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The Interim Coupling Project Implementation overview and first results

Hungarian Energy and Public Utility Regulatory Authority

Clean energy, sustainable environment



The meeting is supported by:



Content



Market coupling; ICP; SDAC

Overview of project implementation

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Foreword and Benefits of Market Coupling



The Hungarian Energy and Public Utility Regulatory Authority (MEKH) would like to **introduce** and share experience and results of the so called Interim Coupling Project (ICP) as a good example of regional cooperation among national regulatory authorities (NRAs), transmission system operators (**TSOs**) and nominated electricity market operators (NEMOs) in order foster develop cross-border further and electricity market integration bringing the benefits that coupled market can offer to market participants and to consumers.

Day-ahead market coupling enables cross-border trading across Europe via implicit capacity auctions for delivery of power for the following day.

Market coupling assures a deeper integration of regional power markets.

Given the advantages for endconsumers, traders, etc. this integration serves both national and cross-border interests. The market coupling process aims at maximizing the energy flow from the low price area to the high price area by taking into account the available cross-border capacity. Consequently, price levels among individual market areas converge.

ICP at a glance

The Interim Coupling project aimed to connect the 4M MC (Czech-Slovak-Hungarian-Romanian market coupling) with the Multi-Regional Coupling (MRC) by introducing Net Transmission Capacity (NTC) based implicit capacity allocation on six new borders: PL-DE, PL-CZ, PL-SK, CZ-DE, CZ-AT, HU-AT. The project represents an important step towards the extension of the European Single Day-Ahead Coupling (SDAC) foreseen by Regulation 2015/1222 (guideline on Capacity Allocation and Congestion Management/CACM).



"Interim" attributive in ICP refers solely to the way the cross-border capacities are calculated, for an interim period, where the NTC based calculation will be replaced with the flow-based capacity calculation as the target model later in time, expected in February 2022.

The enduring phase of SDAC



The successful go-live of ICP also marked the start of the so called **"enduring phase" of SDAC**, during which there will be one European Single Day-Ahead Coupling only, where MRC and 4M MC are coupled.



SDAC allocates scarce cross-border transmission capacity in the most efficient way by coupling wholesale electricity markets from different through a algorithm, regions common simultaneously taking into account cross-border transmission constraints, thereby maximising social welfare. The aim of SDAC is to create a single pan European cross zonal day-ahead electricity market. An integrated day-ahead market increases the overall efficiency of trading by promoting effective competition, increasing liquidity and enabling a more efficient utilisation of generation resources across Europe.

Overview of project implementation – Origins



Although in the EU legally binding network codes and guidelines provide the **obligation for the EU wide implementation of single day-ahead and intraday coupling** the **geographical extension** to cover all EU bidding zones and bidding zone borders is **executed based on a stepwise approach** determined to a large extent by early implementation projects and available resources of involved project parties (TSOs and NEMOs).

By the beginning of **2015 two coupled market areas emerged in Europe** the larger being **the MRC** (multi-regional coupling) covering north-west-central Europe **and the 4 MMC** covering Czech Republic, Slovakia, Hungary and Romania. **Both** market coupling cooperations **used the same coupling algorithm (euphemia) and coupling model (PCR price coupling of regions)** but **they operated isolate from each other**, since, on the borders between MRC and 4MMC explicit cross-border capacity allocation remained and a **different gate closure time was applied in 4MMC** (11:00 CET compared to 12:00 in MRC).

CACM regulation Art. 8. (1) requires that In Member States electrically connected to another Member State all TSOs shall participate in the single day-ahead and intraday coupling.

SDAC roadmap – extensions



Origins



The CACM target model provides an **obligation to implement a flow-based capacity calculation** model for the market coupling **in Central-Europe** (FBMC),

ACER Decision No 02/2019 (of 21 February 2019) provided an implementation timeframe for the FBMC **until 1 December 2020**.

The flow based capacity calculation methodology aims to improve operational security in highly meshed regions and able to capture unscheduled transit flows that are present in Central-Europe (CORE CCR) region.

The **presence of high volumes of loop flows** also gave operational security concerns underlying the need to implement market coupling at the same time together with flow based implementation.

With the split of the German-Austrian bidding zone as decided by an ACER Decision (No. 06/2016) on the determination of capacity calculation regions, also due to the instalment of phase shifting transformers close to the DE-PL and DE-CZ borders operational security reasons decreased to some extent in the region that were cited many times as reasons why market coupling and the flow based implementation shall be implemented at the same time there.

In parallel, **4MMC countries were actively looking for possibilities to couple with MRC since 2015**, but with low level of success for a long time.

Origins



It was at the **beginning of 2018** where an active discussion has been reinitiated at this time **by the NRAs** in order to see if market coupling could be introduced in an earlier phase than the FBMC to take the benefits of implicit capacity allocation in the time between flow based model will be ready to go.

After several rounds of intense discussions among NRAs sometimes characterized by hard compromises e.g. on the scope, the timeframe and the necessity of the project, the preparatory talks were further extended by involvement of TSOs and NEMOs as well. The parties successfully reached conclusions on all sensitive topics and in December 2018 the regulatory authorities of Germany, Austria, Poland, Czech Republic, Slovakia, Hungary and Romania jointly decided to request project parties to initiate and implement day-ahead market coupling using NTC based capacity calculation on the DE-PL, DE-CZ, AT-CZ, AT-HU, PL-CZ and PL-SK borders. At this time the project used the DE-AT-PL-4MMC project as reference name.

The project used the assumption that implementation of NTC-based market coupling could be done 10-12 months earlier that the introduction of the flow based market coupling thus it could generate social welfare during that period.







Progressing towards Market Coupling



State of play in pan-European Single Day-Ahead Coupling as of July 2017 (Source: European Commission) 8

Kick-off



The project has been set up early 2019 and began to execute all steps and elements necessary for go-live. That included

- an implementation roadmap,
- joint working groups and governance framework,
- common budget for common costs,
- high level market design,
- common interfaces and operational tools

 (e.g. a common TSO cloud and a capacity management
 module called modified TSO Management Function i.e. mTMF),



Source: SDAC Webinar 21st April 2021

- pre-coupling, coupling and post-coupling processes and arrangements,
- legal contracts on bilateral (e.g. shipping arrangements), regional and European (e.g. SDAC DAOA) level and
- the necessary steps for project testing until go-live readiness covering local, regional and SDAC level testing as well.

The project has completed the design phase and entered its implementation phase in the end of 2019.

Deadlock

By spring 2020 it became evident that the project implementation will suffer delay. In one hand **bottlenecks were identified on individual level** among project parties primarily with regard to **resources needed to prepare local systems for the launch of common testing**, as several project parties were also involved and **preoccupied with the go-live of other** important **projects on SDAC level** (e.g. implementing multi-NEMO arrangements referred as MNAs).



On the other hand the **Covid-19 pandemic outbreak** also demanded time and effort to adapt the working environment of project parties.



Due to the effect on the FBMC implementation the issue has been escalated to all regulatory authorities and project parties of the Core capacity calculation region, who had vested interest in the timely implementation of FBMC, yet common decision has not been reached.

The severe situation questioned even the continuation of the ICP project as the national regulatory authorities could not reach unanimous position on completing ICP on the detriment of several months delay in Core FBMC implementation. The delay caused serious effect, as due to scarce resources several project members informed that the continuation of ICP would also create a cascading delay on the implementation of the flow-based market coupling project in the Core capacity calculation region, a project that enjoys top priority on the European scene among SDAC projects.

Guidance from the European Commission



At the end of summer 2020 **Core NRAs** committed to show flexibility in order to solve the deadlock situation and **agreed on escalating the question** of ICP continuation with delay effect on core FBMC informally **to the European Commission**.

On 22 September 2020 NRAs received the guidance from the **European Commission, giving green light to** the timely implementation of the **ICP solution**.

The Commission considered the sequential implementation of the ICP and Core FB MC projects as the best way forward, since the **ICP will facilitate SDAC** and notably **the geographical extension to all relevant EU borders** as requested by the CACM Regulation in the shortest time possible. It will also bring welfare gains to the market participants.

The Commission communicated that the ICP will bring the added value in ensuring that **Central Eastern European countries will not remain isolated**, even if further delays to CORE FB implementation were to occur. It will furthermore enable to compare testing Flow Based coupling results with the production NTC data during the external parallel run of the CORE FB MC project.

Then **project parties estimated go-live of the ICP by April 2021**. CORE FBMC go-live has been shifted until February 2022

The way towards the go-live



Further resource bottlenecks still remained as the launch of the testing depended on the completion of other projects in the SDAC ladder, e.g. the introduction of Polish MNA, thus the ICP go-live needed smaller adjustment once more. Nevertheless the testing phase starting from spring 2021 till end of May 2021 could be regarded as successful, although contingency time has been exhausted and a smaller reschedule was necessary around the Easter period, again, partially due to other projects in the SDAC ladder.

Still, for such a large scale project like ICP that is a good result, even smaller projects faced before more serious issues during testing.



Go-live

After the **finalization system integration testing**, regional testing, SDAC level testing and member tests, the conclusion of all related contracts including shipping arrangements several project parties needed to reach a compromise – long-time discussed – also on how to reallocate congestion income on the Polish technical profile when allocation constraint are active and how to split up there among TSOs the costs of the remuneration of long term rights.

This topic deserves a separate presentation!

A starting solution with a plan to reach an enduring agreement on this issue finally enabled all parties to confirm go-live readiness and the ICP finally went on line on 17 June 2021 with first delivery date being the day after.



Operational experience



Although the project has been realized in the beginning of summer 2021 the timing of this presentation can give us also **possibility to look into the operational results of the ICP** comparing the 100 trading days before the go-live of the project with 100 trading day elapsed since then.

To start with, the go-live and the first days of **operation technically worked well**. Until end of September 2021 only a few incident have been registered, but these **minor issues are fixed locally** and they are **not visible for the market** neither do they endanger secure operation of the process.

Some results



On the market side it can be observed that **price convergence across ICP borders stayed high during the first three months analysed**.

One remarkable example is the **share of hours with price convergence** e.g. **on the HU-AT border** that was insignificant before ICP, in contrary, **since the go-live the average is around 50%**.

The **average usage of** AT>HU available **transmission capacity (ATC) increased** from 40% up to 87% since the go-live. The share of hours with price convergence counting all neighbouring countries participating in market coupling (AT-SK-RO-HU) reached 41% value.

The significant increase of the number of hours with price convergence and the higher utilization of cross-border capacity is measureable on all borders where ICP project introduced implicit day-ahead capacity allocation (market coupling).



Sum up, next steps

Although wholesale price effects due to the ICP project could be challenging to identify in the stressed market situation described by high energy prices, still the ICP operates secure and bring those benefits to participating countries that comes with the introduction of implicit cross border capacity allocation as presented in the introduction.

ICP members and the whole Core capacity calculation region now works heavily on the roll out of flow based market coupling with planned go-live of February 2022, such project also worth the attention of regulators in ERRA community and could be presented later in time next year.



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Lessons learned

Project ambitions should not be given up after a failure of reaching consensus among relevant parties at the first glance, instead a good timing taking into account external/regional developments can lead to a successful review of previous deadlock situation

To a large extent many elements of ICP can be reused for FBMC project, making thus easier to implements FBMC as well (e.g. coupling and post coupling issues like congestion income, nomination and shipping arrangements with the only real exception is – NTC based – capacity calculation method/pre coupling process that solely carries an "interim nature"). Hungarian Energy and Public Utility Regulatory Authority

NRAs can indeed play a pivotal role and foster the way ahead also in deadlock situations on their merits if consensus can be reached among them

In case of projects where unanimity is required from all project parties/NRAs it is good sometimes to have an escalation body independent from particular/individual interest of any party in the project, who is in general outside of the scope of normal project implementation process to give guidance for deadlock situations only in exceptional cases

Although rarely preferred, even sometimes the deep involvement of NRAs in many aspects of the project management executed by project parties worth the efforts as it might lead to an earlier/faster implementation, thus it generates social economic welfare (or avoids the loss of social economic welfare due to any kind of delay)

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Appreciation



MEKH would like to express its appreciation to ERRA Member ANRE, E-Control, ERU, URSO, URE and to the German regulator BnetzA, also we would like to thank you the project parties who put their resources to implement the ICP project (NEMOs: EPEX SPOT, EXAA, HUPX, Nord Pool EMCO, OKTE, OPCOM, OTE, TGE and TSOs: 50Hertz, APG, ČEPS, MAVIR, PSE, SEPS, TenneT DE, Transelectrica).





THANK YOU FOR YOUR ATTENTION!

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Annex I. Inefficiency of explicit DA capacity allocation



Level of efficient use of cross-zonal capacity in the DA market timeframe, per border in Europe – 2020 (%)



Coupled Not coupled

Estimated social welfare gains still to be obtained from further extending DA market coupling per border – 2018–2020



Source: ACER MMR 2020 (2021)

Market coupling process procedures – normal day



Pre-Coupling

Source: SDAC Webinar 21st April 2021

- Verification that the NEMO systems use the same parameters and are configured accordingly
- TSO submission of Cross Zonal Capacities (CZC) and Allocation Constraints (AC) and reception by NEMOs
- Network Data (all CZCs and ACs) and market orders sending to market coupling systems

Coupling

- Price calculation process
- Results sharing and receiving among NEMOs
- Preliminary confirmation of the results by NEMOs
- · Final confirmation of market coupling results by involved parties and considering them final

Post-Coupling

- · Transfer final market coupling results and scheduled exchange to post-coupling systems
- Provision of local and cross-border trade files to CCP and/or cross-border shipper entities
- Share information on timing of processes and store it for further analysis
- Reporting and archiving coupling related information
- Publication of results

