shall:

- provide exhaustive list of services that might be provided by DER resources, as well as a description of particular services,
- address respective flexibility services which might be provided to the regulated (TSO and DSO) and non-regulated (portfolio optimization, imbalance settlement) beneficiaries,
- provide a general description of particular DER's technical potential and its suitability for providing services to different beneficiaries~~.~~,
- address key principles of DER's aggregation (aggregation rules, DER categories for aggregation purposes, costs of aggregation, bid creation, bid types, disaggregation rules etc.)

4-4 Network visibility and information exchange

Network visibility and information exchange at different time horizons are the key enablers of DSO-TSO coordination enhancement.

DSO2TSO TF shall address information exchange issue and provide a set of recommendations for the following non-exhaustive list of structured data sets:

- network models,
- network development and investment plans input data,
- demand and generation forecasts,
- installed capacity of DER resources,
- real time measurements, statuses and alarms,
- DER observability and controllability,
- metering and settlement data.

DSO2TSO TF shall also address and elaborate current status of standardization which is applicable for the data exchange between DSOs and TSOs.

4-5 Regulatory framework – DSOs and DER flexibility

DSO2TSO TF shall address key aspects of regulatory framework in respect of enabling DER flexibility, such as market rules and product definitions (imbalance settlement period, minimum bid size, activation period, frequency of activation, rate of change, response time, asymmetric products etc.), coordination with balancing activities, measurement of activated flexibility for non-metered consumers, contracts for flexibility, flexibility remuneration mechanisms, aggregation rules, imbalance settlement rules etc.

In addition, DSO2TSO TF shall address key issues related to the DSO's costs/benefits of hosting flexibility, such as: recognition of costs of enabling flexibility, recognition of DSO's cost of procuring flexibility (costs of curtailment, voltage regulation, peak shaving etc.), OPEX vs. CAPEX treatment in DSO's revenues, DSO's constraints on electrical energy trade etc.