ESTABLISHING ENTRY-EXIT TARIFFS —
CASE: THE EU TARIFF NC

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REVENUE RECOVERY PROCESS

TAR NC splits the regimes into two categories:

- price cap: The maximum transmission tariff is set: Target revenue
- non-price cap: The revenue is set: Allowed revenue

**Regulatory period:** for which ‘the general rules for the allowed or target revenue are set’

**Tariff period:** the time ‘during which a particular level of reference price is applicable’
Tariffs „shall be transparent, take into account the need for system integrity and its improvement and reflect the actual costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent, whilst including an appropriate return on investments, and, where appropriate, taking account of the benchmarking of tariffs by the regulatory authorities. Tariffs, or the methodologies used to calculate them, shall be applied in a nondiscriminatory manner.”

… „Tariffs, or the methodologies used to calculate them, shall facilitate efficient gas trade and competition, while at the same time avoiding cross-subsidies between network users and providing incentives for investment and maintaining or creating interoperability for transmission networks.”

Tariffs for network users shall be non-discriminatory and set separately for every entry point into or exit point out of the transmission system. Cost-allocation mechanisms and rate setting methodology regarding entry points and exit points shall be approved by the national regulatory authorities. By 3 September 2011, the Member States shall ensure that, after a transitional period, network charges shall not be calculated on the basis of contract paths.”

„Tariffs for network access shall neither restrict market liquidity nor distort trade across borders of different transmission systems. Where differences in tariff structures or balancing mechanisms would hamper trade across transmission systems, and notwithstanding Article 41(6) of Directive 2009/73/EC, transmission system operators shall, in close cooperation with the relevant national authorities, actively pursue convergence of tariff structures and charging principles, including in relation to balancing.”
The reference price methodology shall comply with Article 13 of Regulation (EC) No 715/2009 and with the following requirements. It shall aim at:

(a) enabling network users to reproduce the calculation of reference prices and their accurate forecast;
(b) taking into account the actual costs incurred for the provision of transmission services considering the level of complexity of the transmission network;
(c) ensuring non-discrimination and prevent undue cross-subsidisation including by taking into account the cost allocation assessments set out in Article 5;
(d) ensuring that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system;
(e) ensuring that the resulting reference prices do not distort cross-border trade.

Cost reflective  Minimise cross-subsidies  Non-discriminatory  Facilitate cross-border trade
**APPLICATION**

**CAM NC**
- All to IPs

**TAR NC**
- Partly to IPs only – ‘limited scope’ rules
- Partly to IPs and non-IPs – ‘broader scope’ rules

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**TAR NC scope > CAM NC scope**

- All points
  - Ch. I ‘General provisions’
  - Ch. II ‘Reference price methodologies’
  - Ch. IV ‘Reconciliation of revenue’
  - Ch. VII ‘Consultation requirements’ (except for Art. 28)
  - Ch. VIII ‘Publication requirements’
  - Ch. X ‘Final and transitional provisions’

**TAR NC scope = CAM NC scope**

- IPs only
  - Ch. III ‘Reserve prices’
  - Ch. V ‘Pricing of bundled capacity and capacity at VIPs’
  - Ch. VI ‘Clearing and payable price’
  - Ch. VII ‘Consultation requirements’ (only for Art. 28)
  - Ch. IX ‘Incremental capacity’
IMPLEMENTATION OF TAR NC

- Flexible legal text
- ENTSOG Initiative: IDOC
  - Attempt to outline the implementation practices – good practices from ENTSOGs point of view
  - A tool to identify the difficult areas where discussions are coming up
- Living document, second version in October
Article 4: Transmission and non-transmission services and tariffs
Article 4(1): A given service shall be considered a transmission service where both are met:

- (a) The costs of such service are caused by the cost drivers of both technical or forecasted contracted capacity and distance
- (b) The costs of such services are related to the investment in and operation of the infrastructure which is part of the regulated asset base for the provision of transmission services

Where any of the criteria set out in points (a) and (b) are not complied with, a given service may be attributed to either transmission or non-transmission services subject to the findings of the periodic consultation by the transmission system operator(s) or the national regulatory authority and decision by the national regulatory authority, as set out in Articles 26 and 27.

Currently, there are many services offered by TSOs which must be assessed in future against the TAR NC criteria above. Examples of such services are:

- Blending and/or ballasting (e.g. Belgium, Italy);
- Odourisation (e.g. Belgium, Denmark, France, Greece, Hungary, Ireland, Italy, Lithuania, Romania);
- Biogas services (e.g. France, Germany, Ireland, Italy, Lithuania);
- Services provided on regional networks (e.g. France, Italy);
- Dedicated compression services (e.g. France, Great Britain, Ireland, Lithuania, Poland);
- Dedicated metering services (e.g. Belgium, Lithuania, Germany, Ireland, Italy, France, Great Britain);
- Dedicated pressure services (e.g. Belgium, France, Germany, Ireland, Italy, Lithuania);
- Dedicated connections (e.g. Austria, Belgium, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Lithuania).
Article 4(3): Transmission services revenue shall be recovered by capacity-based transmission tariffs:

- As an exception, subject to the approval of NRA, a part of the transmission services revenue may be recovered only by the following commodity-based transmission tariffs may also be applied which are set separately from each other:
  - Flow-based charge which shall comply with all of the following criteria:
    - Levied for the purpose of covering the costs mainly driven by the quantity of the gas flow;
    - Calculated on the basis of forecasted or historical flows, or both and set in such a way that it is the same at all entry points and the same at all exit points;
    - Expressed in monetary terms or in kind.
  - Complementary revenue recovery charge (CRRC) which shall comply with all of the following criteria:
    - Levied for the purpose of managing revenue under- and over-recovery;
    - Calculated on the basis of forecasted or historical capacity allocations and flows, or both;
    - Applied at points other than interconnection points;
    - Applied after NRA makes an assessment of its cost reflectivity and its impact on cross-subsidisation between Ips and non-Ips.

TAR NC does not require any specific methodology that applies to the 'commodity' part; the sole requirement is periodic consultation.

CRRC can work in conjunction with adjustments to the application of RPM rescaling.
## Comparison of the Two Commodity Charges

### Comparison between a Flow-Based Charge and CRRC

<table>
<thead>
<tr>
<th>Charge</th>
<th>Aim</th>
<th>Which points</th>
<th>How expressed</th>
<th>Calculation</th>
<th>Approval requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow-based charge</td>
<td>Cover the costs mainly driven by the quantity of the gas flow</td>
<td>All points</td>
<td>In monetary terms or in kind</td>
<td>On the basis of forecasted or historical flows, or both Same at all entry points and same at all exit points</td>
<td>Consultation per Article 26(1)</td>
</tr>
<tr>
<td>CRRC</td>
<td>Managing revenue under-/over-recovery</td>
<td>Non-IPs</td>
<td>In monetary terms</td>
<td>On the basis of forecasted or historical capacity allocations, or both</td>
<td>Consultation per Article 26(1) NRA assessment of its cost-reflectivity and its impact on cross-subsidisation between IPs and non-IPs</td>
</tr>
<tr>
<td>Exit charges</td>
<td>Capacity &amp; Commodity</td>
<td>Commodity</td>
<td>None</td>
<td></td>
<td></td>
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<tr>
<td>--------------</td>
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<td>-----------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>AT, FR, DE, NL</td>
<td>IT</td>
<td>FI, SE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity &amp; Commodity</td>
<td>DK, HU, PL, PT, SK, ES</td>
<td>BE, CZ, GR, IT, RC</td>
<td>LT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commodity</td>
<td>BG, EE, LV</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>None</td>
<td>LU</td>
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</tbody>
</table>

- **E/E system**
- **Postage stamp system**

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**DNV KEMA – COWI 2013**

**KEMA – REKK 2009**
Article 4(4): Revenue recovery for non-transmission services

- Cost-reflective, non-discriminatory, objective and transparent
- Charged to the beneficiaries of a given non-transmission service with the aim of minimising cross-subsidisation between network users within or outside a Member State, or both.

Where according to the national regulatory authority a given non-transmission service benefits all network users, the costs for such service shall be recovered from all network users.

TAR NC does not require any specific methodology that applies to the charge of the non-transmission services revenue; the sole requirement is periodic consultation.

The process for NRA approval differs for non-transmission services provided to network users, and for non-transmission services provided to parties other than network users.

Non-transmission services provided to network users are subject to the requirements of periodic consultation, NRA approval and review per Articles 26 and 27, and subject to publication per Article 30. The relevant requirements address: (1) the stakeholder concerns of additional transparency for charges that network users must pay; and (2) the need to preserve the confidentiality of potentially commercially sensitive information.

TSOs may provide non-transmission services to parties other than network users, such as infrastructure operators and telecom service providers. If the recipient is not a network user, then the non-transmission service does not fall under the requirements mentioned above for non-transmission services provided to network users. In any case, Article 4(1) subjects the split between transmission and non-transmission services to periodic consultation, NRA approval and review per Articles 26 and 27.
CAPACITY PRODUCTS WITH CONDITIONS

Article 4(2)
Transmission tariffs may be set in a manner as to take into account the conditions for firm capacity products

Explanation: firm capacity products with ‘conditions’ for the efficient use of the network, and to maximise the offer of firm capacity taking into account market and network characteristics.

EXAMPLES OF FIRM CAPACITY PRODUCTS WITH ‘CONDITIONS’

<table>
<thead>
<tr>
<th>Firm capacity product with ‘conditions’</th>
<th>Explanation</th>
<th>TSOs offering a given firm capacity product with ‘conditions’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restrictedly usable firm</td>
<td>Capacity that ensures firm freely allocable network access within an entry-exit-system on a firm basis within certain gas flows, within certain temperature ranges and/or entry-exit-system load/demand; Access to the VTP included</td>
<td>Thyssengas, Fluxys TENP, GRTgaz Deutschland, GTG Nord, OGE (called ‘bFZK’ in Germany – used on entry points to control local distribution of incoming flows; called ‘TAK’ if used at network points to storage facilities) Creos</td>
</tr>
</tbody>
</table>
| Restrictedly allocable firm            | Restrictedly allocable capacity ensures the injection of gas on a firm basis at entry point(s) and the withdrawal of gas at explicitly dedicated exit point(s) and vice versa on a firm basis Can use this capacity with ‘explicitly dedicated exit point(s)’, but not in combination with other exit/entry points or VTP | bayernets, Fluxys TENP, OGE, GUD (called ‘BZK’ in Germany; if the distance between the entry and exit points is short, the product may be called ‘Shorthaul’)
The Fluxys Belgium (called ‘Wheeling and OCUC – Operational Capacity Usages Commitments”)© GTS 7)
REFERENCE PRICES

Only refers to the Capacity Part
RELATIONS

Methodology: Cost reflective, transparent, non-discriminatory

Adjustments: Rescaling, equalisation, benchmarking, storage, LNG, specific infrastructure
For yearly capacity

Reference prices

Reference prices: Yearly capacity price

Multipliers: Reflect the value of the non-yearly product

Seasonal factors: To incentivise efficient use of the transmission system

Reserve prices: For all non-yearly products
TAR NC Definition: A reference price is effectively a price for a firm capacity product with one year duration.
The TAR NC does not insist on a particular RPM.
Instead, it specifies the requirements for such methodologies: their aims and the possible adjustments within the RPM.
Chapter VII ‘Consultation requirements’ calls for a consultation document explaining how the proposed RPM meets such requirements.
The TAR NC requires a comparison of the resulting indicative reference prices to those derived from the clearly defined CWD counterfactual.
The TAR NC contemplates an initial NRA decision on a RPM, and a required consultation at least every five years thereafter.
TSOs / NRAs have to **ensure compliance with five principles when evaluating a certain RPM:**

- **Reproducibility:** network users should know the methodology to derive tariffs, should be able to reproduce the tariff calculations and should have the ability to forecast tariff developments over time.

- **Cost-reflectivity:** tariffs should reflect the costs incurred by the TSO.

- **Non-discrimination:** means that to the extent possible, TSOs should avoid cross-subsidies where some network users pay for others. The assessments set out for the CAA test the satisfaction of this principle.

- **Volume risk management:** one group such as intra-system network users should not face tariff hikes to compensate for the diminishing use of the network by another group such as cross-system network users.

- **Non-distortion of cross-border trade through reference prices** implies that reference prices derived in accordance with RPM should ensure non-distorted economic signals for cross-border trade.
Current reference price methodologies in the EU within the Entry-Exit Tariff System

- **Postage Stamp**
  - The same reference price at all entry and exit points

- **Capacity Weighted Distance (CWD)**
  - The reference price at each entry (or exit) point is set considering the contribution of that point to the total cost of the system: the ‘weight’ of each entry (or exit) point is measured by its capacity-weighted distance from all exit (or entry) points;

- **Virtual Point Based**
  - Similar to the CWD; however the ‘weight’ of each entry (or exit) point is calculated according to the distance of that point from a focal virtual point of the network. This virtual point can be either calculated mathematically (VP – A) or it can be determined geographically (VP – B);

- **Matrix**
  - It’s principle: the reference price at each entry (or exit) point should reflect the actual investment costs of the TSO.
## Current Reference Price Methodologies in the EU

<table>
<thead>
<tr>
<th>Country</th>
<th># of TSOs</th>
<th>Primary reference price methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P. Stamp</td>
</tr>
<tr>
<td>Austria</td>
<td>2</td>
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<tr>
<td>Belgium</td>
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<td></td>
</tr>
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<td>Bulgaria</td>
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<td>Croatia</td>
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<td>✓</td>
</tr>
<tr>
<td>Czech Rep</td>
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<td>✓</td>
</tr>
<tr>
<td>Denmark</td>
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<td>✓</td>
</tr>
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<td>Estonia</td>
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<td>✓</td>
</tr>
<tr>
<td>Finland</td>
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<td>✓</td>
</tr>
<tr>
<td>France</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>12</td>
<td>✓(11)</td>
</tr>
<tr>
<td>Greece</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Hungary</td>
<td>2</td>
<td>✓(2)</td>
</tr>
<tr>
<td>Ireland</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Italy</td>
<td>2</td>
<td>✓(2)</td>
</tr>
<tr>
<td>Latvia</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Lithuania</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2</td>
<td>✓(2)</td>
</tr>
<tr>
<td>Poland</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Portugal</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Romania</td>
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<td>✓</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Slovenia</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>Spain</td>
<td>2</td>
<td>✓(2)</td>
</tr>
<tr>
<td>Sweden</td>
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<td>✓</td>
</tr>
<tr>
<td>UK</td>
<td>4</td>
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</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>46</strong></td>
<td><strong>28</strong></td>
</tr>
</tbody>
</table>
**ADJUSTMENTS TO THE REFERENCE PRICE METHODOLOGY**

- **Benchmarking** by NRA: reference prices are adjusted so that the resulting values meet the competitive level of reference prices;
- **Equalisation**: same reference price is applied to some or all points within a homogeneous group of points;
- **Rescaling**: the reference prices at entry or at all exit points or both are adjusted either by multiplying their values by a constant or by adding to or subtracting from their values a constant.
- **Storage EX points**: a discount of at least 50% shall be applied unless and to the extent a storage facility which is connected to more than one transmission or distribution network is used to compete with an interconnection point.
- **Discount for increasing SOS**: may be applied to LNG and infrastructure developed with the purpose of ending the isolation of MSs
The primary use of rescaling is to ensure the recovery of allowed revenue while respecting the entry-exit split.

Rescaling can entail multiplying reference prices by a certain value, or adding / subtracting a certain value. The choice depends on the RPM used.

- **Multiplication** can calibrate desired locational signals up or down, maintaining their percentage differences, while permitting an adjustment of expected revenue to match the allowed transmission services revenue.

- **Addition** ensures the recovery of allowed revenue and can address the issue of zero or negative reference prices.

A simple example: Assume that tariffs post RPM are € 1, 2 and 3 for IP1, IP2 and IP3 respectively, but that they would only recover € 50 while the TSO’s allowed revenue are € 100.
**DISCOUNTS**

**Storage points**

**Default rule:** storage connected to 1 TSO only → entry and exit discounts of at least 50%  

**Exception 1:** storage connected to 2 TSOs and in competition with an IP  

**Exception 2:** storage connected to 1 TSO and 1 DSO in competition with an IP  

- TSO entry and exit points from/to storage

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**LNG entry points and other points to infrastructure to end isolation of MSs for security of supply purposes**

- TSO entry point from LNG  
- TSO entry and exit points from/to infrastructure (here: new IP) to end isolation of Country 2  

**Discounts possible at LNG entry point to reduce Country 2 dependence with IP Country 1**

**Discounts possible at the entry point or exit point of the new IP to end isolation of Country 2**
# Storage EE Tariffs

<table>
<thead>
<tr>
<th>Country</th>
<th>Discount to be applied to E/E tariffs</th>
<th>Entry from Storage to Network</th>
<th>Exit from Network to Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Free of charge</td>
<td></td>
<td>Highly discounted</td>
</tr>
<tr>
<td>Belgium</td>
<td>No discount</td>
<td>Free of charge</td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>70%</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>Croatia</td>
<td>No discount</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Czech Rep</td>
<td>No general discount applied. The NRA decides on storage E/E tariffs</td>
<td>No general discount applied. The NRA decides on storage E/E tariffs</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>Free of charge</td>
<td>Free of charge</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>85%</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>No general discount applied.</td>
<td>No general discount applied.</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>No discount on capacity change. TSOs decide on storage E/E tariffs</td>
<td>No discount on capacity change. TSOs decide on storage E/E tariffs</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>Applied when costs are allocated to each pipeline (14%)</td>
<td>Applied when costs are allocated to each pipeline (14%)</td>
<td></td>
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<tr>
<td>Latvia</td>
<td></td>
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<tr>
<td>Netherlands</td>
<td>25%</td>
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<tr>
<td>Poland</td>
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</tr>
<tr>
<td>Portugal</td>
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</tr>
<tr>
<td>Romania</td>
<td>No discount</td>
<td>No discount</td>
<td></td>
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<tr>
<td>Slovakia</td>
<td>No discount</td>
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<tr>
<td>Spain</td>
<td>Free of charge</td>
<td>Free of charge</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>Free of charge</td>
<td>Free of charge</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>No discount on capacity charge, free of charge from commodity charge</td>
<td>No discount on capacity charge, free of charge from commodity charge</td>
<td></td>
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<tr>
<td>Estonia</td>
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<tr>
<td>Finland</td>
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<td>Greece</td>
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<td>Luxembourg</td>
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<tr>
<td>Slovenia</td>
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</tbody>
</table>

No storage facility
Only for comparison purposes with proposed RPM
- All MSs will have to compare their RPM to CWD

CWD strikes balance between the conflicting objectives of

- Share of the allowed revenue to collect from each entry or exit point should be proportionate to its contribution to the cost of the system’s capacity and to the distance between it and all exit points or all entry points.
  - The resulting tariff would be uniform per unit of capacity and distance
Capacity weighted distance methodology

Part of the revenue to be recovered from capacity based transmission tariffs

The forecasted contracted capacity at each entry point or a cluster of entry points and at each exit point or a cluster of exit points

Where entry points and exit points can be combined in a relevant flow scenario, the shortest distance of the pipeline routes between an entry point or a cluster of entry points and an exit point or a cluster of exit points

Entry/exit split shall be 50/50

Parameters

Formulae

\[ AD_{En} = \frac{\sum_{all\ Ex} CAP_{Ex} \times D_{En,Ex}}{\sum_{all\ Ex} CAP_{Ex}} \]

\[ W_{c,En} = \frac{CAP_{En} \times AD_{En}}{\sum_{all\ En} CAP_{En} \times AD_{En}} \]

\[ R_{En} = W_{c,En} \times R_{\Sigma\ En} \]

\[ T_{En} = \frac{R_{En}}{FC_{En}} \]
CWD Calculation Example

1. **Distance matrix (1.c & 1.d)**
   - Entries: IP 1 (150 km, 80 km); IP 2 (120 km, 70 km)
   - Exits: IP 3 and Consumption
   - Total km: 270

2. **Forecasted contracted capacity (1.b)**
   - Entries: IP 1 (200 GWh/d); IP 2 (300 GWh/d)
   - Exits: IP 3 and Consumption
   - Total GWh/d: 500

3. **Allowed Revenue (1.a & 1.e)**
   - Total Allowed Revenue: 100,000 €
   - Entry %: 50%
   - Exit %: 50%

4. **Weight of costs (2.b)**
   - Entries: IP 1 and IP 2
   - Exit %: 44% for IP 3, 56% for Consumption
   - AD x CAP: 18,000, 24,000
   - Weight of costs: 31%, 69%

5. **Revenue Split (2.c)**
   - Entry: 50,000 €
   - Exit: 50,000 €

6. **Tariffs (2.e)**
   - Exits: IP 3 and Consumption
   - Total Tariff: 154 and 86

7. **Revenues per point (2.d)**
   - Entries: IP 1 and IP 2
   - Revenues: 15,421 and 34,579
Homogeneous group of points:
- Entry Ips, exit Ips, domestic entry points, domestic exit points, entry from storage, exit to storage, entry from LNG, exit to LNG, production entry points.
- Homogeneity does not necessarily imply identical network use: e.g. intra-system and cross-system network uses.
- The concept of ‘homogeneity’ does not itself depend on ‘vicinity’.

Cluster of entry or exit points:
- **Clustering is the treatment of a group of entry points or exit points as one entry point or one exit point prior to applying the RPM.** Such points can belong to a homogeneous group or be located near each other. With clustering, the selected homogeneous points or points in the vicinity of each other become a single ‘virtual’ point. The rules for ‘how to cluster’ are:
  - Clustering may apply to some points or all points of the same homogeneous group of points.
  - Clustering may apply to some points within the vicinity of each other.
  - It is not possible to cluster entry points with exit points.
- The capacity of a cluster is the sum of the capacities of the points it brings together.
- The RPM considers only a cluster in the aggregate, as opposed to its individual points, so the RPM produces a reference price for the cluster as a ‘commercial’ point although the ‘physical’ points still exist.
- Where the RPM requires geographical coordinates for a cluster, it is possible to use a capacity-weighted average of the coordinates of its constituent points, or another approach.
- No specific provision in the TAR NC restricts the use of clustering.
- In practice, the main motivation for clustering is a need to reduce the number of points for the application of the RPM. In the absence of clustering, it may be cumbersome and impractical for the RPM to determine reference prices for hundreds of entry and exit points. Clustering offers the advantage of simplified considerations.
- Shortest pipeline distance for CWD RPM:
  - Shortest distance of the pipeline routes between
    - an entry point or a cluster of entry points and an exit point or a cluster of exit points.
  - Clustering introduces two possibilities:
    - ‘Distance before cluster’: calculate the weighted average of the shortest pipeline distances of all physical points of the cluster. The weights can depend on the technical capacity.
    - ‘Cluster before distance’: select a focal point of the cluster, and then calculate the shortest distance of the pipeline routes from or to such a focal point. A dominant physical point of the cluster can constitute the focal point.

- TSO/NRA can consider such methodologies within a proposed alternative RPM (including a modified CWD), eg:
  - Average pipeline distance
  - Airline distance
The entry-exit split may be either an input to the RPM or an output.

Article 8(1)(e) requires the counterfactual CWD to use a 50 / 50 entry-exit split as an input.

The TAR NC does not define the entry-exit split for the proposed and approved RPM, but Article 30(1)(b)(v)(2) requires its publication.

In any case, the broader principles established by Article 13 of the Gas Regulation always apply.

TAR NC Resubmitted: Base case: 50/50, but NRA can modify
Based on cost drivers
And if better fulfils the following minimum objectives:
  Minimise cross-subsidisation between network users, (between cross border and domestic network users)
  Not create barriers to cross border trade
  Avoid differences between the allowed revenue and the actually obtained revenue
ARTICLE 5

Cost Allocation Assessments - CAA
The CAA is one of the main provisions of the TAR NC
It enters into force in 2017!!!
It is for assessing the trade-offs between intra-system and cross-system flows

- 2 tests:
  - Ratios on capacity
  - Ratios on commodity
- Assessments:
  - No strict rule but justification is needed if it exceeds the 10% threshold

Goal is to minimise cross-subsidies in tariffs between intra-system and cross-system network uses
The cost allocation assessments shall indicate the **degree of cross-subsidisation** between intra-system and cross-system network use based on the proposed reference price methodology.

**Test:**

\[
\text{Ratio}^{\text{intra\_cap}} = \frac{\text{Revenue}^{\text{intra\_cap}}}{\text{Driver}^{\text{intra\_cap}}}, \quad \text{Ratio}^{\text{cross\_cap}} = \frac{\text{Revenue}^{\text{cross\_cap}}}{\text{Driver}^{\text{cross\_cap}}}
\]

Where distance is used also as a cost driver, the capacity weighted average distance shall be used.

\[
\text{Comp}^{\text{cap}} = \frac{2 \times |\text{Ratio}^{\text{intra\_cap}} - \text{Ratio}^{\text{cross\_cap}}|}{\text{Ratio}^{\text{intra\_cap}} + \text{Ratio}^{\text{cross\_cap}}} \times 100\%
\]

Where the results of the cost allocation comparison index exceed 10%, the national regulatory authority shall provide the justification for such results.

**Cost drivers**
- Technical capacity; or
- Forecasted capacity; or
- Technical capacity and distance; or
- Forecasted contracted capacity and distance
The cost allocation assessments shall indicate the degree of cross-subsidisation between intra-system and cross-system network use based on the proposed reference price methodology.

Intra-system capacity ratio:

\[
\text{Ratio}_{\text{intra}} = \frac{\text{Revenue}_{\text{intra}}}{\text{Driver}_{\text{intra}}}
\]

\[
\text{Ratio}_{\text{cross}} = \frac{\text{Revenue}_{\text{cross}}}{\text{Driver}_{\text{cross}}}
\]

\[
\text{Comp}_{\text{comm}} = \frac{2 \times |\text{Ratio}_{\text{intra}} - \text{Ratio}_{\text{cross}}|}{\text{Ratio}_{\text{intra}} + \text{Ratio}_{\text{cross}}} \times 100\%
\]

Where distance is used also as a cost driver, the commodity weighted average distance shall be used.

Cost drivers:
- Amount of gas flows; or
- Amount of gas flows and distance

Where the results of the cost allocation comparison index exceed 10 percent, the national regulatory authority shall provide the justification for such results.
Revenue from intra-system network use at entry points shall be calculated as:

- (a) **the amount of allocated capacity** or, respectively, flows attributed to the provision of transmission services for cross-system network use at all entry points shall be deemed equal or proportionate to the amount of capacity or, respectively, flows attributed to the provision of transmission services for cross-system network use at all exit points;

- (b) **the capacity** and, respectively, flows, determined as set out in point (a) of this paragraph shall be used to calculate the transmission services revenue to be obtained from cross-system network use at entry points;

- (c) **the difference between the overall transmission services revenue to be obtained at entry points** and the resulting value referred to in point (b) of this paragraph shall be equal to the transmission services revenue to be obtained from intra-system network use at entry points.

How to allocate it to individual entry points?
It is not the relative importance of the cost drivers based on statistical analysis that matters but how the proposed methodology compares with the counterfactual on the basis of the same cost drivers.

For both assessments, the intent is to guarantee against undue cross-subsidies on capacity or commodity by checking that the revenue-to-cost ratio for intra-system use is broadly similar to the revenue-to-cost ratio for cross-system use. **Any ratio above 10% requires a justification** by the NRA in its decision under Article 27(4) following consultation under Article 26.
CAA CHALLENGES

- NRAs will have to determine how to carry out this assessment:
  - What are the cost drivers (most likely distance, capacity, commodity...)?
  - How to calculate distances for intra-system and cross-system flows?
  - How to split capacities used by both intra-system and cross-system flows (entry IPs, potentially IP with storages facilities...)?
  - All these parameters will require assumptions (e.g. flow scenarios).

- The way to implement this assessment is key. It will have a significant impact on the reference price methodology (Chapter 2, which will have to be applied before May 2019).
EXAMPLE OF COST ALLOCATION ASSESSMENTS

Consumption refers to ‘intra-system network use. It is forecasted contracted capacity, as per Article 5 provisions.

- The distances are then determined according to the approach chosen for CAA by the TSO or NRA (no mandatory approach in the TAR NC)

**Table A: Distances between Entries and Exits**

<table>
<thead>
<tr>
<th>Entry</th>
<th>IP 1</th>
<th>IP 2</th>
<th>IP Exit 5</th>
<th>IP 3</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG</td>
<td>650</td>
<td>820</td>
<td>840</td>
<td>420</td>
<td>460</td>
</tr>
<tr>
<td>IP 1</td>
<td>0</td>
<td>350</td>
<td>520</td>
<td>360</td>
<td>200</td>
</tr>
<tr>
<td>IP Entry 4</td>
<td>150</td>
<td>480</td>
<td>660</td>
<td>430</td>
<td>270</td>
</tr>
<tr>
<td>IP 2</td>
<td>350</td>
<td>0</td>
<td>230</td>
<td>430</td>
<td>270</td>
</tr>
<tr>
<td>IP 3</td>
<td>360</td>
<td>430</td>
<td>440</td>
<td>0</td>
<td>170</td>
</tr>
</tbody>
</table>

Driver: Capacity * Average Distance
In this case for average distance calculations the „flow scenario” approach is used, however it is also possible to not apply it since Article 5 on CAA does not make it a requirement.
Assumption:
• Contracted capacity at exit IPs corresponds to cross-system network use and contracted capacity at domestic consumption points correspond to intra-system network use.

<table>
<thead>
<tr>
<th>Average distance (km) for each entry point</th>
<th>to intra exits</th>
<th>to cross exits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG</td>
<td>460</td>
<td>663</td>
</tr>
<tr>
<td>IP 1</td>
<td>200</td>
<td>436</td>
</tr>
<tr>
<td>IP Entry 4</td>
<td>270</td>
<td>460</td>
</tr>
<tr>
<td>IP 2</td>
<td>270</td>
<td>328</td>
</tr>
<tr>
<td>IP 3</td>
<td>170</td>
<td>413</td>
</tr>
</tbody>
</table>

The average distance to the 4 IP exits

The distance to Consumption point
# Cost Drivers: Combination of Distance and Capacity

## Capacity (GWh/d)

<table>
<thead>
<tr>
<th>Exit</th>
<th>IP 1</th>
<th>IP 2</th>
<th>IP Exit 5</th>
<th>IP 3</th>
<th>Consumption</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNG</td>
<td>360</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP 1</td>
<td>580</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP Entry 4</td>
<td>580</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP 2</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP 3</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>60</td>
<td>260</td>
<td>220</td>
<td>3,000</td>
<td></td>
</tr>
</tbody>
</table>

**Drivers for Exit Points**

1. Drivers for Exit Points: \( \frac{51,730}{30,531} + \frac{141,283}{89,785} = 844,650 \)

## Average distance (km) for each exit point to the group of entry points

<table>
<thead>
<tr>
<th>Exit</th>
<th>IP 1</th>
<th>IP 2</th>
<th>IP Exit 5</th>
<th>IP 3</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>345</td>
<td>509</td>
<td>543</td>
<td>408</td>
<td>282</td>
</tr>
</tbody>
</table>

**Entry\_Cap\_cross, i = \frac{\sum Exit Cap\_cross, i}{\sum Entry Cap\_i} \times Entry Cap\_i**

**Entry\_IP1, Cross = (150+60+260+220)/(360+580+580+500+40)*580=194**

**Entry\_IP1, intra = 580-194=386**

\( Driver_{exit,i} = Distance_{exit} \times Capacity_{exit,i} \)
# TABLE D: CAPACITY REVENUE. TARIFFS. ALLOCATION OF REVENUES AND CONDUCTION OF TEST

<table>
<thead>
<tr>
<th></th>
<th>Exit tariffs</th>
<th>IP 1</th>
<th>IP 2</th>
<th>IP Exit 5</th>
<th>IP 3</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity revenue (€)</td>
<td>800,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry share</td>
<td>40 %</td>
<td>98</td>
<td>147</td>
<td>220</td>
<td>147</td>
<td>122</td>
</tr>
<tr>
<td>Exit share</td>
<td>60 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry revenues</td>
<td>320,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit revenues</td>
<td>480,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry revenues dedicated for Intra</td>
<td>212,869 Acc. to Art 5(5)(c)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry revenues dedicated for Cross</td>
<td>107,131 Acc. to Art 5(5)(b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit revenues from Intra</td>
<td>366,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit revenues from Cross</td>
<td>113,060</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue for Intra</td>
<td>578,869</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue for Cross</td>
<td>220,191</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost driver for Entry Intra</td>
<td>385,728</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost driver for Exit Intra</td>
<td>844,660</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost driver for Intra</td>
<td>1,230,388</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost driver for Entry Cross</td>
<td>314,570</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost driver for Exit Cross</td>
<td>313,330</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost driver for Cross</td>
<td>627,900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Entry Tariffs**

<table>
<thead>
<tr>
<th>LNG</th>
<th>265</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP 1</td>
<td>106</td>
</tr>
<tr>
<td>IP Entry 4</td>
<td>159</td>
</tr>
<tr>
<td>IP 2</td>
<td>133</td>
</tr>
<tr>
<td>IP 3</td>
<td>106</td>
</tr>
</tbody>
</table>

\[
\text{Ratio}_{\text{intra}} = \frac{\text{Revenue}_{\text{intra}}}{\text{Driver}_{\text{intra}}}
\]

<table>
<thead>
<tr>
<th>Ratio intra</th>
<th>0.4705</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio cross</td>
<td>0.3507</td>
</tr>
</tbody>
</table>

**CAA** 29.18%

justification required
How to calculate CAA?

1. Distance matrix

<table>
<thead>
<tr>
<th>km</th>
<th>IP 1</th>
<th>IP 2</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP 1</td>
<td>150</td>
<td>-</td>
<td>80</td>
</tr>
<tr>
<td>IP 2</td>
<td>120</td>
<td>-</td>
<td>70</td>
</tr>
</tbody>
</table>

2. Forecasted contracted capacity

<table>
<thead>
<tr>
<th>GWh/d</th>
<th>IP 3</th>
<th>Consumption</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP 1</td>
<td>-</td>
<td>-</td>
<td>200</td>
</tr>
<tr>
<td>IP 2</td>
<td>-</td>
<td>-</td>
<td>300</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

3. Forecasted Revenue

<table>
<thead>
<tr>
<th>€</th>
<th>IP 3</th>
<th>Consumption</th>
<th>Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP 1</td>
<td>-</td>
<td>-</td>
<td>21,963</td>
</tr>
<tr>
<td>IP 2</td>
<td>-</td>
<td>-</td>
<td>28,037</td>
</tr>
<tr>
<td>Revenues</td>
<td>15,421</td>
<td>34,579</td>
<td></td>
</tr>
</tbody>
</table>

4. Capacity-weighted average distance

<table>
<thead>
<tr>
<th>km</th>
<th>i-s AD</th>
<th>c-s AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit IP 3</td>
<td>-</td>
<td>132</td>
</tr>
<tr>
<td>Exit Consumption</td>
<td>74</td>
<td>-</td>
</tr>
<tr>
<td>Entry IP 1</td>
<td>80</td>
<td>150</td>
</tr>
<tr>
<td>Entry IP 2</td>
<td>70</td>
<td>120</td>
</tr>
</tbody>
</table>

5. Cost driver (example: AD x CAP)

<table>
<thead>
<tr>
<th>i-s CAP</th>
<th>c-s CAP</th>
<th>i-s CD</th>
<th>c-s CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit IP 3</td>
<td>-</td>
<td>100</td>
<td>13,200</td>
</tr>
<tr>
<td>Exit Consumption</td>
<td>400</td>
<td>-</td>
<td>29,600</td>
</tr>
<tr>
<td>Entry IP 1</td>
<td>160</td>
<td>40</td>
<td>12,800</td>
</tr>
<tr>
<td>Entry IP 2</td>
<td>240</td>
<td>60</td>
<td>16,800</td>
</tr>
<tr>
<td>Sum</td>
<td>800</td>
<td>200</td>
<td>59,200</td>
</tr>
</tbody>
</table>

6. Revenue Allocation

<table>
<thead>
<tr>
<th>€</th>
<th>i-s Rev</th>
<th>c-s Rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit IP 3</td>
<td>-</td>
<td>15,421</td>
</tr>
<tr>
<td>Exit Consumption</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Entry IP 1</td>
<td>17,570</td>
<td>4,391</td>
</tr>
<tr>
<td>Entry IP 2</td>
<td>22,430</td>
<td>5,607</td>
</tr>
<tr>
<td>Sum</td>
<td>74,579</td>
<td>25,421</td>
</tr>
</tbody>
</table>

Assessment

27.0%
Justification required

Ratio calculation

<table>
<thead>
<tr>
<th>Ratio</th>
<th>i-s</th>
<th>c-s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.26</td>
<td>0.96</td>
</tr>
</tbody>
</table>
RESERVE PRICES
**RESERVE PRICES**

- **Reference Price**
  - Relevant for: price for firm capacity product with duration of one year, used to derive reserve prices, applicable at both IPs and non-IPs.
  - Reference price is equal to the price of firm capacity product with a duration of one year.

- **Auction per CAM NC**
  - Relevant for: all IPs and some non-IPs where CAM NC and TAR NC are applied.
  - Reference price is used as a reserve price for a particular capacity product.

- **Reserve Price**
  - Used to calculate the reserve prices for non-yearly products.
  - Is equal to the reserve prices for yearly product.

- **For Non-Yearly Products**
  - Firm: proportion of ref. price × multiplier
  - Interruptible: proportion of ref. price × multiplier × discount

- **For Yearly Product**
  - Firm: proportion of ref. price × multiplier × sf
  - Interruptible: proportion of ref. price × multiplier × sf × discount

- **Price Applicable at Non-IPs**
  - Different prices for different products.
**Reserve Prices For Non-Yearly Products**

- Reserve prices serve as a floor in the relevant capacity auction
- CAM NC Five standard capacity products:
  - Yearly, quarterly, monthly, daily, within-day
- For yearly standard firm capacity the reference prices shall be used as reserve prices.
- TAR NC Defines the ranges for the respective multipliers
  - Quarterly and Monthly: 1-1,5
  - Daily and WD: 1-3;
    - in duly justified cases the level maybe less than 1 but higher than 0, or higher than 3
    - By April 2023 for daily and within-day shall be no more than 1,5, if by April 2021 the Agency issues a recommendation on this
- Same multiplier should be applied at a given IP for the same standard capacity product, however it could be different at all the IPs
- Non-within-day products must have reserve prices based on the number of days in the product, while within-day products must have reserve prices based on the number of hours.

\[
P_{st} = m_i \times (p_y/365) \times d \quad P_{st} = m_{WD} \times (p_y/8760) \times h
\]
Seasonal factors

The purpose of seasonal factors is to foster efficient system use by allowing higher reserve prices in months with high utilisation rates, and lower reserve prices in low-utilisation months. ENTSOG considers that such pricing:

- provides incentives to shift gas flows away from high demand periods;
- avoids additional unnecessary investment, by encouraging network use in summer and discouraging it in winter.

- TSOs can apply different set of seasonal factors per IP.
- The 12 seasonal factors for monthly products provide the basis for calculating the seasonal factors for the other three capacity products: quarterly, daily and within-day.
- Application of seasonal factors:

\[ P_{st} = (m_i \times s_{f_1}) \times \frac{(p_y/365) \times d}{1} \]
\[ P_{st} = (m_{WD} \times s_{f_{WD}}) \times \frac{(p_y/8760) \times h}{1} \]
**Example of SF determination**

**For monthly standard capacity products:**

Seasonal factors for monthly products are calculated using as an input the forecasted flows for each month. Only if the forecasted flows for one month (or more) are 0, forecasted contracted capacity should be used in the calculations.

(a) **For each of the months, calculate the forecasted flows or forecasted contracted capacity.**

\[ \text{Month}_i \rightarrow \text{Flows}_i \]

(b) **For each of the months, calculate the usage rate for each month**

\[ \text{Usage rate}_i = \frac{\text{Flows}_i}{\sum_{i=1}^{12} \text{Flows}_i} \]

(c) **For each of the months, calculate the primary factor:**

\[ \text{Primary factor}_i = \text{Usage rate}_i \times 12 \]

* If one of the above calculated primary factors is equal to 0, then this value needs to be corrected. Its value will be changed to whichever is lower: (1) the lowest of the other primary factors; or (2) 0.1.

(d) **For each of the months, calculate the initial level of the seasonal factors:**

\[ \text{Initial SF}_{\text{monthly},i} = \text{Primary factor}_i^s \]

\( s \) is applied in order to penalise / incentivise more clearly the months that deviate the most from a flat usage. With \( s = 1 \), the seasonal factors are directly proportional to the use for the system. With \( 0 \leq s < 1 \), seasonal factors would be ‘softened’ and can be utilised for cases where flow changes are extreme between the different periods.
Monthly multipliers (Apr-Sept), average: 1.29

Monthly multipliers (Oct-March), average: 1.98
Daily multipliers (Apr-Sept), average: 1.9

Daily multipliers (Oct-March), average: 3.1
RESERVE PRICES:

INTERRUPTIBLE CAPACITY PRICING

Only for IPs
## Pricing of Interruptible Capacities

<table>
<thead>
<tr>
<th>Country</th>
<th>Approach to Interruptible Capacity</th>
<th>Discount applied</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ex ante discount</td>
<td>Ex post discount</td>
</tr>
<tr>
<td>Austria</td>
<td>✓ (2)</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Croatia</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>No interruptible capacity</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>✓ (2)</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>✓ (12)</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>No interruptible capacity</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>✓ (2)</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>✓ (2)</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Slovakia</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>✓ (Enagas)</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>✓ (National Grid)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Discount Compensation**

**Ex-Ante**
- More elaborated in TAR NC
- Same discount in a given IP for the same standard capacity product
- Provides a reserve price for a standard interruptible product:

  \[ D = \text{Pro} \times A \times 100 \]

  \[ \text{Pro} = \frac{(N \times D_{int})}{D \times (\text{CAPav int} / \text{CAP})} \]

**Ex-Post**
- Compensates in the event of interruption
- May be applied if no interruptions occurred due to physical congestion in the preceding gas year

Ex post compensation paid for each interrupted day shall be equal to **3 times the reserve price of daily firm standard capacity.**

- \( A' \) applies to reflect the estimated economic value of the type of standard interruptible capacity product. In practice, it reflects that the costs of hedging interruption for a network user are higher than the probability of interruption
- Pro and A can be calculated separately for all 5 categories of standard capacity products and for each IP
Ex-ante calculation

Standard capacity product
- \( D = 720 \) h
- \( CAP = 1,000,000 \) units

Expected scale of interruption
- \( N = 6 \) interruptions
- \( D_{int} = 12 \) h
- \( CAP_{av,int} = 100,000 \) units

Probability factor
\[
Pro = \frac{6 \times 12}{720} \times \frac{100,000}{1,000,000} = 0.01
\]

Adjustment factor
- \( A = 20 \)

Discount
\[
D_{\text{ex ante}} = 0.01 \times 20 \times 100\% = 20\%
\]
REGULATORY ACCOUNT
A regulatory account records the difference between the TSO’s allowed revenues and the revenues actually obtained during the same period.

In case of non-price cap regimes

The purpose of the regulatory account is to compensate under- and over-recovery for a more stable and predictable TSO tariff from one period to the next, for the benefits of network users.
The TAR NC requires each TSO functioning under a non-price cap regime to have one regulatory account recording the information on under- / over-recovery.

- The NRA can decide to require aggregated information, or information differentiated by source / aim showing the gap for each item.

If non-transmission services are included:
- It could be split into sub accounts
- Compensation results in less tariff variation
- But will result in cross-subsidisation
The account is determined annually:

- Based on the difference between allowed and actually collected revenue
- In case of incentive schemes it can be partial
- NRA can decide to direct the auction premium to reduce physical congestion

Adjustment:

- The difference becomes a future input to the applied RPM:
  - Rescaling: Over recovery reduces it, Under recovery raises
    - Subject to the principle of avoiding significant differences between transmission tariffs in consecutive tariff periods
- Revenue reconciliation period:
  - It may be longer than a tariff period spreading it...
- CRRC could be an option at non-IPS
Application dates: overview

**Entry into force, 6 April 2017**
- Ch. I ‘General provisions’
- Ch. V ‘Pricing of bundled capacity and capacity at VIPs’
- Ch. VII ‘Consultation requirements’
- Ch. IX ‘Incremental capacity’
- Ch. X ‘Final and transitional provisions’

**1 October 2017**
- Ch. VI ‘Clearing and payable price’
- Ch. VIII ‘Publication requirements’

**31 May 2019**
- Ch. II ‘Reference price methodologies’
- Ch. III ‘Reserve prices’
- Ch. IV ‘Reconciliation of revenue’