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**RECOMMENDATION OF THE AGENCY FOR THE COOPERATION OF ENERGY  
REGULATORS No 02/2016**

**of 11 November 2016**

**ON THE COMMON CAPACITY CALCULATION AND REDISPATCHING AND  
COUNTERTRADING COST SHARING METHODOLOGIES**

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 Regulators<sup>1</sup>, and, in particular, Article 7(2) thereof,

HAVING REGARD to the favourable opinion of the Board of Regulators of 8 November 2016, delivered pursuant to Article 15(1) of Regulation (EC) No 713/2009,

WHEREAS:

- (1) Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management<sup>2</sup> ('CACM Regulation') requires, *inter alia*, on the one hand, transmission system operators ('TSOs') to develop at regional level a common methodology for capacity calculation pursuant to Article 20(2), as well as a common methodology for redispatching and countertrading cost sharing pursuant to Article 74(1) (hereafter referred to as 'the common methodologies'), and, on the other hand, national regulatory authorities ('NRAs') of the concerned regions subsequently to approve those methodologies pursuant to Article 9(7)(a) and (h).
- (2) In a letter dated 31 August 2016, the European Commission requested the Agency to formulate a recommendation to assist TSOs in developing, and NRAs in approving, these common methodologies consistently and in a way that brings maximum benefit to the internal market. In the letter, the European Commission underlined that these common methodologies form a critical part of the implementation of the CACM Regulation and of the successful integration of the EU electricity market more widely.
- (3) In response to the European Commission's request, this Recommendation intends to assist TSOs and NRAs in sharing good practices in, respectively, developing and approving the common methodologies, within the framework of the implementation of the CACM Regulation.

**HAS ADOPTED THIS RECOMMENDATION:**

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<sup>1</sup> OJ L 211, 14.8.2009, p. 1.

<sup>2</sup> OJ L 197, 25.7.2015, p. 24.

## 1. Introduction

The development of rules for the access and use of interconnectors<sup>3</sup> is an integral step, within the European regulatory framework, for the completion of the internal electricity market. The primary objective of the above-mentioned rules is the efficient management of network congestion, i.e. situations when the capacity of a network is insufficient to accommodate all requests for transport over that network. Efficient management of network congestion consists of several processes, which range from the definition of the bidding-zones to the methodologies for calculation and allocation of cross-zonal capacities in different timeframes, and also include the methodology to activate remedial actions and to share the resulting costs.

Over the last years, significant progress has been achieved in the area of capacity allocation, in particular with the development and introduction of market coupling, which ensures that the available capacity, as calculated by TSOs, is allocated in an efficient manner. Yet, despite the progress achieved in the Central-West Europe (CWE) region, with the introduction of the flow-based capacity calculation method, capacity calculation, as well as the activation of remedial actions and the sharing of their costs, have in general not yet reached the level of efficiency, transparency and non-discrimination required by the European legal and regulatory framework.

The implementation of the CACM Regulation provides a new opportunity to improve current congestion management methodologies in Europe. This Recommendation focuses both on the methodologies to calculate cross-zonal capacities and on the methodologies to share redispatching and countertrading costs for several reasons: a) as explained above and, more in detail, in Section 3, there are some serious concerns with the existing methodologies; b) the development and effective implementation of efficient, transparent and non-discriminatory common methodologies is an essential feature of a well-functioning internal electricity market; and c) these methodologies are strongly interdependent (in the sense that the way TSOs calculate cross-zonal capacities strongly depends on the methodologies to activate remedial actions and share their costs. The purpose of this Recommendation, therefore, is to assist TSOs and NRAs in fulfilling the requirements of 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 1228/2003<sup>4</sup> and the CACM Regulation in, respectively, the development and approval of these methodologies.

To that effect, this Recommendation defines some high-level principles which TSOs and NRAs are expected to follow when developing, approving, implementing and monitoring these methodologies.

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<sup>3</sup> While the term interconnector is defined in Article 2(1) of Regulation (EC) No 714/2009 as a transmission line which crosses or spans a border between Member States and which connects the national transmission systems of the Member States, for the purpose of this recommendation this definition is extended to a transmission line which crosses or spans a border between two bidding zones.

<sup>4</sup> OJ L 211, 14.8.2009, p. 15.

## 2. The European legal framework for the congestion management procedures

Regulation (EC) No 714/2009 establishes general rules for congestion management. These rules are based on general EU competition principles, which foster the formation of a free market and price signals, and consequently provide appropriate incentives for investment. However, the transport of electricity is heavily affected by specific physical laws, which cause frequent congestion in the electricity network. A fully functioning electricity market thus fundamentally depends on efficient congestion management procedures, in addition to general competition factors like market structure and concentration, among others.

As a supplement to Regulation (EC) No 714/2009, the CACM Regulation provides detailed guidelines on cross-zonal capacity allocation and congestion management in the day-ahead and intraday markets, including the requirements for establishing common methodologies. Together, the Regulations provide the framework for the effective implementation of the common methodologies. It is therefore essential that the common methodologies, developed pursuant to the CACM Regulation, be also aligned with the rules and principles set out in Regulation (EC) No 714/2009.

### 2.1 General rules pursuant to Regulation (EC) No 714/2009

Article 16(1) of Regulation (EC) No 714/2009 stipulates that *'[n]etwork congestion problems shall be addressed with non-discriminatory market-based solutions which give efficient economic signals to the market participants and transmission system operators involved'*. This principle is repeated in point 1.5 of Annex I to the same Regulation, which states that *'the methods adopted for congestion management shall give efficient economic signals to market participants and TSOs, promote competition and be suitable for regional and Community-wide application'*.

Congestion management is most efficient when the scarce capacity of the network is provided to those requests for transport which are willing to pay the most. Such an approach establishes a congestion price equal to the marginal willingness to pay. Given Article 16(1) and point 1.5 of Annex I to Regulation (EC) No 714/2009, congestion management of this kind:

- a) is non-discriminatory, since the willingness to pay is the only criterion that separates requests for transport which are accepted from those which are denied;
- b) is market-based, as the competition between market participants determines which requests for transport are accepted;
- c) provides efficient economic signals to market participants, as it grants transport of electricity between the area(s) with cheapest generation and the one(s) with highest consumption price, therefore delivering the highest benefit; and
- d) provides efficient economic signals to TSOs by providing a transparent and competitive price signal, which reflects the marginal value of capacity and therefore contributes to efficient investment decisions for new transmission infrastructures.

The congestion management rules laid down in Regulation (EC) No 714/2009 therefore stipulate that congestion management problems should in principle be solved with the efficient allocation of scarce capacity (i.e. capacity allocation).

Furthermore, Article 16(3) of Regulation (EC) No 714/2009 provides for an obligation to maximise interconnection capacity, requiring that *'the maximum capacity of the interconnections and/or the transmission networks affecting cross-border flows shall be made available to market participants, complying with safety standards of secure network operation'*. This principle is complemented by point 1.7 of Annex I to the same Regulation, which provides that *'TSOs shall not limit interconnection capacity in order to solve congestion inside their own control area, save for the abovementioned reasons<sup>5</sup>] and reasons of operational security'*.

Both requirements are complementary to Article 16(1), as they assume that congestion problems are addressed with capacity allocation. This implies that geographical areas within which market participants are able to exchange energy without capacity allocation, i.e. bidding zones, should be configured in such a way that:

- a) congestion appears only on the borders between bidding zones and there is no congestion inside bidding zones;
- b) internal exchanges inside bidding zones do not create loop flows through other bidding zones (creating congestion in those bidding zones and reducing the capacity between zones).

The failure to meet these two conditions should, in principle, give rise to a reconfiguration of the bidding zones. However, Article 16(3) of Regulation (EC) No 714/2009 and point 1.7 of Annex I thereto do also recognise that, in certain cases, there might be justified reasons why cross-zonal capacities may be reduced because of a congestion inside bidding zones. In that context, it is proposed to understand Article 16(3) as requiring that cross-zonal capacities provided to the market reflect the maximum capacities of the interconnectors (i.e. cross-zonal network elements) and/or the maximum capacities of transmission networks affecting cross-border flows (i.e. internal network elements), and point 1.7 of Annex I as specifying under which conditions the maximum capacities of internal network elements may reduce cross-zonal capacities.

Regulation (EC) No 714/2009 does, however, not recognise the existence of loop flows and internal flows as a justification for not making available the maximum capacity of the internal and cross-zonal network elements to market participants.

## 2.2 Specific rules pursuant to the CACM Regulation

The above general congestion management rules of Regulation (EC) No 714/2009 are supplemented by the specific rules of the CACM Regulation. As far as the common methodologies are concerned, specific requirements arise in particular from Articles 3, 21, and 74 of the CACM Regulation.

First, those methodologies should implement the objectives stated in Article 3 of the CACM Regulation, including (a) promoting effective competition in the generation, trading and supply of electricity; (b) ensuring optimal use of the transmission infrastructure; (c) ensuring operational security; (d) optimising the calculation and allocation of cross-zonal capacity; (e) ensuring fair and non-discriminatory treatment of TSOs, NEMOs, the Agency, regulatory

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<sup>5</sup> i.e. cost effectiveness and minimisation of negative impacts on the internal market in electricity.

authorities and market participants; (g) contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union; (h) respecting the need for a fair and orderly market and fair and orderly price formation; and (i) providing non-discriminatory access to cross-zonal capacity.

Secondly, in accordance with Article 21(1)(b)(ii) of the CACM Regulation, the proposal for the common capacity calculation methodologies should include rules for avoiding undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009.

Thirdly, according to Article 74(6) of the CACM Regulation, the common methodologies for the sharing of redispatching and countertrading costs between TSOs shall (c) ensure a fair distribution of costs and benefits between the TSOs involved, (f) facilitate adherence to the general principles of congestion management under Article 16 of Regulation (EC) No 714/2009 and (i) comply with the principles of transparency and non-discrimination.

### 3. Concerns with the existing methodologies

While Article 16(3) provides a clear obligation to maximise interconnection capacities, it seems that the existing capacity calculation methodologies often fail to meet this requirement. These methodologies are indeed based on the assumption that the network must be able to accommodate all flows resulting from internal exchanges, whereas cross-zonal capacities can be used as an adjustment variable such that the total flows arising from internal and cross-zonal exchanges comply with operational security limits. **As a consequence of this approach, requests for internal exchanges get unlimited and prioritised access to the scarce network capacity, whereas the requests for cross-zonal exchanges can access only that part of the scarce network capacity which is not already used by internal exchanges.**

An optimal bidding zone configuration could limit the problems resulting from this differential treatment of exchanges. However, the existing bidding zone configuration, as well as the lack of sufficient coordination in capacity calculation in Continental Europe, have created a situation where (in order to accommodate flows resulting from internal exchanges) cross-zonal capacities are being significantly reduced, far below the maximum capacity of the interconnectors and/or of the transmission networks concerned. This situation can be observed on many EU borders without any clear and transparent justification as required by point 1.7 of Annex I to Regulation (EC) No 714/2009.

Table 1 below shows that, in Continental Europe, the cross-zonal capacity made available to the market is on average about 26% of the thermal capacities of the interconnectors for meshed and non-meshed networks. When the N-1 security criterion is taken into account<sup>6</sup>, this average rises to 31%.

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<sup>6</sup> See the Agency's annual market monitoring report for details on the applied N-1 methodology (p.75 to 82). Note that the applied methodology is simplified and that the calculation assumes perfectly proportional distribution of flows on the interconnectors, whereas, in reality, some interconnectors get congested before others do. Thus, the resulting maximum capacity of the interconnectors is likely to be lower.

Table 1: Average level of cross-zonal capacities compared to the thermal cross-zonal capacities (with and without the application of the N-1 criterion)

Border meshed	NTC/TC without N-1		NTC/TC with N-1	
	Indicated direction	Opposite direction	Indicated direction	Opposite direction
AT>CH	19.2%	29.2%	22.1%	33.6%
AT>CZ	17.9%	15.5%	21.7%	18.9%
AT>HU	14.5%	17.7%	17.2%	20.9%
AT>SI	28.8%	35.5%	33.1%	40.8%
BE>FR	33.3%	48.0%	39.4%	56.8%
BE>NL	23.4%	23.2%	27.0%	26.9%
CH>DE	32.1%	11.4%	37.1%	13.2%
CH>FR	16.2%	41.9%	18.7%	48.3%
CH>IT	41.9%	24.4%	47.7%	27.7%
CZ+DE+SK>PL	0.0%	19.8%	0.0%	23.2%
CZ>PL	20.2%	22.1%	23.0%	25.2%
CZ>SK	37.7%	26.3%	45.1%	31.5%
DE>CZ	14.9%	42.9%	17.2%	49.5%
DE>FR	33.5%	25.6%	39.7%	30.3%
DE>NL	20.8%	21.9%	23.5%	24.6%
FR>IT	52.3%	21.7%	58.5%	24.3%
HU>SK	26.3%	33.8%	31.7%	40.8%
IT>SI	33.3%	27.5%	40.6%	33.6%
PL>SK	21.4%	19.5%	26.2%	23.9%
<b>non-meshed</b>				
DE>DK_W	29.1%	7.9%	45.7%	12.5%
ES-FR	22.0%	25.5%	29.8%	34.6%
ES-PT	26.8%	34.7%	32.8%	42.5%

In some extreme cases (such as on the German-Polish (DE-PL) and Danish-German (DK\_W-DE) borders), the cross-zonal capacity has been reduced to almost zero<sup>7</sup>. On these borders, the internal exchanges (as well as non-coordinated cross-zonal exchanges in the case of the DE-PL border) and the corresponding physical flows have consumed the capacity of the network to a degree where little or no capacity remains available to accommodate cross-zonal flows on the given border.

For instance, in the case of the DE-PL border, the internal exchanges within the Germany-Luxemburg-Austria (DE-LU-AT) bidding zone are causing high flows on internal network elements in Germany (i.e. internal flows) and Poland (i.e. loop flows), which often utilise the full capacity of the network, making it impossible in these cases to accommodate any cross-zonal exchange on the DE-PL border. Similarly, in the case of the DK\_W-DE border, the internal exchanges within the DE-LU-AT bidding zone are causing high flows on internal

<sup>7</sup> On the DE-PL border, some capacity has been provided to the market in the intraday timeframe.

network elements in Germany (i.e. internal flows), which utilise the full capacity of this network, making it almost impossible to accommodate any cross-zonal exchange on the DK\_W-DE border.

The differential treatment of internal and cross-zonal exchanges in addressing congestion problems is further exacerbated by the existing methodologies to activate remedial actions and share the corresponding costs. These methodologies usually fail to provide correct incentives for TSOs to maximise cross-zonal capacities and to ensure non-discrimination between internal and cross-zonal exchanges. In particular:

1. The activation of remedial actions is often not coordinated, thus not optimised. Coordinated remedial actions are still an exception rather than the rule<sup>8</sup>;
2. The costs of remedial actions are most often paid by the TSOs facing congestion problems (i.e. requester-pays principle), rather than the ones causing them (i.e. polluter-pays principle)<sup>9,10</sup>;
3. TSOs may not be accustomed to comparing the costs of remedial actions with the benefits of increased cross-zonal capacities. Instead, they may be inclined to minimise the costs of remedial actions regardless of the resulting welfare losses caused by a reduction of cross-zonal capacities.

The relatively low level of cross-border capacity made available to the market across Europe represents a **significant barrier for the integration and the efficient functioning of the internal electricity market**, because:

1. **It limits the transport of electricity between Member States** and thereby touches upon the core principle of the internal electricity market. The effects of the widespread limitations of cross-border flows can go beyond the two directly involved countries. For instance, the bottleneck between Denmark and Germany limits the access of generators from the other Nordic countries to the German market and vice-versa.
2. **It discriminates between network users in different parts of the network.** Some users are accessing the scarce capacity of the network for free and without *a priori* limitations, while others have to compete to access an *ex ante* limited amount of this capacity.
3. **It distorts competition between market participants.** Market participants do not compete equally for the scarce capacity of the network. Instead, the space for competition inside the bidding zones is artificially increased by ignoring the scarcity of network capacity, consequently decreasing the space for competition between bidding zones since too little scarce capacity is made available<sup>11</sup>.
4. **It does not provide the correct incentives and efficient economic signals to TSOs.** Individual TSOs are guided by their national interest to minimise their congestion

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<sup>8</sup> One positive counter-example is the development within the TSC region, where some remedial actions are coordinated to some degree.

<sup>9</sup> Only in case of the TSO Security Cooperation area, 50% of costs are shared based on the requester-pays principle, while the other 50% is shared based on the polluter-pays principle. In addition, a special cost-sharing regime mimicking the polluter-pays principle is already in place between TSOs (50HzT and PSE) on the DE-PL border. However, in both cases, the Agency is unable to make a judgement on the adequacy of the application of the polluter pays principle.

<sup>11</sup> In a case involving the Swedish TSO, limitations of interconnector capacities has been reduced by the introduction of appropriate bidding zones (See Case COMP/39351 – Swedish Interconnectors, Decision of 14 April 2010).



management costs and the reduction of cross-zonal capacities is often the cheapest option for them to do so. Currently, TSOs are provided with no financial incentives and economic signals to explore options which would be more efficient from the European perspective (e.g. use of coordinated remedial actions, bidding zone reconfiguration, network investments).

5. In case of loop flows, it can result in the use of the neighbouring networks without bearing the costs for this use (i.e. **free-riding**).

The above concerns may be addressed with different solutions over different timeframes, from short-run solutions (which are the focus of this Recommendation) to the mid-term (reconfiguration of bidding zones) and long-term (network investments) ones.

This Recommendation, and the high-level principles set out herein, focuses on the short-run solutions, which should be considered as transitional measures until the enduring solutions are implemented. Nonetheless, the short-run solutions are important to ensure that the internal electricity market functions efficiently during this transition phase. In particular, they aim to prevent the on-going situation where the internal electricity market and cross-border trade suffer from severe capacity limitations due to delayed (or failed) implementation of the enduring solutions. To this extent, the implementation of the short-run solutions serves as a back-up option and ensures that the functioning of the internal electricity market is not significantly hampered.

Thus, the short-run solutions proposed in this Recommendation do not conflict with, but rather complement the implementation of enduring solutions; and, while they become less important once the enduring solutions are properly implemented, they will continue to function as a safety net in cases where the market situation calls for a new enduring solution, which requires significant implementation time.

#### **4. The recommended short-run solutions**

To address the above concerns with existing congestion management methodologies, the Agency proposes three high-level principles.

##### **4.1 High-Level Principle No. 1: On the treatment of internal congestion**

Legally, this first high-level principle is derived from and based on, particularly, Article 16(3) of Regulation (EC) No 714/2009, point 1.7 of Annex I to the same Regulation, as well as Articles 3 and 21(1) (b) ii) of the CACM Regulation.

**As a general principle, limitations on internal network elements<sup>12</sup> should not be considered in the cross-zonal capacity calculation methods.** If congestion appears on internal network elements, it should in principle be resolved with remedial actions in the short term, with the reconfiguration of bidding zones in the mid-term and with efficient network investments in the long term.

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<sup>12</sup> The term ‘cross-zonal network elements’ concerns in general only those transmission lines which cross the bidding zone border. However, for the purpose of understanding the proposed deviations in this Recommendation, the term ‘cross-zonal network elements’ is enhanced to also include the network elements between the interconnector and the first transformer station to which at least two internal transmission lines are connected.

Any deviation from the general principle, by limiting cross-zonal capacity in order to solve congestion inside bidding zones, should only be temporarily applied and in those situations when it is:

- (a) needed to ensure operational security; and
- (b) economically more efficient than other available remedies (taking into account the EU-wide welfare effects of the reduction of cross-zonal capacity) and minimises the negative impacts on the internal market in electricity.

To verify that the above conditions for deviations are met, it is proposed that TSOs take into account all of the following aspects:

1. Any deviation from the general principle should not induce undue discrimination between internal and cross-zonal exchanges, as required by Article 21(1)(b)(ii) of the CACM Regulation<sup>13</sup>. For this purpose, they should define, for those internal network elements which are considered in cross-zonal capacity calculation, a maximum portion of their capacity that may be reduced to accommodate loop flows and internal flows.
2. Any deviation from the general principle should be well justified with respect to the conditions referred to above. This justification should be regularly re-evaluated to account for changes in the actual situation.
3. During the period of deviation, the TSOs should develop mid-term and long-term solutions, including the projects and related methodologies to implement them. The purpose of these solutions should be to discontinue the deviations.
4. The deviations should be of a temporary nature. However, in cases where deviations from the general principle are more efficient than any other available mid-term and long-term solution, TSOs may propose to NRAs to continue applying the deviations.

#### 4.2 High-Level Principle No. 2: On the treatment of loop flows on the interconnectors

Legally, this second high-level principle is derived from and based on, particularly, Article 16(3) of Regulation (EC) No 714/2009, point 1.7 of Annex I to the same Regulation, as well as Articles 3 and 21(1) (b) ii) of the CACM Regulation.

**As a general principle, the capacity of the cross-zonal network elements considered in the common capacity calculation methodologies should not be reduced in order to accommodate loop flows<sup>14</sup>.** Indeed, loop flows are significantly reducing the amount of cross-zonal capacities and have a negative impact on the functioning of the market and cross-border trade and their volume should be therefore minimised.

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<sup>13</sup> For the regional calculation of cross-zonal capacity see also Article 29(7)(d) and (8)(c) of the CACM Regulation.

<sup>14</sup> This implies that the full thermal capacity of the cross-zonal network elements, reduced by the reliability margin related to the uncertainty of cross-zonal exchanges (but not the uncertainty of internal exchanges) should be considered in capacity calculation. Nevertheless, in few specific cases the cross-zonal exchanges may be limited by other operational security limits than thermal limits (e.g. voltage stability, dynamic stability etc.). In these cases, the capacity of the cross-zonal network elements may be reduced below the level of the full thermal capacity reduced by reliability margin. In the case of Third Party Interconnectors the full thermal capacity is usually established through an agreed connection capacity with the concerned System Operators and National Regulatory Authorities.

Any deviation from this general principle, by limiting cross-zonal capacity in order to accommodate loop flows, should only be temporarily applied and in those situations when it is:

- (a) needed to ensure operational security; and
- (b) economically more efficient than other available remedies (taking into account the EU-wide welfare effects of the reduction of cross-zonal capacity) and it minimises the negative impacts on the internal market in electricity.

In practice, in a zonal market design, and even with an appropriate configuration of bidding zones, it is likely that a minimum level of loop flows could be justified in terms of economic efficiency and, if so, may constitute an acceptable deviation from the general principle.

To verify that the above conditions for deviations are met, it is proposed that TSOs take into account all of the following aspects:

1. TSOs should ensure that any deviation from the general principle does not induce undue discrimination between internal and cross-zonal exchanges, as required by Article 21(1)(b)(ii) of the CACM Regulation<sup>15</sup>.
2. Any deviation from the general principle should be well justified with respect to the conditions referred to above. This justification should be regularly re-evaluated to account for the changes in the actual situation.
3. During the period of deviation, the TSOs should develop mid-term and long-term solutions, including the projects and the related methodologies to implement them. The purpose of these solutions should be to discontinue the deviations.
4. Any deviation should be of a temporary nature. However, in cases where deviations from the general principle are more efficient than any other available mid-term and long-term solution, TSOs may propose to NRAs to continue applying the deviations.

#### **4.3 High-Level Principle No. 3: On the sharing of redispatching and countertrading costs**

Legally, this third high-level principle is derived from and based on, particularly, Articles 3 and 74 (6) (c), (f) and (i) of the CACM Regulation.

**As a general principle, the costs of remedial actions should be shared based on the ‘polluter-pays principle’, where the unscheduled flows over the overloaded network elements should be identified as ‘polluters’ and they should contribute to the costs in proportion to their contribution to the overload<sup>16</sup>.** As the primary purpose of a capacity allocation procedure is to ensure that cross-zonal exchanges do not create overloading in the network<sup>17</sup>, cross-zonal exchanges should not be considered as the ones causing congestion and thus should not be considered as ‘polluters’ (doing otherwise would lead to penalising

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<sup>15</sup> For the regional calculation of cross-zonal capacity see also Article 29(7)(d) and (8)(c) of the CACM Regulation.

<sup>16</sup> Unscheduled flows consist of loop flows and unscheduled allocated flows. However, with the implementation of flow-based capacity calculation within appropriate capacity calculation regions, the unscheduled allocated flows should gradually diminish and the loop flows would remain the main polluters. In case of the internal network elements, the internal flows should also contribute to the congestion, but only if and to the degree to which the volume of overload is higher than the volume of unscheduled flows.

<sup>17</sup> Note that capacity calculation should also include a reliability margin, which should cover the uncertainties of physical flows related to cross-zonal exchanges (e.g. the choice of generation shift key).

cross-border exchanges twice; once via the *ex-ante* limited volume of cross-zonal capacity made available to the market and a second time via their contribution to the cost recovery of the remedial actions).

It is important to note that the first two high-level principles should always be applied in combination with this third one because an agreement on a fair principle for sharing the costs of remedial actions is a critical prerequisite effectively to apply the first two high-level principles. Accordingly, and even though the common methodologies for redispatching and countertrading cost sharing are due to be developed six months after the common capacity calculation methodologies<sup>18</sup>, the Agency recommends that all TSOs and all NRAs have this high-level cost-sharing principle fully in mind - ideally agree on it beforehand - when developing/approving the common capacity calculation methodologies.

## **5. The recommended implementation of the high-level principles**

### **5.1 Application of the high-level principles**

The Agency recommends that TSOs and NRAs establish:

1. the common capacity calculation methodologies for a capacity calculation region pursuant to Articles 20(2) and 21 of the CACM Regulation in accordance with the high-level principles Nos. 1 and 2, including the recommendations on how to apply the deviations;
2. the common redispatching and countertrading cost sharing methodologies for a capacity calculation region pursuant to Article 74 of the CACM Regulation in accordance with the high-level principle No. 3.

Further, as explained above, it is proposed to apply the high-level principles No. 1 and 2 always together with the high-level principle No. 3.

### **5.2 Regular review of the high-level principles No. 1 and 2**

In order to ensure that the common capacity calculation methodologies apply the high-level principles (including the deviations) based on up-to-date information on network topology and market conditions, the methodologies should be regularly reviewed. To this effect, the Agency proposes that TSOs regularly monitor and report on the conditions and justifications for applying the deviations and, where relevant, provide an amended methodology to NRAs for approval.

### **5.3 Monitoring**

To the extent that the high-level principles are actually followed and implemented, the Agency and NRAs should be able to monitor their effective application, including possible deviations, within the scope of their monitoring obligations provided for in the relevant network codes and guidelines and in accordance with Article 9 of Regulation (EC) No

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<sup>18</sup> According to Article 20(3) and 74(1), TSOs shall submit at regional level a proposal for a common coordinated capacity calculation methodology and for a common methodology for redispatching and countertrading cost, respectively, 10 months and 16 months after the decision on the capacity calculation regions is taken.

714/2009. In this context, the Agency and NRAs expect to receive the data and information on capacity calculation and redispatching and countertrading cost sharing, which should be provided to the Agency by ENTSO-E in accordance with Article 8(9) of Regulation (EC) No 714/2009.

The Agency proposes that any such monitoring (by the Agency and NRAs) focuses in particular on all of the following:

1. Calculating the benchmark value of cross-zonal capacities that would be applicable without any deviation from the high-level principles Nos. 1 and 2.
2. Monitoring any justification of deviations, focusing in particular on the conditions set out for the deviations from the high-level principles Nos. 1 and 2.
3. Monitoring both the expected and actual impact of any deviation on the functioning of the internal electricity market.
4. Monitoring potential undue discrimination between internal and cross-zonal exchanges, as a result of any unjustified deviation from the high-level principles Nos. 1 and 2, focusing in particular on the amount of capacity of the critical network elements which has been made available for cross-zonal exchanges and the amount reserved for internal exchanges.
5. Monitoring the development of the mid-term and long-term solutions, including the projects and related methodologies to implement them.

Based on the findings from these monitoring activities, the Agency and NRAs would be able regularly to review the principles and may make further recommendations if necessary.

#### **5.4 Transparency**

In the Agency's view, any monitoring of the application of the high-level principles should also include scrutiny by stakeholders and the general interested public (e.g. academics, consultants) and, therefore, all data necessary for effective stakeholder scrutiny should be made publicly available. It is proposed that the Agency and NRAs, in cooperation with ENTSO-E, stakeholders and other interested public, develop the list of required data that should become publicly available and then recommend the improvements to the general transparency requirements set out in Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009<sup>19</sup> (Transparency Regulation).

#### **6. Conclusions**

Coordinated, efficient, transparent and non-discriminatory congestion management procedures are a fundamental prerequisite for an efficient functioning of the internal electricity market.

While the implementation of market coupling has brought a high level of efficiency, transparency and non-discrimination in the area of capacity allocation, similar achievements are still awaited with regard to the other dimensions related to congestion management procedures. In particular, the Agency considers that the existing practice by which the

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<sup>19</sup> OJ L 163, 15.6.2013, p.1.

capacities of the interconnections and, consequently, cross-zonal electricity exchanges are considered as an adjustment variable to ensure the overall operational security of the system is not compatible with the objective of creating a fully integrated internal electricity market. The Agency recommends discontinuing - or at least seriously challenging - this practice.

To that effect, this Recommendation proposes a set of high-level principles aiming at ensuring that the common methodologies to be developed pursuant to Article 20(2) and 74(1) of the CACM Regulation will reflect transparent, non-discriminatory, market-based solutions, which give efficient economic signals to the market participants and TSOs involved. In the Agency's view, the implementation of these high-level principles would in particular ensure that discrimination between internal and cross-zonal exchanges is prevented -- or at least minimised and duly justified - and that *'the maximum capacity of the interconnections and/or the transmission networks affecting cross-border flows shall be made available to market participants, complying with safety standards of secure network operation'*.

While this Recommendation is not binding, TSOs and NRAs are invited to consider all necessary measures to ensure that the common methodologies to be developed pursuant to Articles 20(2) and 74(1) respectively of the CACM Regulation fulfil the high-level principles proposed in Section 4 of this Recommendation.

This Recommendation is addressed to all TSOs and all NRAs.

Done at Ljubljana on 11 November 2016.

For the Agency:

  
Alberto Pototschnig  
Director



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