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All TSOs' proposal for a generation and load data provision methodology in accordance with Article 16 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

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13 May 2016

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All TSOs, taking into account the following:

#### Whereas

- (1) This document is a common proposal developed by all Transmission System Operators (hereafter referred to as "TSOs") regarding the development of a proposal for a generation and load data provision methodology (hereafter referred to as "GLDPM").
- (2) This proposal (hereafter referred to as the "GLDPM Proposal") takes into account the general principles and goals set in Commission Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management (hereafter referred to as "Regulation 2015/1222") as well as Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereafter referred to as "Regulation (EC) No 714/2009"). The goal of Regulation 2015/1222 is the coordination and harmonisation of capacity calculation and allocation in the day-ahead and intraday cross-border markets. To facilitate these aims, it is necessary for all TSOs to use a common grid model. A common grid model can only be created if all TSOs have access to the generation and load data that this requires. "Generation" encompasses all injections into the transmission network and "Load" encompasses all withdrawals from the transmission network.
- (3) While the GLDPM described in the present GLDPM Proposal sets out requirements with respect to the delivery of the generation and load data required to establish the common grid model, the rules on how to establish the common grid model itself are addressed in the common grid model methodology pursuant to Article 17 of Regulation 2015/1222.
- (4) Article 16 of Regulation 2015/1222 constitutes the legal basis for this proposal and defines several specific requirements that the GLDPM Proposal should take into account:
  - 1. By 10 months after the entry into force of this Regulation all TSOs shall jointly develop a proposal for a single methodology for the delivery of the generation and load data required to establish the common grid model, which shall be subject to consultation in accordance with Article 12. The proposal shall include a justification based on the objectives of this Regulation for requiring the information.*
  - 2. The proposal for the generation and load data provision methodology shall specify which generation units and loads are required to provide information to their respective TSOs for the purposes of capacity calculation.*
  - 3. The proposal for a generation and load data provision methodology shall specify the information to be provided by generation units and loads to TSOs. The information shall at least include the following: (a) information related to their technical characteristics; (b) information related to the availability of generation units and loads; (c) information related to the schedules of generation units; (d) relevant available information relating to how generation units will be dispatched.*
  - 4. The methodology shall specify the deadlines applicable to generation units and loads for providing the information referred to in paragraph 3.*
  - 5. Each TSO shall use and share with other TSOs the information referred to in paragraph 3. The information referred to in paragraph 3(d) shall be used for capacity calculation purposes only.*

6. *No later than two months after the approval of the generation and load data provision methodology by all regulatory authorities, ENTSO for Electricity shall publish: (a) a list of the entities required to provide information to the TSOs; (b) a list of the information referred to in paragraph 3 to be provided; (c) deadlines for providing information."*
- (5) Article 2(2) of Regulation 2015/1222 defines the common grid model as  
*"a Union-wide data set agreed between various TSOs describing the main characteristic (sic) of the power system (generation, loads and grid topology) and rules for changing these characteristics during the capacity calculation process"*
- (6) Article 2(1) of Regulation 2015/1222 defines an individual grid model as  
*"a data set describing power system characteristics (generation, load and grid topology) and related rules to change these characteristics during capacity calculation, prepared by the responsible TSOs, to be merged with other individual grid model components in order to create the common grid model"*
- (7) Article 19 of Regulation 2015/1222 also includes relevant provisions:  
*"2. Each individual grid model shall represent the best possible forecast of transmission system conditions for each scenario specified by the TSO(s) at the time when the individual grid model is created.*  
*3. Individual grid models shall cover all network elements of the transmission system that are used in regional operational security analysis for the concerned time-frame."*  
*5. Each TSO shall provide all necessary data in the individual grid model to allow active and reactive power flow and voltage analyses in steady state."*
- (8) The first paragraph of Article 9(9) of Regulation 2015/1222 sets out two further obligations:  
*"The proposal for terms and conditions or methodologies shall include a proposed timescale for their implementation and a description of their expected impact on the objectives of this Regulation."*
- (9) Article 28(1) and (2) of Regulation 2015/1222 formulates additional obligations relevant for the GLDPM Proposal addressed to the generation units and loads as data providers:  
*"1. For each capacity calculation time-frame referred to in Article 14(1), each generator or load unit subject to Article 16 shall provide the data specified in the generation and load data provision methodology to the TSO responsible for the respective control area within the specified deadlines.*  
*2. Each generator or load unit providing information pursuant to Article 16(3) shall deliver the most reliable set of estimations practicable."*
- (10) Article 24 of Regulation 2015/1222 refers to one way of making use of the data obtained on the basis of the generation and load data provision methodology that is separate from the use of the data in each TSO's individual grid model:  
*"1. The proposal for a common capacity calculation methodology shall include a proposal for a methodology to determine a common generation shift key for each bidding zone and scenario developed in accordance with Article 18.*  
*2. The generation shift keys shall represent the best forecast of the relation of a change in the net position of a bidding zone to a specific change of generation or load in the common grid*

*model. That forecast shall notably take into account the information from the generation and load data provision methodology."*

- (11) Article 9(9) of Regulation 2015/1222 requires that the expected impact of the GLDPM Proposal on the objectives of Regulation 2015/1222 is described. The impact is presented below (points (12) to (21) of this Whereas Section). The description of the impact of the GLDPM Proposal on the objectives of Regulation 2015/1222 should be read in conjunction with the related articles of the Common Grid Model Methodology required pursuant to Article 17 of Regulation 2015/1222 being a companion methodology to the GLDPM Methodology.
- (12) The GLDPM Proposal contributes to and does not in any way hamper the achievement of the objectives of Article 3 of Regulation 2015/1222. In particular, the GLDPM Proposal serves the objective of promoting effective competition in the generation, trading and supply of electricity (Article 3(a) of Regulation 2015/1222) in contributing to coordinated capacity calculation by prescribing the inputs required from the addressees of the proposal to facilitate the preparation of individual grid models to be merged into the common pan-European grid model.
- (13) In respect of ensuring the optimal use of transmission infrastructure further to Article 3(b) of Regulation 2015/1222, the GLDPM Proposal contributes to coordinated capacity calculation by prescribing the inputs required from the addressees of the proposal to facilitate the preparation of individual grid models to be merged into the common pan-European grid model, which will allow determinations to be made regarding the optimum availability of the transmission grid and thus, the optimal use of the transmission infrastructure.
- (14) The GLDPM Proposal takes into account operational security in accordance with Article 3(c) of Regulation 2015/1222 by requiring the provision of information from the addressees of the proposal to allow specific modelling of all grid elements, generation and load at 220 kV or above or of less than 220 kV where they are used in regional operational security analysis.
- (15) In accordance with Article 3(d) of Regulation 2015/1222, and taking into account the capacity calculation methodologies to be developed under Regulation 2015/1222, the creation of the common grid model and use thereof in the capacity calculation process will optimise the calculation and allocation of cross-zonal capacity by ensuring a common methodology and inputs for the preparation of individual grid models to be merged into the common pan-European grid model. The GLDPM Proposal contributes to meeting this objective of Regulation 2015/1222 by prescribing the inputs required from the addressees of the proposal to facilitate the preparation of individual grid models to be merged into the common pan-European grid model.
- (16) The GLDPM Proposal ensures that the objective of fair and non-discriminatory treatment of TSOs, NEMOS, the Agency, regulatory authorities and market participants is met insofar as the requirements in respect of data provision by the addressees of the GLDPM Proposal are common and binding throughout the Union. The GLDPM Proposal, in setting out requirements for data provision to facilitate the operation of the Common Grid Model Methodology required pursuant to Article 17 of Regulation 2015/1222, contributes to the general aim of equal access to cross-zonal capacity further to Article 3(e) of the Regulation 2015/1222.
- (17) The CGMM Methodology ensures and enhances the transparency and reliability of information further to Article 3(f) of Regulation 2015/1222 by providing for monitoring of the quality and timely delivery of data to TSOs. The detailed requirements in relation to data provision in the

- GLDPM Proposal enhance the reliability of the data that will be available to TSOs for the purposes of creating individual grid models and the creation of the common grid model.
- (18) The GLDPM Proposal also contributes to the objective of respecting the need for a fair and orderly market and price formation (Article 3(h) of the Regulation 2015/1222) by contributing to the provision of a common grid model to be used in the capacity calculation process on the basis of the common grid model.
  - (19) The GLDPM Proposal will contribute to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union by virtue of outlining the common requirements in terms of data provision to be used as inputs for creating the common grid model that will be used in a coordinated manner throughout the Union.
  - (20) The GLDPM Proposal contributes to the objective of providing non-discriminatory access to cross-zonal capacity (Article 3(j) of the Regulation 2015/1222) again by specifying the common data provision requirements that form the basis for provision of the common grid model.
  - (21) Article 16(1) of Regulation 2015/1222 requires that a justification based on the objectives of the regulation for requiring the information sought is included in this proposal. It has been outlined that the GLDPM Proposal complies generally with the objectives of Regulation 2015/1222 in that the information being sought contributes to the formation of the common grid model, further to the requirements outlined in the Common Grid Model Methodology as required under Article 17 of the regulation. The information required to be provided by the addressees of the GLDPM Proposal constitute the inputs required by TSOs to prepare their individual grid models further to the Common Grid Model Methodology referenced above. As the GLDPM Proposal prevents double-reporting of information by the addressees of the proposal, the requirements for information provision are balanced and proportionate. The proposal further allows for the continuation of data provision under existing mechanisms in individual jurisdictions throughout the Union, thus ensuring as minimal an impact as possible on the addressees of the proposal.

**SUBMIT THE FOLLOWING GLDPM PROPOSAL TO ALL REGULATORY AUTHORITIES:**

### **Article 1**

#### **Subject matter and scope**

1. The generation and load data provision methodology described in this proposal is the common proposal of all TSOs in accordance with Article 16 of Regulation 2015/1222.
2. This methodology shall apply in the area referred to in Article 1 (2) of Regulation 2015/1222.
3. This methodology shall also apply to those jurisdictions outside the area referred to in Article 1 (2) of Regulation 2015/1222 whose TSOs have joined the CGM process on a voluntary basis in accordance with the provisions in Article 1 of the common grid model methodology.
4. The TSOs referred to in paragraph 1 shall monitor that in those jurisdictions participating in the CGM process on a voluntary basis pursuant to paragraph 3 all relevant parties respect their obligations. If the relevant parties do not respect their essential obligations in a way that significantly endangers the implementation and operation of Regulation 2015/1222, the TSOs in the area referred to in paragraph 1 shall terminate the voluntary participation in the CGM process of the

TSO(s) in the corresponding jurisdictions in accordance with the procedure set out in Article 9(2) of Regulation 2015/1222.

5. This methodology does not apply to HVDC connections that are operated by one TSO if the corresponding Member State has assigned the responsibility for complying with the obligations set out in Article 16 of Regulation 2015/1222 to a different TSO.

## Article 2

### Definitions and interpretation

For the purposes of this proposal, the terms used shall have the meaning of the definitions included in Article 2 of Regulation 2015/1222 and the other items of legislation referenced therein. In addition, the following definitions shall apply:

1. 'CGM area' means the area covered by the common grid model; this is the set of (i) bidding zones whose TSOs contribute their IGM to the CGM plus (ii) the interconnections linking these bidding zones with bidding zones that do not contribute an individual grid model to the CGM (i.e., are not part of the CGM area);
2. 'CGM process' means all stages and all aspects of the process by which TSOs build and share individual grid models and merge these into common grid models;
3. 'conforming load' means a load whose active and reactive power consumption shall be scaled when scaling the overall load;
4. 'equivalent model' means a set of modelled grid elements which together have the same electrical behavior as a part of the network. Equivalent models are obtained through a process known as model reduction;
5. 'implementation rules' means the set of rules describing the methods and data formats to be used by the parties providing data to TSOs under the generation and load data provision methodology as well as any additional instructions from TSOs that are relevant in this respect; to be prepared by TSOs under the applicable national legislation or regulations;
6. 'maximum permissible TATL duration' means the maximum period of time that a loading in excess of the PATL and less than or equal to the TATL can be sustained without risk to the equipment;
7. 'non-conforming load' means a load whose active and reactive power consumption shall not be scaled when scaling the overall load;
8. 'PATL (permanent admissible transmission loading)' means the maximum loading in amperes, MW or MVA that can be sustained on a transmission line, cable or transformer for an unlimited duration without risk to the equipment;
9. 'substation voltage limits' means the maximum and minimum acceptable voltages for modelled substations at each nominal voltage level as per the locally applicable power quality and system security standards;
10. 'TATL (temporary admissible transmission loading)' means the maximum loading in amperes, MW or MVA that can be sustained for a limited duration without risk to the equipment;
11. 'tripping current' means the maximum current threshold above which a transmission line, cable or transformer will trip without delay.

### Article 3

#### General principles

1. This methodology sets out the generation and load data which may be required by TSOs in order to establish the common grid model. Each TSO shall have the right but not the obligation to obtain these data from the owner of the corresponding network element or the party responsible for providing the information, as the case may be, provided that all of the following conditions are met:
  - a. the TSO requires the data in order to build its individual grid model or to meet other obligations that are essential to establishing the common grid model; the set of required data shall be the minimum set that enables the TSO to do so;
  - b. the data are not already available to the TSO
    - i. either pursuant to national legislation or regulation, on a contractual basis or based upon some other kind of legally binding mechanism;
    - ii. or as data publicly available via the central information transparency platform pursuant to Regulation 543/2013 or pursuant to Regulation 1227/2011 (REMIT).
2. This methodology does not confer upon TSOs the right to request data not explicitly described in this methodology. For avoidance of doubt, real-time data are out of scope of the present methodology.
3. The harmonisation requirement set out in Article 19(4) of Regulation 2015/1222 shall be understood to refer to the harmonisation of modelling principles. TSOs shall not invoke the harmonisation requirement in order to obtain data which they do not require in order to build their individual grid model or in order to meet other obligations that are essential to establishing the common grid model.
4. Except where explicitly stated otherwise, the owner of the corresponding network element shall be the party required to provide the data to the TSO.
5. Data to be provided to the TSO under this methodology shall, in principle, be provided directly to the TSO. Subject to the agreement of the TSO, parties required to provide data under the generation and load data provision methodology shall be allowed to delegate tasks in accordance with the principles set out in Article 81 of Regulation 2015/1222. The TSO shall not unreasonably withhold its agreement.
6. Subject to the confidentiality obligations set out in Article 13 of Regulation 2015/1222, TSOs may share the data obtained with other TSOs that participate in the CGM process pursuant to Article 16(3) of Regulation 2015/1222 as well as the alignment agents referred to in Article 19(7) of the common grid model methodology, the merging agents referred to in Article 20(1) of the common grid model methodology, and the ENTSO for Electricity in its role as owner of the information platform referred to in Article 21 of the common grid model methodology.
7. Regarding the enforceability of the present methodology and the dispute resolution related to its provisions including the implementation and interpretation of this methodology and the proper functioning of the data provision process the relevant Union and national law applies.
8. All times stated in this GLDPM Proposal refer to market time as defined in Article 2(15) of Regulation 2015/1222.

9. This methodology solely relates to the provision of data and deadlines associated with the CGM process and does not affect existing or future obligations to provide data or deadlines related to any other system operation process if those obligations to provide data or those deadlines are based on national legislation or regulation, contractual arrangements, or some other kind of legally binding mechanism.

#### **Article 4**

##### **Data provision**

1. Each party obliged to provide data under this methodology shall respect the implementation rules set by the responsible TSO.
2. This methodology in conjunction with the provisions of the common grid model methodology as required under Article 17 of Regulation 2015/1222 shall make it possible to create the common grid model pursuant to Article 28 of Regulation 2015/1222. In particular, this means that this methodology relates to the elements of the high-voltage and extra high-voltage network, insofar as these are used in regional operational security analysis for the concerned time-frame.
3. Where this methodology refers to a breakdown by primary energy sources, a breakdown into primary energy sources consistent with those used by the central information transparency platform referred to in Article 3 of Regulation 543/2013 is required.

#### **Article 5**

##### **Distribution and closed distribution system operators – structural data**

1. Distribution and closed distribution system operators shall provide the structural data described in paragraph 2 of this Article if these grid elements pertain to a voltage level
  - a. of 220 kV or above;
  - b. of less than 220 kV and they are used in regional operational security analysis.
2. The relevant grid elements and the data to be provided for these are
  - a. sub-stations: voltage levels, busbar sections and if applicable to the modelling approach used by the TSO switching devices to include switching device identifier and switching device type, comprising either breaker or isolator or load break switch;
  - b. lines or cables: electrical characteristics, the sub-stations to which these are connected;
  - c. power transformers incl. phase-shifting power transformers: electrical characteristics, the sub-stations to which these are connected, the type of tap changer, and type of regulation, where applicable;
  - d. power compensation devices and flexible AC transmission systems (FACTS): type, electrical characteristics, and type of regulation where applicable.
3. Distribution and closed distribution system operators shall provide a model or an equivalent model of those parts of the grid operated at a voltage of less than 220 kV if
  - a. these parts of the grid are used in regional operational security analysis, or
  - b. the relevant grid elements in those parts of the grid are connecting



- i. a generation unit or load modelled in detail in accordance with Article 8 or 11 to the 220 kV or higher voltage level; or
    - ii. two nodes at the 220 kV or higher voltage level.
4. Models and equivalent models pursuant to paragraph 3 shall contain aggregates of load separated from generation and generation capacity separated by primary energy sources and separated from load in the corresponding parts of the grid broken down by sub-stations of the equivalent model or the sub-stations to which the corresponding parts of the grid are connected.
5. Distribution and closed distribution system operators shall provide the following information on operational monitoring limits for the relevant grid elements described in this Article:
  - a. a PATL reflecting the nominal rating for each season if the rating does not depend upon meteorological conditions or the pre-fault loading;
  - b. one or more TATLs, reflective of the corresponding season and based on the applicable PATL, for each explicitly modelled transmission line, cable, transformer and relevant item of DC equipment;
  - c. for each TATL specified pursuant to point (b) a TATL duration;
  - d. tripping current for each relevant item of explicitly modelled transmission equipment, if applicable;
  - e. maximum and minimum acceptable voltages at each nominal voltage level, as per relevant locally applicable codes, standards, licences, policies and agreements.

## Article 6

### **Distribution and closed distribution system operators – infrequently changing variable data**

1. Distribution and closed distribution system operators shall provide the following infrequently changing variable data for the relevant network elements:
  - a. the tap position of all modelled power transformers including phase-shifting transformers without regulation;
  - b. the best forecast operational topological situation defined as the expected configuration of the corresponding parts of the grid;
  - c. control settings for the following items of regulating equipment referred to in Articles 5 and 8, respectively, where modelled and relevant:
    - i. power transformers and associated tap changers;
    - ii. phase-shifting transformers and associated tap changers;
    - iii. reactive compensation devices:
      1. shunt compensators - shunt capacitors or reactors or discretely switchable banks of shunt capacitors or reactors;
      2. static VAR compensators;
      3. synchronous condensers;
      4. static synchronous compensators (STATCOMs) and other flexible AC transmission system (FACTS) devices;
    - iv. generators - with respect to voltage regulation;
  - d. the control settings pursuant to point (c) shall include the following data where applicable:

- i. regulation status - enabled or disabled;
- ii. regulation mode - voltage, active power, reactive power, power factor, current or another mode as appropriate;
- iii. regulation target or target range - in kV, MW, Mvar, p.u. or another unit as appropriate;
- iv. regulation target deadband;
- v. regulation participation factor;
- vi. regulated node.

## Article 7

### Distribution and closed distribution system operators – variable data

1. Distribution and closed distribution system operators shall provide the following variable data for the network elements referred to in Article 5:
  - a. the planned or forced unavailability of modelled items of equipment that are known or expected to be unavailable;
  - b. topological remedial actions pursuant to Article 25 of Regulation 2015/1222 as well as topological agreed measures pursuant to Article 22 of the common grid model methodology;
  - c. forced unavailability of modelled equipment if applicable for the concerned time-frame.

## Article 8

### Generation – structural data

1. Owners of generation units including synchronous condensers and pumps shall provide the relevant information described in this Article if these are modelled in detail, whether on an individual or composite basis. Generation units shall be modelled in detail if they are connected at a voltage level
  - a. of 220 kV or above;
  - b. of less than 220 kV and they are used in regional operational security analysis.
2. Several identical or similar generation units may be modelled in detail on a composite basis if this modelling approach is sufficient with respect to regional operational security analysis. For generation units modelled in detail on a composite basis an equivalent model shall be included in the individual grid model. The owners of the individual generation units shall provide the detailed information on the generation units and the relevant DSO shall provide detailed information on the grid connections such that the TSO can compute the equivalent model. Alternatively the complete equivalent model shall be provided to the TSO.
3. Distribution including closed distribution system operators shall provide the relevant information described in this Article for generation capacity not modelled in detail. This generation capacity shall be modelled as aggregates separated by primary energy sources and separated from load.
4. For both generation units modelled in detail and for aggregates of generation capacity separated by primary energy sources and separated from load the following data shall be provided:

- a. connection point;
  - b. primary energy source.
5. For generation units modelled in detail, the following data shall be provided:
- a. maximum active power and minimum active power; defined as those values which the generation unit can regulate to. In the case of hydroelectric pumped storage generation units, two cycles shall be modelled and two records have to be provided, being one for the generating mode and one for the pumping mode;
  - b. the type of control mode, being one of the following: disabled, voltage control, power factor control, reactive power control and, for voltage-controlled generation units, the regulated buses, where the scheduled voltage is set up;
  - c. maximum and minimum values of reactive power when the minimum and maximum active power is delivered as well as the associated capability curve;
  - d. the auxiliary load of the generation unit representing the internal demand of the generation unit shall be modelled as a non-conforming load at the connection point of the generation unit.
6. For generation units modelled as aggregates the following data shall be provided:
- a. aggregates of generation capacity separated by primary energy sources and separated from load in the corresponding parts of the grid referred to in Article 5 broken down by sub-stations of the equivalent model or the sub-stations to which the corresponding parts of the grid are connected.
7. For generation units modelled as aggregates and managed by an aggregator whose data are used in regional operational security analysis, the aggregator shall provide the following data:
- a. aggregates of generation capacity separated by primary energy sources and separated from load managed by the aggregator in the corresponding parts of the grid broken down by sub-stations of the equivalent model or the sub-stations to which the corresponding parts of the grid are connected.

## Article 9

### Generation – infrequently changing variable data

1. Owners of generation units modelled in detail or, in the case of generation units modelled in detail on a composite basis, the owners of the individual generation units shall provide the following infrequently changing variable data for the generation units referred to in Article 8:
  - a. applicable priority dispatch requirements.
2. The information referred to in paragraph (1)(a) constitutes relevant available information relating to how generation units will be dispatched pursuant to Article 16(3)(d) of Regulation 2015/1222 and shall be used for capacity calculation purposes only.

## Article 10

### Generation – variable data

1. Owners of generation units modelled in detail or, in the case of generation units modelled in detail on a composite basis, the owners of the individual generation units shall provide the following variable data for the generation units referred to in Article 8:
  - a. information about upward and downward active power reserves and other types of ancillary services;
  - b. outage plans;
  - c. testing profiles;
  - d. scheduled unavailability;
  - e. any active power capacity restrictions;
  - f. latest available market schedules;
  - g. forecast active power output.
2. The information referred to in paragraph (1)(a) and (1)(g) constitutes relevant available information relating to how generation units will be dispatched pursuant to Article 16(3)(d) of Regulation 2015/1222 and shall be used for capacity calculation purposes only.
3. Aggregators of generation units whose data are used in regional operational security analysis shall provide the following variable data:
  - a. latest available market schedules.

## Article 11

### Load – structural data

1. Loads shall provide the relevant information described in this Article if they are modelled in detail whether on an individual or composite basis. Loads shall be modelled in detail if they are connected at a voltage level
  - a. of 220 kV or above;
  - b. of less than 220 kV and they are used in regional operational security analysis.
2. Several identical or similar loads may be modelled in detail on a composite basis if this modelling approach is sufficient with respect to regional operational security analysis. For loads modelled in detail on a composite basis an equivalent model shall be included in the individual grid model. The owners of the loads shall provide the detailed information on the loads and the relevant DSO shall provide detailed information on the grid connections such that the TSO can compute the equivalent model. Alternatively the complete equivalent model shall be provided to the TSO.
3. Distribution including closed distribution system operators shall provide the relevant information described in this Article for loads not modelled in detail which shall be modelled as aggregates.
4. For both loads modelled in detail and for aggregates of loads separated from generation the following data shall be provided:
  - a. connection point;
  - b. maximum active power consumption;
  - c. power factor or reactive power;

- d. conforming flag where the value "true" means that the active and reactive power consumption of the load shall be scaled when scaling the overall load.
5. For loads modelled in detail the following data shall be provided:
  - a. characteristics of reactive power control if installed;
  - b. maximum and minimum active power available for demand response and the maximum and minimum duration of any potential usage of this power for demand response.
6. For loads modelled as aggregates the following data shall be provided:
  - a. aggregates of loads separated from generation in the corresponding parts of the grid referred to in Article 5 broken down by sub-stations of the equivalent model or the sub-stations to which the corresponding parts of the grid are connected.
7. For loads modelled as aggregates and managed by an aggregator whose data are used in regional operational security analysis, the aggregator shall provide the following data:
  - a. aggregates of maximum and minimum active power available for demand response separated from generation and the maximum and minimum duration of any potential usage of this power for demand response managed by the aggregator in the corresponding parts of the grid broken down by sub-stations of the equivalent model or the sub-stations to which the corresponding parts of the grid are connected.

## Article 12

### Load – variable data

1. Owners of loads modelled in detail or, in the case of loads modelled in detail on a composite basis, the owners of the individual loads, shall provide the following variable data for the loads referred to in Article 11:
  - a. planned outages;
  - b. forecast of unrestricted active power available for demand response and any planned demand response;
  - c. scheduled active and forecast reactive consumption.
2. Aggregators of loads whose data are used in regional operational security analysis shall provide the following variable data:
  - a. forecast of unrestricted active power available for demand response and any planned demand response.

## Article 13

### HVDC links – structural data

1. HVDC links shall be modelled regardless of whether these are located entirely within a single bidding zone or they connect two bidding zones. The TSO or TSOs concerned shall decide on the degree of detail with which the HVDC link is to be modelled. They shall base their decision on the functions for which the HVDC link is to be used. By default an HVDC link shall be modelled in

detail and the AC/DC part of the HVDC link shall be exchanged unless the functions that it is used for do not require this.

2. For both HVDC links modelled in detail and for those modelled in a simplified manner, the owner shall provide the following data:
  - a. connection points.
3. For HVDC links to be modelled in detail the owner shall provide a detailed model which shall include
  - a. electrical characteristics;
  - b. type and characteristics of supported control modes.
4. HVDC links modelled in a simplified manner shall be represented by equivalent injections at the connection points and the owner shall not have to provide additional structural data.

#### **Article 14**

##### **HVDC links – infrequently changing variable data**

1. Owners of HVDC links modelled in detail shall provide the following infrequently changing variable data for the HVDC links referred to in Article 13:
  - a. control settings including
    - i. operating mode - inverter/rectifier;
    - ii. control mode - voltage, active power, reactive power, power factor, current, or similar mode;
    - iii. voltage targets;
    - iv. regulated nodes.

#### **Article 15**

##### **HVDC links – variable data**

1. Owners of HVDC links modelled in detail shall provide the following variable data for the HVDC links referred to in Article 13:
  - a. active power targets.

#### **Article 16**

##### **Deadlines for providing the information**

1. The default deadlines for providing the information by type of data item are as follows:
  - a. structural data: six months before the entry into operation or the implementation of a change in the relevant characteristics of the corresponding network element; the continued validity of the data provided needs to be confirmed every year by 01 April;
  - b. infrequently changing variable data:

- i. changes expected during the following year need to be signalled to the TSO by 01 April of each year;
    - ii. changes expected during the following month need to be signalled to the TSO by the 5th day of each month;
    - iii. for changes expected at shorter time horizons the deadlines for variable data apply;
  - c. variable data:
    - i. for the day-ahead capacity calculation time-frame: 15:15h two days before the day of delivery;
    - ii. for the intraday capacity calculation time-frame: 16:30h on the day before the day of delivery.
2. When setting deadlines for the provision of the data, each TSO may set a deadline that is less constraining for data providers than the default deadline specified in paragraph 1. Where a TSO has set a deadline that is less constraining than the default deadline and later wishes to modify that deadline in a way that is more constraining, it shall ensure that the principles outlined in Regulation 2015/1222 in terms of stakeholder consultation are adhered to or in the alternative, ensure that sufficient consultation and approval processes take place to satisfy the requirements at a national level, provided that such alternative approach remains in compliance with the general principles of stakeholder consultation outlined in Regulation 2015/1222. Under no circumstances shall TSOs set deadlines that are more constraining for data providers than the default deadlines in order to obtain data under this methodology.

## Article 17

### Quality monitoring

1. Each TSO shall monitor the quality of the data provided to it as well as the timeliness of data delivery and overall compliance with the implementation rules.
2. If a TSO identifies problems with respect to the quality of the data provided to it or the timeliness of data delivery or overall compliance with the implementation rules it shall in the first instance attempt to resolve these problems directly with the entity concerned.

## Article 18

### Timescale for implementation

1. Upon approval of the present methodology each TSO shall publish it on the internet in accordance with Article 9(14) of Regulation 2015/1222.
2. By one month after the approval of the present methodology, each TSO shall
  - a. inform the entities required to provide data about the information they are required to provide as well as the deadlines for providing the information;
  - b. forward the information set out in (a) to ENTSO-E;
  - c. prepare draft implementation rules on the practicalities of data provision specifying, for example, data formats and technical requirements with respect to the IT implementation of

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the data provision process in accordance with the procedures applicable under national law. Each TSO shall ensure that these implementation rules make use of existing infrastructure and data delivery processes to the extent possible and it shall allow sufficient time for implementation; where appropriate TSOs shall also provide clarification on definitions and other guidance as may be required.

3. By two months after the approval of the present methodology, ENTSO-E shall publish the information referred to in Article 16(6) of Regulation 2015/1222.
4. By twelve months after the approval of the present methodology or 14 December 2017, whichever is later, each TSO shall ensure that the data provision process required in order to implement the methodology is operational; this entails that all necessary steps required by national legislation or regulations such as stakeholder consultation or NRA approval shall have been completed. At a minimum, implementation rules need to have been finalised and the data provision process needs to have been tested.

#### **Article 19**

##### **Language**

The reference language for this proposal shall be English. For the avoidance of doubt, where TSOs need to translate this proposal into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 9(14) of Regulation 2015/1222 and any version in another language the relevant TSOs shall, in accordance with national legislation, provide the relevant national regulatory authorities with an updated translation of the proposal.