



MEMORANDUM OF UNDERSTANDING

on the development of a common CWE and CEE CCR's day-ahead flow-based capacity calculation methodology and the merger of the CEE and CWE CCR ("MoU")

between

50Hertz Transmission GmbH ("50Hertz") – with its registered office at Eichenstraße 3a, 12435 Berlin, Germany, commercial register: Amtsgericht Charlottenburg, HRB 84446 B;

Amprion GmbH ("Amprion") - with its registered office at Rheinlanddamm 24, 44139 Dortmund, Germany, commercial register: Amtsgericht Dortmund, Handelsregister-Nr. HR B 15940

Austrian Power Grid AG ("APG") – with its registered office at IZD Tower, Wagramer Straße 19, 1220 Vienna, Austria, commercial register FN 177696 v HG Wien

Creos Luxembourg S.A. ("Creos") - with its registered office at 59-61 rue de Bouillon, 1248 Luxembourg, registered in the commercial register of Luxembourg under B 4513.

ČEPS, a.s. ("ČEPS") - with its registered office at 101 52 Praha 10, Elektrarenska 774/2, Czech Republic, and incorporated in the Commercial Register kept by the Municipal Court in Prague, Section B, Entry 5597, with the Company Identification No. 25702556

Eles, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja ("ELES") – with its registered office at Hajdrihova 2, 1000 Ljubljana, Slovenia, commercial register 5427223

Elia System Operator SA-NV ("Elia"), with registered office at Boulevard de l'Empereur 20, 1000 Brussels, registered with enterprise number 0476 388 378, in the Brussels Business Register

Croatian Transmission System Operator Ltd. (HOPS d.o.o.) ("HOPS") - with its registered office at Kupska 4, HR-10000 Zagreb, Croatia, registered in the court register of the Commercial Court in Zagreb under the company registration number 080517105

MAVIR Hungarian Independent Transmission Operator Company Ltd. ("MAVIR") – with its registered office at 1031 Budapest, Anikó u. 4, Hungary, registered in the Commercial Register kept by the Hungarian Company Registry Court of Budapest-Capital Regional Court with the Company Identification No. 01-10-044470

PSE S.A. ("PSE") – with its registered office at Warszawska 165, 05-520 Konstancin-Jeziorna, Poland, entered in to national court register under No. KRS 0000197596 by District Court for the Capital City of Warsaw, 14th Commercial Department of the National Court Register and the share capital of 9.605.473.000,00 PLN paid in full amount.

RTE Réseau de Transport d'Electricité, listed in the Nanterre Trade and Business Register under the number 444 619 258, having its registered offices at 1, terrasse Bellini, TSA 41000, 92919 LA DEFENSE Cedex ("RTE")

Slovenská elektrizačná prenosová sústava, a.s. ("SEPS") – with its registered office at Mlynské nivy 59/A, 824 84 Bratislava, Slovakia, incorporated in the Commercial Register kept by the District Court in Bratislava, Section Sa, Entry 2906/B, with Company Identification No. 35829141

TenneT TSO B.V. ("TTB") - with its registered office at Utrechtseweg 310, 6800 AS Arnhem, commercial register no. 09155985

TenneT TSO GmbH ("TTG") – with its registered office at Bernecker Strasse 70, 95448, Bayreuth, Germany, commercial register in Bayreuth, HRB 4923

National Power Grid Company Transelectrica S.A., ("Transelectrica"), a Romanian company with a dualist management system, having its registered office at 33 General Gheorghe Magheru Blvd., 1st District, Bucharest and mailing address at Olteni no. 2-4, 3rd District, Bucharest, postal code 030786, registered with Bucharest Trade Registry with no. J40/8060/2000 and sole code of identification 13328043

TransnetBW GmbH ("TransnetBW") - with its registered office at Pariser Platz, Osloer Straße 15-17, 70173 Stuttgart, Germany, commercial register: 740510;

All above TSO(s) being referred to as "**CWE and CEE Party**" individually and/or "**CWE and CEE Parties**" collectively;

MEMORANDUM OF UNDERSTANDING

INTRODUCTION

In accordance with Article 9 of the “All TSOs’ proposal” on the definition of capacity calculation regions (“CCRs proposal”) and Article 15 (1) of Regulation (EU) 2015/1222 (“CACM”)¹, TSOs of the proposed CEE and CWE CCRs (being CWE and CEE Parties) committed themselves to foster their cooperation in order to define an approach on how to merge the two proposed CEE and CWE Capacity Calculation Regions (CCRs) with all related legal and regulatory obligations as soon as possible. Respective progress shall be sent to NRAs within four months after the submission of the CCRs proposal in order to facilitate the all NRAs’ CCRs definition approval based on article 9 (6.b) CACM.

According to Article 15 (3) CACM, neighbouring CCRs both applying a Flow-Based (“FB”) approach shall be merged into one CCR if cumulative conditions as defined under Article 15 (3) CACM are fulfilled.

According to Article 20(2) of CACM, the proposal for the capacity calculation methodology within regions based on the CWE and CEE shall be complemented within a common framework for coordination and compatibility of flow-based methodologies across regions.

These engagements have been accompanied by common efforts to assess and develop possible approaches for the development and implementation of a common Day-Ahead Flow-Based Capacity Calculation (DA FB CC) methodology applicable in the combined CEE and CWE CCR and connected supportive processes in both the CEE and CWE CCR.

This MoU reflects the progress achieved through this co-operation and the common understanding of objectives to be fulfilled jointly by the CWE and CEE Parties as well as the General Project Plan and a High-Level roadmap.

NOW THEREFORE, the CWE and CEE Parties agree as follows:

ACTIVITIES TOWARDS THE DEVELOPMENT OF A COMMON DA FB CAPACITY CALCULATION METHODOLOGY FOR THE MERGED CWE AND CEE REGION

1. The CWE and CEE Parties confirm their commitment to the final objective of ultimately merging the CWE and CEE CCRs and express their intention to closely **cooperate on the development of the common DA FB CC methodology and its application under a single coordinated process for both CEE and CWE CCRs as a first step towards this merger.**
2. The first objective is to **deliver a common DA FB CC methodology and the CWE and CEE Parties intend to implement it under single process covering both regions.** This MoU focuses on capacity calculation activities (and their closely related TSO side procedures), but acknowledges the need to launch all necessary activities for a full coupling with NEMOs in the short term.
3. The common DA FB CC methodology to be defined **shall be applicable to CWE and CEE Parties and be based on the existing FB approaches**, meaning the one already operational in the CWE region and the approach under development in the CEE region, which both shall be amended where necessary to adapt, among others, the different grid structures of CWE and CEE.
4. The CWE and CEE Parties shall deliver a common DA FB CC methodology **by Q1 2017, in accordance with the CACM deadline** defined under Article 20 (2) and aim for implementation as a single capacity calculation process for both CEE and CWE CCRs according to the enclosed General Project Plan (Annex 1).

¹ Cf. „All TSOs’ proposal for Capacity Calculation Regions (CCRs) in accordance with Article 15(1) of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management” of 29 October 2015.

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5. **The CWE and CEE Parties' intention is an "all-borders-at-once" implementation of the common DA FB CC by means to cover all borders of the CWE CCR and CEE CCR in the timing indicated in the General Project Plan.** If however this proves to be unfeasible, as acknowledged by CWE and CEE Parties, the CEE and CWE Parties will reconsider the implementation approach and may investigate a step-by-step implementation that shall secure final objective of implementing DA FB CC as well as ultimately merging the CWE and CEE CCRs.
6. The cooperation should be performed by each of the CWE and CEE Parties with **mutual loyalty and reasonable efforts** in order to provide deliverables as soon as possible and **work together constructively** to avoid any unnecessary delays or disputes.
7. The CWE and CEE Parties confirm their interest to **ensure a level playing field** and to develop the common DA FB CC methodology while taking advantage of both CWE and CEE DA FB CC approaches, respecting differences of both regions and at the same time complying with the needs of the European energy market.
8. The common **development** of the common DA FB CC methodology shall follow an **approach** which consists of two phases and will include the **following main activities**:

Phase 1: Concept definition, validation and approval

1. Analysis of the CWE and CEE DA FB CC approaches
 - a. Detailed comparison of the CWE and CEE FB methods and processes
 - b. Technical assessment of the IT tool used in the CWE region in terms of its possible extension to the CEE region
 - c. Identification of common (compatible) and diverging (incompatible) areas of the CWE and CEE FB CC approaches
2. Development of a common DA FB CC methodology
 - a. Unification of terminology for the common methodology
 - b. Development of a common methodology covering at least the main two key processes:
 - i. Flow-Based domain computation and definition of critical branches and outages (CBCO) where the existing CWE concepts and formats shall be used as a starting point.
 - ii. Remedial actions coordination and optimization, where a joint approach based on CEE and CWE approaches and existing algorithmic developments in both regions shall be used in order to define the target process.
 - c. Definition of the implementation path in terms of overall business process and IT architecture
3. Validation and approval of the envisaged common DA FB CC concept (Proof of principles)
 - a. Simulation on a significant data set for a sufficiently long period to confirm the accuracy of the method
 - b. Operational gap analysis to confirm operational feasibility from all involved TSOs in terms of timings and resources/organization
 - c. Approval of the methodology by NRAs on the basis of an approval package
 - d. Publication of the approval package

Phase 2: Concept implementation

1. Implementation of the common DA FB CC methodology
 - a. Development of the required IT systems, reusing as much as possible existing modules
 - b. Implementation of the common DA FB CC process within each TSOs' operational departments and training based on common procedures
 - c. Testing and validation of the systems and processes including back up and fall back solutions during an internal parallel run

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2. Organisation of a test with market participants
 - a. Publication of the new common DA FB CC process results for a sufficiently long period in order to gather market feedback and ensure market participants readiness and acceptability
 - b. Validation of the publication and transparency requirements
 - c. Preparation of go live and validation of expected evolutions
3. Common DA FB CC methodology operational readiness for go live
 - a. Gain the regulatory approval to go live with the common DA FB CC methodology
 - b. Ensure readiness of all related processes on the capacity allocation layer and post-processing in order to be ready for flow-based market coupling in both CCRs
 - c. Decision by the CWE and CEE Parties to go live

ACTIVITIES TOWARDS THE ESTABLISHMENT OF THE MERGED REGION

9. The CWE and CEE Parties intend to set up a **project management structure** that will be responsible for the development of the common DA FB CC methodology and its implementation as well as the establishment of the merged region. The management structure should be agreed in detail (Terms of Reference) within two months after this MoU is signed by the last CWE and CEE Party, including but not limiting to:
 - a. Equal participation of all CWE and CEE Parties and unanimity voting principle unless otherwise agreed.
 - b. Creation of a Common Steering Board (CSB) providing supervision of the project and necessary support for the successful implementation of the project in accordance with the objectives of this MoU and being responsible for taking high-level decisions
 - i. Chairmanship will be shared between CWE and CEE Parties
 - c. Working structures providing expertise, fulfilling tasks stemming from the project implementation and informing the CSB about the latest state of play including decisions that need to be taken
10. The CWE and CEE Parties will invite **ENTSO-E** to join the CSB as guest and facilitator, when needed, on a regular basis.
11. The CWE and CEE Parties shall endeavour to merge the CWE and CEE CCRs in accordance with the enclosed High Level Roadmap for the merger of the CWE and CEE CCRs (Annex 2). The merger of the CWE and CEE CCRs shall not be accomplished before the NRAs approval of the Common DA FB CC methodology but it shall take place not later than the implementation of the common DA FB CC methodology in both regions. Within this window the actual time of the merger will be defined in a way, which mitigates any adverse impact on on-going regional projects.
12. Based on an approval of the CCRs definition proposal by all NRAs, the CWE and CEE Parties shall endeavour to enter into a contract conferring rights and imposing obligations on all CWE and CEE Parties.

TERM AND TERMINATION

The MoU shall come into effect on the date of the last signature of either the CWE or CEE Party and remain in effect until the first of the following events occur:

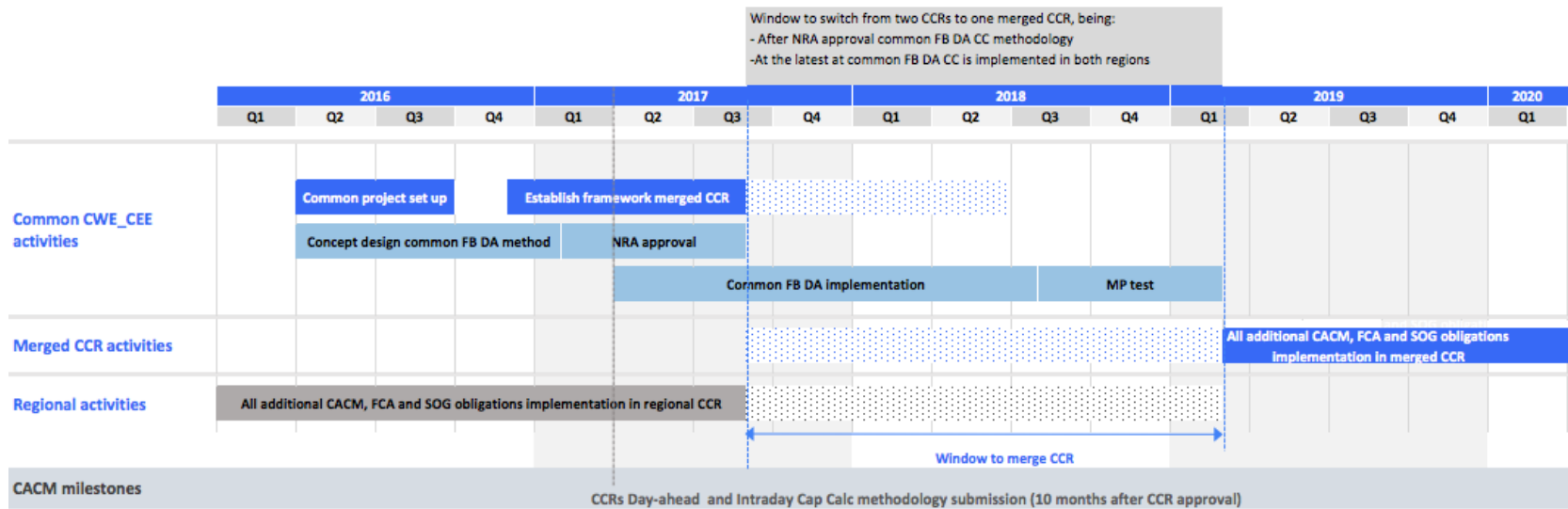
- a) twenty four (24) months following the effective date of this MoU; or
- b) agreement of all CWE and CEE Parties to terminate this MoU.

Either party may terminate its participation in this MoU upon fifteen (15) days advance written notice delivered to the other CWE and CEE Parties.

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		Window to switch from two CCRs to one merged CCR, being: - After NRA approval common FB DA CC methodology -At the latest at common FB DA CC is implemented in both regions												
		2016				2017				2018				2019
ID	Activity	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
0	PM													
1	Initiation													
2	Phase 0: Establish framework Merged Region													
2.1	Joint FB DA project Contractual Framework													
2.2	Merged CCR Contractual Framework and governance													
3	Phase 1: Conceptual definition and validation common DA FB CC methodology													
3.2	Development common DA FB CC methodology													
3.3	Validation of the DA FB CC methodology by simulations (Proof of Concept)													
4	Phase 2 Concept Implementation common DA FB methodology													
4.1	Implementation preparation													
4.2	Implementation common initial Flow based Paramater calculation (stream 1)													
4.3	Implementation Common Coordination of RA opitimization (stream 2)													
4.4	Deployment at CWE and CEE Parties													
4.5	Testing and validation of systems (incl int // run)													
4.7	Organisation test with Market Participants													
5	Stakeholder management													
5.1	NRA approval concept													
5.2	NRA approval final method													

MEMORANDUM OF UNDERSTANDING



MEMORANDUM OF UNDERSTANDING

IN WITNESS WHEREOF, the CWE and CEE Parties hereto have executed this Memorandum of Understanding as of the date specified below with their respective signatures, in 16 [sixteen] original counterparts, each Party acknowledging receipt of its original copy

For 50Hertz


On 29. 02. 16

By 

Title Dirk Biermann
Managing Director

29. 02. 16

On
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By 

Title Gert Schwarzbach
Head of Interconnectors



MEMORANDUM OF UNDERSTANDING

For Amprion

On 18.02.2016

On 18.02.2016

By Dr. Klaus Kleinekorte

By Dr. Carsten Lehmköster

Title CTO

Title Senior Manager
Regulatory Management


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MEMORANDUM OF UNDERSTANDING

For APG

On 01.03.2016

By *Mr. Dolleschal*

On *ppa Kaschnitz*

By *Mr. Kaschnitz*

Title *authorized representative*

Title *authorized representative*



MEMORANDUM OF UNDERSTANDING

For CREOS

On ... February ... 16th ... 2016

On ... February ... 16th ... 2016

By ... Marc ... Meyer ...

By ... Claude ... Seyvest ...

Title ... Head ... of ... asset ... management
& grid strategy

Title ... CEO ... of ... Hops Luxembourg S.A

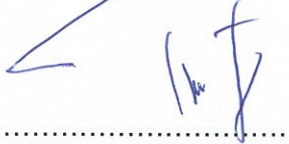


MEMORANDUM OF UNDERSTANDING

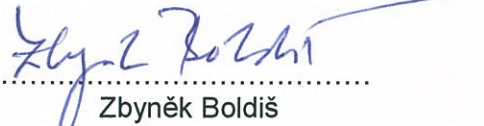
For ČEPS

On 25-2-2016

On 25-2-2016



.....
Vladimír Tošovský
Chairman of the Board



.....
Zbyněk Boldiš
Member of the Board



MEMORANDUM OF UNDERSTANDING

For ELES

On 16.2.2016



On

By ALEKSANDER MERVAR, M.Sc.

By

Title CEO

Title


ELES, d.o.o.
Hajdrihova 2, Ljubljana 





MEMORANDUM OF UNDERSTANDING

For ELIA

On 16.. February.. 2016.....

On 16.. February.. 2016.....

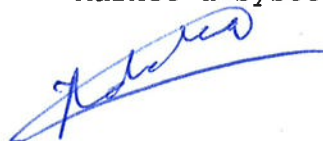
By Pascale.. Fonck.....

By Frank.. Vandenberghe...

Title Head..of..Public..&..Regulatory
Affairs and External Relations

Title Chief..Officer..Customers,
Market & System

Fonck



MEMORANDUM OF UNDERSTANDING

For HOPS

On 29 February 2016

By Miroslav Mesić, Ph.D



President of the Management Board



MEMORANDUM OF UNDERSTANDING

For MAVIR

On 29th Febr. 2016.....

On 29th Febr. 2016.....



Kamilla Csomai
CEO



Sándor Herczeg
Deputy CEO
for Market Operation and Finance

1.2 MAVIR

Magyar Villamosenergia-ipari Átviteli Rendszerirányítói
Zártkörűen Működő Részvénytársaság



MEMORANDUM OF UNDERSTANDING

on the development of a common CWE and CEE CCR's day-ahead flow-based capacity calculation methodology and the merger of the CEE and CWE CCR

For PSE

On 2016 -02- 2 9

On 2016 -02- 2 9

By Eryk Kłossowski

Title: Chairman of Management Board

By Tomasz Sikorski

Title Vice Chairman of Management Board




MEMORANDUM OF UNDERSTANDING

For RTE

On 11.3.2016

On

By 

By

Jean VERSEILLE
Directeur des Affaires Européennes

Title

Title



MEMORANDUM OF UNDERSTANDING

For SEPS

On 19 February 2016

On 19 February 2016

By Miroslav Stejskal

By Michal Pokorný

Title Chairman of the BoD

Title Vice-Chairman of the BoD

Slovenská elektrizačná
prenosová spoločnosť, a.s.
Mlynské nivy 58/A
824 84 Bratislava 26
-1-



MEMORANDUM OF UNDERSTANDING :

For TENNET TSO BV

On ...19-2-2016.....

On ...19-2-2016.....

By ..r. B. G. M. Voorhorst

By ..dr. A. Jagee.....

Title ..COO.....

Title ..CFO.....



MEMORANDUM OF UNDERSTANDING

For TENNET TSO GmbH

On24.02.2016.....


On24.02.2016.....

ByDr. Urban Keussen.....


ByThorsten Dietz.....

Title ...Chef Executive Officer ...

Senior Manager –
Title ...Customers & Market G.....



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MEMORANDUM OF UNDERSTANDING

For TRANSELECTRICA

On 25/02/2016

By **Ion Toni Teau**



Title: **CEO**

On 25/02/2016

By **Octavian Lohan**

Title: Member of Directorate

On 25/02/2016

By **Ion Smeelanu**

Title: Member of Directorate

well



MEMORANDUM OF UNDERSTANDING

For TRANSNETBW

On 26.02.2016

On 26.02.2016

By Rainer Joswig

By Andreas Semmig

Title Managing Director

Title Head of Trading

