ENTSO-E Public Webinar on Bidding Zone Review (BZR) study

16 September 2022
1. Introduction
2. ACER decision on alternative configurations
3. Organisation of the BZR and timeline update
4. PAN EU Studies: Transition costs questionnaire
5. BZRR Central Europe – status update
6. BZRR Nordic – status update
7. Conclusion
The All TSOs proposal of methodology and configurations submitted in October 2019 ended in ACER’s desk...

ACER methodology approved has 2 steps:
1. Methodology + request to TSOs to deliver LMP
2. Definition of alternative configurations

**Methodology and assumptions**
- by ACER decision
- Approved: 24 November 2020

**LMP**
- by All TSOs
- Delivered: March 2022
- Approved: 8 August

**Alternative Configurations**
- by ACER

**Bidding Zone Review**
- by the TSOs of the BZRRs
- From 8 August 2022 to 8 August 2023

**Relevant MSs**
unanimous decision to maintain or amend the BZ in 6 months

We are here
ACER’s Decision on the alternative bidding zone configurations

ENTSO-E public webinar
16 September 2022
The Decision was adopted on 8 August and follows from the lack of configurations submitted by TSOs for continental Europe back in 2020.

The Decision uses ACER’s high-level approach (consulted in July 2021), which relies on TSOs LMP simulation results and additional analysis on e.g. loop flows (see below).

In line with the Electricity Regulation (Article 14(1)), the alternative configurations have been selected based on the objectives of maximising economic efficiency and cross-zonal capacity. In essence, the selection relied on two high-level indicators:

- **Geographical nodal price dispersion within a bidding zone** resulting from TSOs simulations: The higher the dispersion, the higher the scope to manage congestions through better bidding zones delineation.

- **The cross-zonal capacity taken away by loop flows and other internal flows** on network elements relevant for capacity calculation. The higher these flows, the higher the scope to increase cross-zonal capacity through better bidding zones delineation.

Additionally, ACER took into account the configurations previously proposed by TSOs and TSOs’ feedback on the configurations initially identified by ACER.
### Summary of the proposed configurations: Continental Europe

<table>
<thead>
<tr>
<th>Member State</th>
<th>Individual alternative configurations</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>DE2</td>
<td>ACER clustering algorithm (k-means)</td>
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<td>DE2</td>
<td>TSOs’ modifications on ACER clustering algorithm (Spectral P1)</td>
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<td>DE3</td>
<td>ACER clustering algorithm (Spectral P1)</td>
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<td>DE4</td>
<td>TSOs’ modifications on ACER clustering algorithm (Spectral P1)</td>
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<td>France</td>
<td>FR3</td>
<td>ACER clustering algorithm (Spectral P1)</td>
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<td>The Netherlands</td>
<td>NL2</td>
<td>ACER clustering algorithm (Spectral DIRC)</td>
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<td>Italy (North)</td>
<td>IT2</td>
<td>ACER clustering algorithm (k-means)</td>
</tr>
</tbody>
</table>

In addition:

- TSOs are requested to study **at least the 2 more promising combinations**, comprising two Member States and based on the intermediate results obtained during the bidding zone review study (e.g. MS\textsubscript{x} split into 2 BZs combined with MS\textsubscript{y} split into 3 BZs)

- **Fallback configurations better following control area borders were envisaged for Germany**, in case challenges with the unique assignment of generation and load units to BZs in the configurations proposed by ACER are found
<table>
<thead>
<tr>
<th>Member State</th>
<th>Individual alternative configurations</th>
<th>Justification</th>
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<tr>
<td>Sweden</td>
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<td>ACER clustering algorithm (Spectral P1)</td>
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<td>SE4</td>
<td>TSOs’ modifications on ACER clustering algorithm (Spectral P1)</td>
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</tbody>
</table>
Overview of the bidding zone review process

Draft BZR methodology and alternative BZ configurations to be studied

All TSOs

Approve unanimously or ask ACER to decide

All NRAs

Decide/amend the methodology and the alternative configurations to be studied

ACER

Conduct the bidding zone review study

All TSOs

Decision on whether to keep or amend BZs

EU member states

October 2019 / February 2020

July 2020

August 2022

August 2022 – August 2023

February 2024
Annex: Maps of the alternative BZ configurations to be studied
**Alternative BZ configurations for Germany**

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<thead>
<tr>
<th>DE2</th>
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<th>DE3</th>
<th>DE4</th>
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<tbody>
<tr>
<td>DE2</td>
<td>k-means</td>
<td>Modified version of Spectral P1</td>
<td>Modified version of Spectral P1</td>
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<td>following remarks provided by the German TSOs</td>
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<td></td>
<td>Split of Germany into 2 BZs along the border identified to reduce loop flows and price dispersion within Germany the most.</td>
<td>Modified configurations to accommodate TSOs' comments to facilitate the unique assignment of generation and load units to BZs.</td>
<td>Modified configurations to accommodate TSOs' comments to facilitate the unique assignment of generation and load units to BZs.</td>
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<td>Split of Germany into 3 BZs along the borders identified to reduce loop flows and price dispersion within Germany the most.</td>
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</table>
Split of France into 3 BZs (ACER clustering algorithm Spectral P1) along the borders identified to reduce loop flows and price dispersion within France the most. Some small refinements suggested by TSOs were also considered.
Split of Italy North into 2 BZs (ACER clustering algorithm k-means) along the borders identified to reduce loop flows and price dispersion within Italy the most. Some small refinements suggested by TSOs were also considered.
Split of the Netherlands into 2 BZs (ACER clustering algorithm Spectral DIRC) along the borders identified to reduce loop flows and price dispersion within the Netherlands the most.
Alternative BZ configurations for Sweden

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<th>SE3</th>
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<td>Spectral P1</td>
<td>Modified version of Spectral P1 following remarks provided by Svenska Kraftnät</td>
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<td>Modified version of Spectral P1 following remarks provided by Svenska Kraftnät</td>
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</table>

**SE3**
- Spectral P1

**SE3**
- Modified version of Spectral P1 following remarks provided by Svenska Kraftnät

**SE4**
- Spectral P1

**SE4**
- Modified version of Spectral P1 following remarks provided by Svenska Kraftnät

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Split of Sweden into 3 BZs along the borders identified to reduce loop flows and price dispersion within Sweden the most. It includes a specific ‘Stockholm BZ’.

Merge of current SE1 and SE2. The ‘Stockholm BZ’ includes the Forsmark power plants and the Fennoskan interconnector.

Split of Sweden into 4 BZs along the borders identified to reduce loop flows and price dispersion within Sweden the most.

Current SE1 and SE2 BZs are kept. The ‘Stockholm BZ’ includes the Forsmark power plants and the Fennoskan interconnector.
Thank you.
Any questions?

The contents of this document do not necessarily reflect the position or opinion of the Agency.
Organisation of the BZR and timeline update
Overview of the current process of the Bidding Zone review

ACER methodology approved has 2 steps:
1. Methodology + request to TSOs to deliver LMP
2. Definition of alternative configurations

The All TSOs proposal of methodology and configurations submitted in October 2019 ended in ACER’s desk...

Methodology and assumptions
- by ACER decision
- Approved: 24 November 2020

LMP
- by All TSOs
- Delivered: March 2022

Alternative Configurations
- by ACER
- Approved: expected 1 July

Bidding Zone Review
- by the TSOs of the BZRRs
- From 8 August 2022 to 8 August 2023

Relevant MSs unanimous decision to maintain or amend the BZ in 6 months

We are here
The Bidding Zone Review is organised in regions

Overview of Bidding Zone Review Regions (BZRRs)

• For the Bidding Zones Review
  ➢ On all TSO level, for pan-EU studies and stakeholder management
  ➢ On regional level, for modelling activities

→ The regional setup for modelling was chosen to reduce model complexity and to be able to consider regional specificities / sensitivities.
Step 1: monetised benefits
- Step 1a: monetised benefits of individual splits
- Step 1b: monetised benefits of derived combinations

Step 2: Assessment of all other criteria

Step 3: Acceptability assessment of alternative configurations (consultation authorities)

Step 4: Consolidation of the results of the BZR

Start of the BZR

INPUT data to ACER and NRAs

INPUT data publication

PUBLIC CONSULTATION

End of calculations and modelling per BZRR

Final assessment by BZRR

Publication of the BZR

Output data publication

Public webinar

PAN EU studies on common indicators

Modelling and Calculations on each BZRR

Transition costs questionnaire available for stakeholders input

Estimation of transition costs based on stakeholders’ answers to questionnaire

Alternative BZ combinations selected

Step 1a

Step 1b

Step 2

Step 3

Step 4

Alignment / draft final report

Formatting and final approval

BZR general timeline
### General timeline (for stakeholder interactions)

**Duration of the BZR (12 months)**

- **Start of the BZR**: 8 Aug 2022

<table>
<thead>
<tr>
<th></th>
<th>Q2 2022</th>
<th>Q3 2022</th>
<th>Q4 2022</th>
<th>Q1 2023</th>
<th>Q2 2023</th>
<th>Q3 2023</th>
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<td>Apr: LMP results</td>
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<td>8 Aug:</td>
<td>8 Oct:</td>
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<td>by ACER</td>
<td>8 Dec: Input</td>
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<td>report</td>
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<td><strong>ACER &amp; NRAs interaction</strong></td>
<td>5 Sep</td>
<td>Explanation</td>
<td>7 October:</td>
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<td><strong>BZR Consultative Group Meetings</strong></td>
<td>5 July</td>
<td>Kick-off call</td>
<td>13 October:</td>
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<td>WS Jan/Feb</td>
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<td>Online call</td>
<td>workshop (WS)</td>
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<td>21 April</td>
<td>16 September</td>
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<td>LMP results)</td>
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<td><strong>MESC</strong></td>
<td>1 June</td>
<td>14 September</td>
<td>7 December</td>
<td>TBD</td>
<td>TBD</td>
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<td><strong>Public consultation</strong></td>
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<td>Dec 22 - Jan 23</td>
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<td><strong>Regional meetings</strong></td>
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<td><strong>PAN EU studies</strong></td>
<td>Questionnaire</td>
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<td>Available for</td>
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<td>on transition</td>
<td>input: 6 Sep</td>
<td>31 Oct</td>
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<td>costs:</td>
<td>- 31 Oct</td>
<td>Analysis:</td>
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<td>after 31 Oct</td>
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</tbody>
</table>

*The dates proposed are indicative.*

- **Public Webinar**
  - Before or during public consultation
  - After publication of the BZR

- **MESC**
  - 1 June
  - 14 September
  - 7 December
  - TBD

- **Public consultation**
  - Launch between Dec 22 - Jan 23

- **Regional meetings**
  - TBD

- **PAN EU studies**
  - Questionnaire on transition costs:
    - Available for input: 6 Sep - 31 Oct
    - Analysis: after 31 Oct
  - TBD
Pan-EU studies: Transition costs questionnaire

1. Introduction
2. Methodology
3. Questionnaire
4. Next steps
5. Q&A
Introduction
Back-ground for the pan EU studies

22 indicators to be assessed in the BZR

- 2 indicators (6 and 11) have to be assessed by the TSOs at pan-EU level (i.e. across the BZRRs) via 2 pan-EU studies;
- TSOs via ENTSO-E have subcontracted Compass Lexecon to perform these studies on their behalf;
- Focus of today’s presentation is on criterion 11 (transition costs);
- Questionnaire on transition costs has been published on September 6th 2022 on the ENTSO-E consultation website (Link);
- Input from EU stakeholders is crucial for the assessment of this criterion and shall be provided until October 31st 2022.

Key
Green: Assessed in pan-European studies
Questionnaire on transition costs: https://consultations.entsoe.eu/markets/bidding-zone-amendments-transition-costs/

Overview
In accordance with the ACEEdirective 29/2020 of 24 November 2020 on the methodology and as snapshots that are to be used in the Bidding Zone Review process and for the alternative bidding zone configuration to be considered, the Bidding Zone Study - Questionnaire on Transition Costs (BZS) of the ACER Methodology Committee for the Bidding Zone Study (ACER) shall jointly perform a survey in order to evaluate transition costs occurring from a bidding zone reconfiguration. TSOs are therefore now launching a questionnaire on transition costs. Through this questionnaire, information on transition costs inherent to the specific bidding zone reconfigurations to be analyzed in the bidding zone review will be gathered.

Why your views matter
We are seeking input from EU stakeholders and market participants on their transition costs. Based on this input, TSOs will estimate the transition costs linked to each specific bidding zone reconfiguration as set forth in the ACER decision 11/2022. In accordance with the ACER Methodology, the resulting estimates shall be considered to calculate the minimum lifetime of a EU comparison.

Give us your views
Online Survey

2 documents can be downloaded here to facilitate the internal assessment within each company BUT answers are to be provided in the consultation tool (accessible via the URL Online Survey)
Methodology
**Methodology: Overview and legal basis**

Recap on what the BZ-methodology says: mandatory and optional aspects for consideration in the bidding zone review process.

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**Transition cost definition**

Transition costs refer to the **one-off costs expected to be incurred** in case the BZ configuration is amended.

Shall relate to **adaptations** that are inherently and unambiguously related to a specific BZ configuration change.

[...]

Shall **not relate to adaptations** that are, in general, necessary to ensure sufficient flexibility of the systems to cope with a variable number of BZs due to a potential amendment of the BZ configuration in the future.

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**Aim of the Study**

In order to identify and possibly estimate transition costs, a study shall be jointly performed for all BZRRs. The study shall aim to **provide an overview of necessary adaptations and possibly a range of related cost estimates**. The study shall also consider stakeholders’ replies to the public consultation conducted pursuant to Article 17.4.

The resulting estimates shall be considered to **calculate the minimum ‘lifetime’**, in years, of a BZ configuration, as described in Step 4 in Article 13.1(d).
The study is conducted in four steps. We are currently relying on your input as a result from step 2.

Our approach and where we stand:
- **Step 1 Define groups** of market participants
- **Step 2 Develop questionnaire**
  - Break down costs into cost categories
  - Pre-questionnaire consultation with BZR consultative group
- **Step 3 Method for cost estimation**
  - Costs are estimated separately for
    - Each group of recipients
    - Each proposed BZ re-configuration
    - Each BZ directly or indirectly affected by specific re-configuration
- **Step 4 Process data and draft report to be consulted**

We have defined exhaustive categories and TSOs and ENTSO-E will push-out an online questionnaire to a large number of market participants.

The questionnaire has been published on September 6\textsuperscript{th} 2022 on the ENTSO-E consultation website.

We will elaborate on the method for extrapolation that will be used to estimate the transition costs per alternative bidding zone configuration.
Methodology: Step 1 - Define group of market participants

The data for the transition cost study is aggregated through a publicly available questionnaire, distributed in the industry.

Organisation types directly and indirectly addressed:
- Generator or storage operator
- Large-scale industrial consumer
- Energy trader
- Retailer
- Aggregator
- NEMO or derivative exchange
- Clearing house
- Ministry or national regulatory authority
- TSO
- DSO
- Other

Direct address to questionnaire:
- ENTSO-E
- Database

Indirect address to questionnaire:
- Generator or storage operator
- Large-scale industrial consumer
- Energy trader
- Retailer
- Aggregator
- NEMO or derivative exchange
- Clearing house
- Ministry or national regulatory authority
- TSO
- DSO
- Other

Data aggregation via website & cleaning for duplicates
Methodology: Step 2 - Develop questionnaire

The cost categories were identified and discussed with the BZR consultative group.

<table>
<thead>
<tr>
<th>Cost category</th>
<th>Definition</th>
<th>Transition cost examples</th>
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</thead>
<tbody>
<tr>
<td>Changes to internal business processes and IT systems</td>
<td>Costs incurred by changes to organization and coordination specifically attributable to BZ re-configuration</td>
<td>• Adapting existing IT systems to specific BZ configurations</td>
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<td>• Costs associated to the efforts (FTE) linked to changing of processes like for example:</td>
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<td>• splitting or merging teams that are responsible for a specific BZ</td>
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<td>• changing trading or algorithmic trading processes</td>
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<td>• going through the process of revaluating assets</td>
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<td>• adopting portfolio optimisation processes</td>
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<td>• adopting processes around the payment of renewable subsidies like feed-in-tariffs</td>
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<td>• testing changed processes</td>
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<td>• informing employees about the changed processes</td>
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<td>• changes to other ongoing exchanges between market participants and TSOs and public bodies, for example balancing and electricity balancing accounts</td>
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<tr>
<td>Adjustment to or termination of contracts and regulation</td>
<td>Costs incurred by amending existing contracts to BZ re-configuration including legal costs</td>
<td>• Re-negotiation, or termination of contracts, depending on their complexity. Particularly, if the reference location of price changes or is not accepted by contract parties anymore (incl. GOs, PPAs, legal arrangements)</td>
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<td>• Re-drawing of legislation, for instance contracts/legislation that refer to a single bidding zone, that does not exist anymore after a BZ reconfiguration</td>
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<td>• Possible costs, because electricity sold forward is affected (will apply mainly in case of shorter lead times)</td>
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<tr>
<td>Adjustments of processes with NEMOs, TSOs and public bodies</td>
<td>Costs incurred by adapting interaction with NEMOs, TSOs or public bodies</td>
<td>• Reporting obligations that must be adjusted to be specific for each new BZ</td>
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<tr>
<td>Additional costs</td>
<td>Any costs directly related to the BZ configuration not covered by any of the categories above</td>
<td>• Any examples not covered above</td>
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</tbody>
</table>
Methodology: Step 3 - Method for cost estimation and data quality check

The cost estimates are aggregated and checked for quality and robustness. Below, a high-level excerpt is provided.

Quality checks

- Depending on the sample size, different quality checks will be applied to:
  - **Identify the best method** for finding total transition costs
  - Estimate the **expected error** and transition cost range
  - Clean the data for data entry errors

- **Typical checks** that will be applied are:
  - Model specificities test
  - Matching tests (see top right)
  - Outlier tests (see bottom right)
  - Estimates against benchmarks
  - Calculation of the regression power

- The results of the quality check give indication to where a close **examination of the explanation of the cost estimates** is most important

Example matching Analysis

- Two entries of similar companies are compared.
- Differences between them are analysed for plausibility.
- This approach is used for small data sets

Example outlier Analysis

- A trend between entries of all or many companies is identified through statistical methods.
- Outliers are analysed for plausibility.
- This approach is used for large data sets.
**Methodology: Step 3 - Method for cost extrapolation**

Total cost extrapolation follows a scaling approach and results in a bandwidth of costs per BZ reconfiguration.

<table>
<thead>
<tr>
<th>Company ID</th>
<th>BZ reconfiguration</th>
<th>Company type</th>
<th>Cost category</th>
<th>FTE</th>
<th>FTE Cost</th>
<th>Other cost</th>
<th>Share independent of comp. size</th>
<th>Market share (physical)</th>
<th>Market share (revenue)</th>
<th>Number of companies</th>
<th>Prior experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (DE2)</td>
<td>A</td>
<td>IT Systems</td>
<td>2</td>
<td>55 000</td>
<td>500 000</td>
<td>50%</td>
<td>5% of A in 1</td>
<td>100</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1 (DE2)</td>
<td>A</td>
<td>IT Systems</td>
<td>4</td>
<td>60 000</td>
<td>400 000</td>
<td>50%</td>
<td>5% of A in 1</td>
<td>100</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 (DE2)</td>
<td>A</td>
<td>IT Systems</td>
<td>4</td>
<td>60 000</td>
<td>400 000</td>
<td>50%</td>
<td>5% of A in 1</td>
<td>100</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1 (DE2)</td>
<td>B</td>
<td>IT Systems</td>
<td>1</td>
<td>55 000</td>
<td>300 000</td>
<td>50%</td>
<td>5% of A in 1</td>
<td>100</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

**Grouping conditional on quality check outcome**

- **Total cost** = \( \text{FTE} \times \text{FTE Cost} + \text{Other cost} \)
- **BZ reconfiguration transition cost independent of company size** = Number of companies \( \times \) Total cost \( \times \) Share of costs independent of comp. size
- **BZ reconfiguration transition cost dependent on company size** = \( \text{Avg(Market shares)} \times \text{Total cost} \times (1 - \text{Share of costs independent of comp. size}) \)
- **Average total cost estimate** = \( \text{Avg(BZ recon. transition cost independent of company size + BZ recon. transition cost dependent on company size)} \)
Questionnaire
### Questionnaire: Structure and guidelines

The questionnaire includes 8 steps and may be completed in multiple sessions.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What does it entail?</strong></td>
<td><strong>How to fill it in?</strong></td>
<td><strong>General remarks:</strong></td>
<td><strong>General remarks:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Explanation of the context and content of the questionnaire and study</td>
<td>▪ Nothing to fill in</td>
<td>▪ Please contact Gjorgij Shemov (<a href="mailto:gjorgji.shemov@entsoe.eu">gjorgji.shemov@entsoe.eu</a>) in case of any questions</td>
<td>▪ Please contact Gjorgij Shemov (<a href="mailto:gjorgji.shemov@entsoe.eu">gjorgji.shemov@entsoe.eu</a>) in case of any questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Refers to relevant documents</td>
<td>▪ Nothing to fill in</td>
<td>▪ The button “continue” works only if the required data is filled in</td>
<td>▪ The button “continue” works only if the required data is filled in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Definition of cost categories and provision of examples</td>
<td>▪ Nothing to fill in</td>
<td>▪ The button “Save and come back later...” creates a unique link such that you do not need to fill in the questionnaire in one session. For this, you need to provide you e-mail.</td>
<td>▪ The button “Save and come back later...” creates a unique link such that you do not need to fill in the questionnaire in one session. For this, you need to provide you e-mail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Questions about the company</td>
<td>▪ Provide company information as requested on the website</td>
<td>▪ Tick boxes as you see fit</td>
<td>▪ Tick boxes as you see fit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Questions about prior experience with BZ reconfigurations</td>
<td>▪ Download excel table</td>
<td>▪ Note: the agreement to the ENTSO-E’s Consultation Hub privacy policy is required</td>
<td>▪ Note: the agreement to the ENTSO-E’s Consultation Hub privacy policy is required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Central data submission of estimated transition costs</td>
<td>▪ Fill in company information sheet</td>
<td>▪ Enter your e-mail, if you want to receive a copy of your answers</td>
<td>▪ Enter your e-mail, if you want to receive a copy of your answers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ BZ-specific data sheets</td>
<td>▪ Fill in cost estimates for all relevant BZ reconfigurations</td>
<td>▪ Don’t forget to press “submit response”</td>
<td>▪ Don’t forget to press “submit response”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Case scenario for impact on liquidity</td>
<td>▪ Upload final excel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Section for additional comments</td>
<td>▪ Provide estimates as requested on the website</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Decision on how your data should be treated</td>
<td>▪ Add any comment you consider relevant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Submission of answers</td>
<td>▪ Tick boxes as you see fit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General remarks:**
- Please contact Gjorgij Shemov (gjorgji.shemov@entsoe.eu) in case of any questions.
- The button “continue” works only if the required data is filled in.
Next steps
Questionnaire on Transition Costs study: timeline

- Deadline for filling in the questionnaire: 31 October 2022 (8 weeks after publication).
- First estimation of transition costs will be consulted in January-February (date TBC).
Q&A
BZRR CENTRAL EUROPE – STATUS UPDATE
Status update BZR Central Europe

Central European BZR in a nutshell

Base setup

3 climate years

Sensitivity analysis

Target year: 2025

Base scenario (current BZs)

- Alternative BZ config 1 DE2
- Alternative BZ config 4 DE4
- Alternative BZ config 5 FR3

Alternative BZ config 2 DE2
Alternative BZ config 3 DE3
Alternative BZ config 6 IT2

Alternative BZ config 8 Combi of two
Alternative BZ config 9 Combi of two

Alternative BZ config 7 NL2

Scenario Preparation

Modelling & Simulation

Criteria Evaluation & Reporting

Alternative BZ config

Combi of two
Status update BZR Central Europe

Central European BZR toolchain

1. BASE CASE CREATION (MARKET RESULT FORECAST)
   - Market Data
   - Provisional NTC

2. CAPACITY CALCULATION (Flow-based + NTC)
   - Grid Model
   - Base Case Market Result
   - Generation Shift Keys (GSK)

3. MARKET COUPLING
   - Market Data
   - FB Parameters
   - NTC

4. REMEDIAL ACTIONS OPTIMIZATION (RAO)
   - Grid Model
   - Market Dispatch
   - Remedial Actions
   - Flows not induced by cross-zonal trade

5. LOOP FLOW ANALYSIS
   - Grid Model
   - Market Dispatch
   - GSK

Database

- Market data (PEMMDB)
- Grid model
- Alternative BZ configurations

Indicator results
Status update BZR Central Europe

Central European BZR timeline

2022 | 2023
---|---
Jan | Mar | May | Jul | Sep | Nov | 2023 | Mar | May | Jul

LMP process

BZR process

Step 1: Welfare analysis vs status quo
Step 2: Assessment of non-monetized criteria
Step 3: Assessment of acceptability
Step 4: Consolidation: recommendation for each region

Publication of the BZR Aug 7
Start of the BZR Aug 8

Step 1 and 2
Step 3
Step 4
Reporting

ACER
Main challenges:
- Large amount of data, data quality and data handling
- Complexity of the modelling and the overall toolchain
- Computational times of the toolchain
- Large amount of simulations needed

In short: challenge to perform all required simulations, at the required level of detail, within the time set for it.
BZR Regions: Introduction of the BZRR NORDIC

• Nordic team members come from
  • Svenska kraftnät
  • Fingrid
  • Statnett
  • Energinet

• Project’s organization
  • Task force: handles requirements and coordination across TSOs
  • Group of modelling experts: handles practical implementation, analyses, etc.
BZR Nordics: Development of the modelling tool for Nordics

- Nordic BZRR continued with BID3 from LMP study as the main modelling tool

- Necessary further development of the model was started early to prepare for BZRR
  - Redispatch module
  - Implementation of flow based functionality similar to real life operations

- BID 3 development finalized.

- Last data preparations are currently taking place before start of simulations.

- All four Nordic TSOs are users of BID3, and the dataset can be shared or passed around
  - Allow all TSOs to contribute efficiently
  - Different TSOs can take lead according to when there are available resources
BZ Review Region Nordic: Tool Chain

Grid model

Market data (PEMMDDB)

Alternative BZ configurations

BID3

1. Capacity Calculation
2. Market Coupling
3. Operational Security Analysis
4. Remedial Actions Optimization (RAO)

Indicator results
Back-Up
Questionnaire: optional data submission

The questionnaire includes questions that are not required from the methodology, but would be useful for the analysis.

Rationale for inclusion of questions

- **Make explicit the difference between transition costs** to be included and those costs that are relatable to a BZ reconfiguration but should not be included
- System flexibility and prior experience may be a **confounding factor** to transition costs. Information on its existence may inform the robustness checks and method to be used for total cost scaling
- Historic data and explanations such as the effect from lead time may **substantiate the estimation rationale** behind the difference in cost estimates conditional on lead time

Treatment of answers

- The description of the previous effect of the lead time will be used to **qualitatively substantiate** the difference in cost estimates per lead time and assess the robustness of the estimates in case of a small response rate
- It will be generally assessed, if companies with experience in BZ reconfigurations expect lower costs than companies without experience. Within the experienced group, this will be further elaborated through a linear relationship between cost estimates and prior costs (conditional on company size). This further helps in **making informed decisions** on the scaling process

Optional data

1. Have you been affected by a past BZ re-configuration in a way that incurred transition costs? ☐ Yes ☐ No
   a. If yes, please note the specific re-configuration that affected you:
   b. If yes, was your main area (the area where you are most active in in terms of generated/ traded/ throughput/ consumed/ overseen volume) of business subject to re-configuration or have you been affected by a re-configuration outside your main area of business?
   c. If yes, what was the lead-time for this re-configuration and how did the lead-time affect your transition costs?

| Prior Process: Making systems / processes flexible** (such that BZ-change is possible) |
|-----------------------------------------------|---------------|----------------|-------------------|
| FTE (existing staff) [total #] | FTE (new staff) [total #] | Cost per FTE** [EUR / #] | Other cost (in total during lead time) [EUR] |

Backup
ENTSO-E Mission Statement

Who we are

ENTSO-E, the European Network of Transmission System Operators for Electricity, is the association for the cooperation of the European transmission system operators (TSOs). The 42 member TSOs, representing 35 countries, are responsible for the secure and coordinated operation of Europe’s electricity system, the largest interconnected electrical grid in the world. In addition to its core, historical role in technical cooperation, ENTSO-E is also the common voice of TSOs.

ENTSO-E brings together the unique expertise of TSOs for the benefit of European citizens by keeping the lights on, enabling the energy transition, and promoting the completion and optimal functioning of the internal electricity market, including via the fulfillment of the mandates given to ENTSO-E based on EU legislation.

Our mission

ENTSO-E and its members, as the European TSO community, fulfil a common mission: Ensuring the security of the interconnected power system in all time frames at pan-European level and the optimal functioning and development of the European interconnected electricity markets, while enabling the integration of electricity generated from renewable energy sources and of emerging technologies.

Our vision

ENTSO-E plays a central role in enabling Europe to become the first climate-neutral continent by 2050 by creating a system that is secure, sustainable and affordable, and that integrates the expected amount of renewable energy, thereby offering an essential contribution to the European Green Deal. This endeavour requires sector integration and close cooperation among all actors.

Europe is moving towards a sustainable, digitalised, integrated and electrified energy system with a combination of centralised and distributed resources. ENTSO-E acts to ensure that this energy system keeps consumers at its centre and is operated and developed with climate objectives and social welfare in mind.

ENTSO-E is committed to use its unique expertise and system-wide view – supported by a responsibility to maintain the system’s security – to deliver a comprehensive roadmap of how a climate-neutral Europe looks.
ENTSO-E Mission Statement

Our values
ENTSO-E acts in solidarity as a community of TSOs united by a shared responsibility.

As the professional association of independent and neutral regulated entities acting under a clear legal mandate, ENTSO-E serves the interests of society by optimising social welfare in its dimensions of safety, economy, environment, and performance.

ENTSO-E is committed to working with the highest technical rigour as well as developing sustainable and innovative responses to prepare for the future and overcoming the challenges of keeping the power system secure in a climate-neutral Europe. In all its activities, ENTSO-E acts with transparency and in a trustworthy dialogue with legislative and regulatory decision makers and stakeholders.

Our contributions
ENTSO-E supports the cooperation among its members at European and regional levels. Over the past decades, TSOs have undertaken initiatives to increase their cooperation in network planning, operation and market integration, thereby successfully contributing to meeting EU climate and energy targets.

To carry out its legally mandated tasks, ENTSO-E’s key responsibilities include the following:

- Development and implementation of standards, network codes, platforms and tools to ensure secure system and market operation as well as integration of renewable energy;
- Assessment of the adequacy of the system in different timeframes;
- Coordination of the planning and development of infrastructures at the European level (Ten-Year Network Development Plans, TYNDPs);
- Coordination of research, development and innovation activities of TSOs;
- Development of platforms to enable the transparent sharing of data with market participants.

ENTSO-E supports its members in the implementation and monitoring of the agreed common rules.

ENTSO-E is the common voice of European TSOs and provides expert contributions and a constructive view to energy debates to support policymakers in making informed decisions.
Our values define who we are, what we stand for and how we behave.
We all play a part in bringing them to life.

EXCELLENCE
We deliver to the highest standards. We provide an environment in which people can develop to their full potential.

TRUST
We trust each other, we are transparent and we empower people. We respect diversity.

INTEGRITY
We act in the interest of ENTSO-E

TEAM
We care about people. We work transversal and we support each other. We celebrate success.

FUTURE THINKING
We are a learning organisation. We explore new paths and solutions.

We are ENTSO-E