



Publishing date: 11/10/2012

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**OPINION OF THE AGENCY FOR THE COOPERATION OF ENERGY
REGULATORS No. 07/2012**

of 8 October 2012

**ON THE ENTSO-E SUMMER OUTLOOK REPORT 2012
AND WINTER REVIEW 2011/2012**

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS

HAVING REGARD to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators¹, and, in particular, Article 6(3)(b) thereof;

HAVING REGARD to 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 and repealing Regulation (EC) No 1228/2003², and, in particular, Article 9(2) thereof;

HAVING REGARD to the favourable opinion of the Agency's Board of Regulators of 1 October 2012, delivered pursuant to Article 15(1) of Regulation (EC) No 713/2009,

WHEREAS:

- (1) On 11 June 2012, the European Network of Transmission System Operators for Electricity ("ENTSO-E"), pursuant to Articles 8(3)(f) and 9(2) of Regulation (EC) No 714/2009, submitted its annual summer generation adequacy outlook report for 2012 to the Agency for the Cooperation of Energy Regulators ("the Agency") for its opinion. The report is entitled "Summer Outlook Report 2012 and Winter Review 2011/2012".
- (2) Pursuant to Article 6(3)(b) of Regulation (EC) No 713/2009 the Agency shall provide an opinion to ENTSO-E in accordance with the first subparagraph of Article 9(2) of Regulation (EC) No 714/2009 on relevant documents referred to in Article 8(3) of Regulation (EC) No 714/2009. Point (f) of Article 8(3) of Regulation (EC) No 714/2009 refers to annual summer and winter generation adequacy outlooks to be adopted by ENTSO-E. It does not explicitly refer to the summer and winter reviews. However, such reviews are of utmost relevance for the preparation of future outlooks and, equally, constitute a long-standing practice of the associations of transmission system operators (TSOs).

¹ OJ L 211, 14.8.2009, p.1

² OJ L 211, 14.8.2009, p.15

Furthermore, the winter review forms an integral part of the document containing ENTSO-E's summer outlook 2012 and is strictly linked to it. In light of the above, it is appropriate therefore to consider in this opinion not only the summer outlook 2012, but also the winter review.

HAS ADOPTED THIS OPINION on the Summer Outlook Report 2012 and Winter Review 2011/2012 with the following comments and guidance:

1. Summer Outlook Report 2012

ENTSO-E indicates that the summer outlook report (SOR)³ is based on the information provided by ENTSO-E members on a qualitative and quantitative basis. The information provided in the SOR refers to the answers submitted by TSOs in response to the SOR questionnaire.

1.1. Methodology for the adequacy assessment

According to ENTSO-E, the SOR sets out their analysis and views for the coming summer period on the basis of a consolidated methodology applied for short-term adequacy reports. This methodology consists of a deterministic approach which indicates the total generation likely to be needed at peak load hours. It presents results for (i) normal conditions and (ii) severe load and generation conditions. According to the appendix of the SOR, severe conditions are related to what each TSO would expect under a one-in-ten-year scenario.

The Agency believes that incorporating the probability of occurrence of severe conditions, based on historical data, in adequacy assessments provides a better representation of the fluctuations of supply/demand balance and measure of the risks.

The Agency appreciates that, over the years, the use of the deterministic approach led to a consolidated methodology across Europe. Its results are useful for identifying adequacy risks for each country in specific periods of the year.

ENTSO-E should further enrich this deterministic approach by giving greater attention to the probability of occurrence of the supply/demand forecast conditions and of occurrence of the adequacy risks.

In the SOR 2012, the methodology for quantitative analysis has been enhanced to provide a regional analysis of adequacy⁴. While acknowledging that no market simulation or grid model simulation whatsoever is taken into account, values of net transfer capacities (NTC) have been introduced, to limit commercial exchanges

³ ENTSO-E, "Summer Outlook Report 2012 and Winter Review 2011/2012", 11 June 2012.
https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/outlookreports/120611-SOWR_2012.pdf

⁴ Section 3.1 of the SOR 2012.

between neighbouring countries, as well as limits on simultaneous imports and exports. A coordination team, comprised of experts from various TSOs across Europe, developed the methodology for the regional analysis and carried out subjective weekly stress assessments.

The Agency believes that national balances must be considered together with the situation in neighbouring networks⁵, since countries can frequently rely on imports from neighbouring countries to ensure the supply/demand balance (e.g. under normal weather conditions Finland, Germany and Hungary would require imports during most of the summer weeks in 2012⁶).

The weekly stress assessment, which takes into account the interconnection capacity, should therefore be presented with more detail and clarity in the next SOR. The probability of simultaneous occurrence of similar weather conditions affecting supply/demand balance in neighbouring countries⁷ should be further investigated in the longer term (see also a related proposal in Section 2 on the winter review).

The Agency welcomes the regional analyses introduced by ENTSO-E as an important addition to the long-standing national assessments. Future regional analyses should particularly focus on groups of neighbouring countries which may simultaneously require imports from abroad.

Compared to the previous SOR in 2011, ENTSO-E has introduced a detailed description of the underlying methodology and expanded the questionnaire⁸ in the SOR 2012, in order to increase transparency and to bring short-term reporting (i.e. the SOR) more in line with long-term reporting (i.e. the Scenario Outlook and Adequacy Forecast⁹).

The Agency takes a very positive view of the improved description of the SOR methodology and the expansion of the SOR questionnaire. A section defining the key terms used in the SOR would further increase the readability of the next report.

⁵ It is noted that recital (44) of the Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, OJ L 211, 14.8.2009, p.55, states that the balance between supply and demand in individual Member States should be monitored, taking account of interconnection capacity between areas.

⁶ This result is derived from the analysis of figure 1 of the SOR 2012 and of country level graphs in section 6 of the SOR 2012.

⁷ E.g. Section 3.3 of ENTSO-E, "Summer Outlook Report 2011 and Winter Review 2010-2011" informed that it was chosen to assume 6% availability of all wind power in the regional power balance, based on previous assessments for the Nordic region alone, where at least 6% of the installed wind power capacity will be available with 90% probability. The SOR 2011 is available at: https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/outlookreports/SOR_2011WR_2010_Final.pdf

⁸ The SOR methodology is presented in Section 3 of the SOR 2012. The SOR questionnaire is attached as an appendix of the SOR 2012.

⁹ ENTSO-E, "Scenario Outlook and Adequacy Forecast 2012-2030", 5 July 2012. <https://www.entsoe.eu/system-development/tyndp/tyndp-2012-new/>

To conduct the regional analysis, ENTSO-E requested load data for the same points in time for all countries - each Wednesday 11:00 Central European Time (CET)¹⁰ - in order to allow for a meaningful assessment when determining cross-border flows. ENTSO-E recognised that this may not be the peak demand time in every region during the summer.

The Agency notes that the time of peak load can vary across countries and areas. One example is given in the table below, which provides data¹¹ for a group of seven neighbouring countries in Eastern Europe for the third Wednesday in September 2010. Peak load in the evening (hourly load value at 20:00) is about 4 GW (about 10%) higher than the hourly load value at 11:00. When considering Bulgaria, FYR of Macedonia, Republic of Serbia and Romania, the peak load exceeds the hourly load value at 11:00 by about 15%.

Country	Hourly load value 11:00 [MW]	Hourly load value 20:00 [MW]	Hourly load value 21:00 [MW]
BG	3890	4327	4591
HU	4909	5156	5128
MK	798	994	993
PL	18115	19421	19529
RO	6125	6961	6706
RS	4195	4828	4852
SK	3047	3210	3179
Total	41079	44897	44978

ENTSO-E should take into account local effects of demand variation to the extent possible. One approach could be to request weekly margins against peak load (as already practiced in the long-term adequacy forecast) and, based on such figures, evaluate the opportunity to perform additional regional analyses for specific groups of countries for specific periods of the year.

In the SOR 2011, ENTSO-E presented the remaining capacity indicator both in absolute [GW] and relative (percentage of peak load) terms. In the SOR 2012, only absolute figures are given. In the SOR 2011, ENTSO-E presented regional graphs displaying the remaining capacity for each week of the period under analysis. In the SOR 2012, only week 34 is presented as an example.

The Agency expects ENTSO-E to display the remaining capacity indicator in relative terms (percentage of the peak load) as well, in order to facilitate comparability across countries. Furthermore, ENTSO-E should describe the forecast supply/demand

¹⁰ The 24 load values collected by ENTSO-E all refer to Central European Time. Concerning the calculation method for the 24 load values, the countries use the average values of the 10, 15 or 60 minutes load preceding the hour. For definitions and national specificities, see ENTSO-E, "Load and consumption data: Specificities of member countries" www.entsoe.eu/fileadmin/user_upload/library/publications/ce/Load_and_Consumption_Data.pdf

¹¹ Elaboration of the Agency on data published by ENTSO-E in the dataset "Hourly load values on each 3rd Wednesday in 2010 [MW]" which accompanies the Statistical Yearbook 2010. https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/Statistical_Yearbook/Detailled_load_values_3rd_Wednesday_2010.xls

conditions for each week, in order to allow for better identification of the periods at risk, as well as those without risks.

1.2. Downward analysis

ENTSO-E introduced an overnight downward adequacy analysis to focus on the effects of intermittent generation¹².

The analysis shows that downward regulation is a concern for the TSOs of Belgium, Great Britain, Italy, Northern Ireland and Spain (with some countries being obliged to constrain wind output)¹³.

ENTSO-E collected the data for the regional overnight downward analysis for the same times - each Sunday at 03:00 CET - in order to allow consistency when determining cross-border flows.

ENTSO-E's analysis is based on the data submitted by TSOs and assumes that wind is at 65% output. ENTSO-E states that the 65% level was assumed as an average estimation of the maximum power output which could be delivered during the night based on the installed capacity.

The Agency regards the deterministic approach adopted by ENTSO-E as an initial attempt to introduce the downward analysis. As a possible long-term development, an improved analysis would require the use of a probabilistic approach for wind and solar output and a simplified time representation of a seasonal or yearly period¹⁴. The analysis shall quantify the expected curtailments of energy from inflexible generation (expressed in GWh) over a season, or, over a year.

ENTSO-E states that the overnight scenario does not cover a situation where the excess generation is also due to high solar in-feed during windy low load holidays and weekends. ENTSO-E recognises that the chosen time point (Sunday at 03:00 CET) may not be the minimum demand in every region in the summer.

As long as ENTSO-E will perform deterministic downward analyses, it should identify the weekly reference point as the time when the difference between the load and the in-feed from inflexible generation is at its minimum value, based on elaborations of

¹² The methodology of the downward adequacy analysis is presented in section 3.2 of the SOR 2012. The analysis is presented in sections 5.4 and 5.5 of the SOR 2012.

¹³ The analysis is based on national answers in Section 6.1 of the SOR 2012. It is also noted that many TSOs do not discuss downward regulation, whereas the TSOs of Poland, Portugal and Sweden indicate that downward regulation is not expected to be a critical issue.

¹⁴ It is noted that ENTSO-E presents "Market Modelling-Based Adequacy Assessment methods" (Section 7.3 of "Scenario Outlook and Adequacy Forecast 2012-2030") as a first step towards investigating the possibilities of new methods for adequacy assessment. Such methods are using historical data and probabilistic market studies to assess the adequacy of a system in a more detailed and complex way. One of the results - Dumped Energy - indicates excess production situations where production resources cannot be reduced far enough to meet the load (in GWh).

historical data¹⁵. The Agency deems this choice as more appropriate in order to consider high solar in-feed during windy low load holidays and weekends as well.

In addition, based on the results of a similar assessment of load and inflexible in-feed on a yearly period, it should be considered to extend the analysis to other periods during spring or autumn, which are currently not investigated by the ENTSO-E's summer and winter outlooks.

Given the expected development of wind and solar plants in the coming years (245 GW and 100 GW in 2020, respectively)¹⁶, the Agency welcomes ENTSO-E's initiative to introduce an overnight downward adequacy analysis and invites ENTSO-E further to develop this methodology.

1.3.Voltage control and operational problems

In addition to concerns about downward regulation, the TSOs of Cyprus, Denmark, Germany, Italy and Sweden report voltage control and operational problems especially in low load conditions with significant injections from inflexible generation¹⁷.

While acknowledging that voltage control is, by its nature, a local issue, the Agency expects that the members of ENTSO-E will clearly indicate the measures which are adopted by the involved TSOs, with a clear focus on those which can have a cross-border effect (e.g. reduction of net transfer capacities).

1.4.Publication of data

ENTSO-E publishes national datasheets for long-term adequacy forecasts, including generating capacity by type, total net generating capacity, non-usable capacity, maintenance and overhauls, outages, system services reserve, reliably available capacity, load, load management and remaining capacity¹⁸.

This ensures transparency and the dissemination of information to the stakeholders. By analogy with other ENTSO-E adequacy publications, the Agency regards the public availability of similar national datasheets for the Summer Outlook Reports as important. In addition to the aforementioned elements¹⁹ provided for the long-term adequacy forecasts, the SOR datasheets should provide explicit figures on the load increase due to severe conditions (which corresponds, in the SOR questionnaire, to the net weekly peak load in severe conditions minus the net weekly peak load in normal conditions) and generation constraints due to severe conditions (which corresponds, in

¹⁵ Given the recent increase of photovoltaic installations, the time series of historical data could be limited.

¹⁶ Section 4 of ENTSO-E, "Scenario Outlook and Adequacy Forecast 2012-2030".

¹⁷ Section 6.1 of the SOR 2012.

¹⁸ ENTSO-E, "Scenario Outlook and Adequacy Forecast 2012-2030" and "SOAF 2012-2030 dataset".

¹⁹ The term "load management" in the long-term adequacy forecasts corresponds to the term "load reduction available at peak" in the summer outlook report.

the SOR questionnaire, to the planned reliably available capacity under normal conditions minus the planned reliably available capacity under severe conditions).

2. Winter Review 2011-2012

ENTSO-E indicates that the winter review report is prepared on the basis of the information provided by ENTSO-E members through a questionnaire in order to present the most important events which occurred during the winter period in comparison to the forecasts and risks reported in the previous winter outlook. The questionnaire covers (i) general commentary on winter conditions, (ii) specific events occurred during the winter 2011/2012, (iii) detailed review of the most stressed periods and (iv) lessons learned for winter 2012²⁰. Already in 2011, “TSOs have been invited to provide quantitative data where possible to illustrate how the winter turned out against what was forecast”²¹.

The Agency notes that the concerns expressed by TSOs in their qualitative description vary significantly from country to country, due to different risk factors. Still, “as identified in the Winter Outlook, the main risk factors for most of the countries are related to the sensitivity of load to low temperatures which may cause stressed situations to be phased with planned measures”²².

The Agency expects ENTSO-E to collect and publish quantitative information as an element of the winter review. Priority should be given to the actual weekly peak load and the actual average temperature and their deviation in relation to the forecasts²³.

Availability of weekly national temperatures and load datasets could allow ENTSO-E and its TSO members further to assess and to know better the probability of occurrence of simultaneous severe weather conditions in neighbouring countries and systems.

3. Timing of publication

The SOR 2012 assesses the adequacy of the power system, as well as the potential electricity issues that may occur for the summer period of 6 June to 25 September 2012.

²⁰ Section 3.1 and Appendix of the SOR 2012.

²¹ Section 2.2.2 of ENTSO-E, “Summer Outlook Report 2011 and Winter Review 2010-2011”.

²² Statement from the Executive Summary of the SOR 2012, with reference to ENTSO-E, “Winter Outlook Report 2011/2012 and Summer Review 2011”.

²³ Publication of similar data (but on monthly or yearly basis) is already an ENTSO-E’s practice in the yearly System Adequacy Retrospect (SAR). See ENTSO-E, “System Adequacy Retrospect 2011” and its dataset. https://www.entsoe.eu/fileadmin/user_upload/library/news/ENTSO-E_publishes_the_System_Adequacy_Retrospect_2011/120726_System_Adequacy_Retrospect_2011_Final.pdf

Furthermore, daily average temperature and deviation from the normal temperature are provided by 29 countries in the ENTSO-E “System Adequacy Retrospect 2010” dataset. https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/SAR/ENTSO-E_SAR_2010.pdf

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ENTSO-E published the SOR 2012 on 11 June 2012.

ENTSO-E informed the respondent TSOs that the deadline for submitting answers to the SOR questionnaire was 30 March 2012 and states that “the information provided in the summer outlook referred to the answers sent by TSOs till beginning of May”.

The Agency acknowledges the usefulness of up-to-date information (e.g. on unavailable capacity due to maintenance and overhauls) when preparing the SOR.

However, the Agency expects ENTSO-E and its TSO members to attempt to deliver future summer outlooks earlier, in advance of the summer period, in order to provide earlier “warnings” where critical situations are expected.

Done at Ljubljana on 8 October 2012.

For the Agency:


Alberto Pototschnig
Director



Publishing date: 11/10/2012

Document title:

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