![ACER — Agency for the Cooperation of Energy Regulators]

Revised chapter on Cost Allocation and determination of the reference price
of the draft Framework Guidelines on rules regarding harmonised transmission tariff structures

PC_2013_G_03

Public consultation document

18 July 2013

This consultation document is issued to invite comments on chapter 3 of the Draft Framework Guidelines on rules regarding harmonised transmission tariff structures for gas, and focuses on *Cost allocation and the determination of the reference price*.

The final version of chapter 3 will be included in the endorsed Draft Framework Guidelines on rules regarding Harmonised Transmission Tariff Structures for gas of 16 April 2013, while sections 3.1, 3.2 and 3.7 will be integrated into chapters 1 and 2.

The consultation will allow stakeholders to assess policy proposals by answering to the relevant questions or provide any other comment, which they find relevant.

This consultation is open to all interested stakeholders. Comments shall be submitted via on-line questionnaire by:

17 September 2013
23.59 hrs (CET)

Related Documents

1. Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC, OJ L 211, 14.8.2009
2. Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005, OJ L211, 14.8.2009
3. Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators, OJ L211, 14.8.2009

3. Cost Allocation Methodologies and determination of the reference price

The choice of a methodology shall reflect system characteristics in order to best achieve the objectives of Framework Guidelines on Rules regarding harmonised transmission tariff structures for gas[1], and in particular those of non-discrimination, competition and promotion of cross-border trade.

At least every 4 years, the NRAs shall assess or approve all assumptions regarding the stability and evolution of the input parameters to the tariff methodologies against relevant available technical and market data and outlooks.

In particular, the Network Code shall develop appropriate forecasting models, taking into account the relevant TYNDPs, for the input parameters of the tariff methodology.

3.1 Definitions

For the purpose of these Framework Guidelines, the following definitions apply:

Locational signals mean different price levels that provide incentives to network users in order for the network operators to achieve an efficient operation and/or expansion of the gas system.

Costs are operational expenditures, depreciation and the cost of capital (which includes the cost of debt and the cost of equity). The costs are determined for a specific year and shall be expressed in the prices of that specific year. They can be determined using either observed costs or incremental costs.

3.2 Publication requirements

The TSO or, where relevant, the NRA shall publish the following information, adjusted to the level necessary to apply the methodology:
1. Inputs on the allowed revenues

    a. Allowed revenues;

    b. Capacity/commodity split;

    c. Entry-exit split;

2. Transmission network characteristics:

    a. Capacity data (technical and booked) relating to all network points to which the tariff methodology applies, allowing the total entry capacity and the total exit capacity to be identified;

    b. Flows for the network points to which the tariff methodology applies, allowing the total flows from entry points and the total flows to exit points to be identified;

---
[1] See Section 1.2

c. Reference conditions for the determination of capacity (technical or booked) or flows:

   i. Peak conditions[2] associated with measured values (technical capacity, flows);

   ii. Average value considered for contractual values (booked capacity).

d. The network representation used as an input to the methodology, clarifying whether this is detailed or simplified, consistent with the chosen allocation methodology that, when appropriate, shall include segments[3] and allow evaluating potential cost drivers from entry points to exit points, including distances, pipeline sizes, terrain characteristics and others that are deemed relevant by the concerned TSOs. The Network Code shall define possible objective approaches to distance and average distance and shall give guidance on how to simplify the network representation in a transparent, non-discriminatory and objective way;

e. Additional technical information about the network, including pipeline lengths and diameters, as well as information on the compressor stations' power;

3. The cost concepts used

   a. Observed costs reflect the costs of the existing system which can be determined using:
      i. Historical costs: the costs registered when building the existing system;
      ii. Replacement costs (modern equivalent): the costs if the existing system were to be entirely built again in a specific year.

      The observed costs shall be recorded in the audited financial statements or shall be approved by the NRA if the regulatory accounting rules are different from the commercial accounting rules;

   b. Incremental costs reflect the costs of expanding the system. This approach captures:
      i. Long run average incremental costs: the costs required for developing capacity to meet additional demand (and provide more capacity);
      ii. Standardised costs of expansion of the system: the unit price for building new assets, for instance a pipeline, with a specific length and diameter;
      iii. Investment plan based costs: the costs that are estimated in a specific investment plan for building additional capacity;

   c. Where relevant, indexation and depreciation have to be specified,

   and their purpose is:

   a. on the one hand, to determine a structure for the allocation of costs among the points, i.e. to determine what should be the relative reference price of one point in the system in comparison to the other points,

   b. on the other hand, to calculate the allowed revenue.

   The cost concept underlying the structure of the cost allocation may differ from the one

---

[2] The reference conditions for the characterisation of these inputs shall be published and assessed against the relevant supply standard (as in Regulation (EC) No 994/2010) for the system
[3] The network is split into segments of pipelines connecting entry points, exit points and nodes. A node is a junction where pipelines meet.

used to establish the allowed revenue. Therefore, a secondary adjustment may be necessary to recover the allowed revenue according to capacity bookings assumptions (see 3.5.1 Rescaling).

3.3 General principles on the determination of the reference price

3.3.1 The capacity-commodity split

The collection of the revenues shall be based primarily on capacity charges.

Subject to approval or determination by the NRA a specific charge related to the volume actually flowed by shippers could be established to cover costs that are mainly driven by the volume actually flowed by shippers (such as compressor fuel cost). Where applied, this charge shall be levied equally for all entry points and equally for all exit points, based on the actual flows of the individual shippers.

3.3.2 The entry-exit split

The entry-exit split, i.e. the split between the revenue to be recovered from entry points of an entry-exit zone in a Member State and the revenue to be recovered from its exit points of an entry-exit zone in a Member State, can be either a result of or an input to the applied cost allocation methodology.

Network Code on Tariffs shall specify that if the split is an input to the applied cost allocation methodology, it will be determined or approved by the NRA.

Where better fulfilling the objectives listed in section 1.2 of the Framework Guidelines, in particular single market integration, avoidance of barrier to cross border trade and of cross-subsidies between different types of network users, especially between cross-border and domestic network users, the Network Code on Tariffs shall specify that, in setting or approving the cost allocation methodology, the NRA may apply a split based on cost drivers, such as capacity and distance. Otherwise, the NRA shall adopt a 50:50 split, as a general principle.

3.3.3 Circumstances influencing the choice of a cost-allocation methodology and of the necessary inputs

The Network Code on Tariffs shall further elaborate on the circumstances when to apply a certain primary methodology, secondary adjustments, as well as on the consequences of the choices with regard to reaching the objectives of these Framework Guidelines.

When more than one methodology may be suitable for a given topology, the NRA or the TSO shall choose the one to be applied.

The use of a postage stamp methodology shall be limited to the following three cases:

- networks where the difference between the average distance travelled by transit flows and the average distance travelled by domestic flows does not exceed a threshold, which shall be

determined in the Network Code;

- networks where more than 90% of the capacity is dedicated to the domestic market; or
- networks where more than 90% of the capacity is dedicated to transit.

Where this is not the case, the selected methodology shall be different from postage stamp and shall take account of the following considerations:

- In a network where a unique geographical node where all the flows converge can be identified, the virtual point based methodology is recommended;
- The choice for or against the matrix methodology and the distance-to-the-virtual-point methodology shall consider both the drawback of necessary network representation simplifications and the benefit in cost reflectivity, as compared to the capacity-weighted distance approach.

Regarding assumptions related to cost concepts, incremental costs may be appropriate in expanding systems, either resulting from an increase in demand, or triggered by a change in the general system sourcing (including a change from exporting to importing or transit country). Conversely, the use of observed costs may be favoured for networks presenting constant or decreasing consumptions, facing limited no change in the system sourcing.

Regarding assumptions related to capacity, the TSOs communicate capacity values for each entry and exit point in the system at reference conditions. Flows in the system may be used to characterise the capacity. However, unstable flow patterns decrease the quality of forecasts. The Network Code shall define, in relation to unstable flow patterns what forecast quality cannot be used and provide appropriate proxies instead.

The capacity assumption shall be consistent with the economic signals expected from the chosen allocation methodology: (i) technical capacity shall be favoured in combination with allocation methodologies providing locational signals, while (ii) the application of booked capacity shall be limited to allocation methodologies that do not provide such signals.

3.4 Main cost allocation methodologies

One and the same primary cost allocation methodology shall apply to all points, regardless of whether they are entries or exits. This rule shall equally apply to entry-exit-zones which include several TSO networks within a Member State.

The Network Code on Tariffs shall specify that the choice of a cost allocation methodology is limited to the 4 generic primary cost allocation methodologies described below. The choice of a given methodology shall take a balanced approach between reaching cost reflectivity and transparency.

3.4.1 Primary cost allocation methodologies

3.4.1.1 Postage stamp

The postage stamp methodology foresees the same reference price at all entries and the same reference price at all exits[4]. The required inputs are the allowed revenue, the entry-exit split and the assumptions on capacity bookings. The reference price for each category of points is given by the target revenue for entry (respectively exit) points divided by the total booked capacity which is assumed for entry points (respectively exit) points.

$$T_{En} = \frac{R_{En}}{BC_{\sum En}}$$

$$T_{Ex} = \frac{R_{Ex}}{BC_{\sum Ex}}$$

Where:
T_{En}: annual reference price at entry points to the system
T_{Ex}: annual reference price at exit points from the system
R_{En}: Revenue to be collected from entry points
R_{Ex}: Revenue to be collected from exit points
$BC_{\sum En}$: Total booked capacity at entry points
$BC_{\sum Ex}$: Total booked capacity at exit points

3.4.1.2 Capacity-Weighted Distance approach

This methodology assumes that the share of the allowed revenue to be collected from each point should be proportionate to its contribution to the cost of the capacity of the system. This share of the allowed revenue, corresponding to the reference price, is based on a (uniform) unit price per capacity per distance.

Variant A
Steps to follow:
1. Define technical capacity at each entry and exit point; define forecasted booked capacity at each entry and exit point; [define (ex-ante) the revenues to be collected from entry points and the share of revenue cap to be collected from exit points, by applying the entry-exit split to total allowed revenues]:

---

[4] Thus, this methodology does not provide any locational signal.

C_{E_i}: Capacity at entry point i
C_{X_j}: Capacity at exit point j

BC_{E_i}: Forecasted Booked Capacity at entry point i
BC_{X_j}: Forecasted Booked Capacity at exit point j

R_E: Revenues to be collected from entry points
R_X: Revenues to be collected from exit points

2. Calculate distance between each entry point and each exit point in the system[5];

$$\left[D_{E_i X_j}\right]: matrix\ of\ the\ distances\ from\ entry\ point\ i\ to\ exit\ point\ j$$

3. Calculate the proportion of technical or booked entry (respectively exit) capacity at each point relative to the total technical or total booked entry (respectively exit) capacity;

$$P_{E_i} = \frac{C_{E_i}}{\sum C_E}\ or\ P_{E_i} = \frac{BC_{E_i}}{\sum BC_E}\ where\ P_{E_i}\ is\ the\ proportion\ factor\ of\ entry\ point\ i$$
$$P_{X_j} = \frac{C_{X_j}}{\sum C_X}\ or\ P_{X_j} = \frac{BC_{X_j}}{\sum BC_X}\ where\ P_{X_j}\ is\ the\ proportion\ factor\ of\ exit\ point\ j$$

4. For each entry (respectively exit) point , calculate capacity-weighted average distance to all exit (respectively entry) points; average distance is weighted by technical capacity:

$$AD_{E_i} = \sum P_{X_j} \times D_{E_i X_j} where\ AD_{E_i}\ is\ the\ capacity\ weighted\ average\ distance\ from\ entry\ i$$
$$AD_{X_j} = \sum P_{E_i} \times D_{X_j E_i} where\ AD_{X_j}\ is\ the\ capacity\ weighted\ average\ distance\ from\ exit\ j$$

5. Determine the weight of each entry (respectively exit) point as the ratio between the product of its <u>forecasted *booked*</u> capacity with its average distance and the sums of such products for all entry (respectively exit) points:

$$W_{E_i} = \frac{BC_{E_i} \times AD_{E_i}}{\sum BC_{E_i} \times AD_{E_i}}\ where W_{E_i}\ is\ the\ weight\ of\ entry\ point\ i$$
$$W_{X_j} = \frac{BC_{X_j} \times AD_{X_j}}{\sum BC_{X_j} \times AD_{X_j}}\ where W_{X_j}\ is\ the\ weight\ of\ exit\ point\ j$$

6. Determine the revenues to be recovered from each entry (respectively exit) point by multiplying the revenues to be collected from entry (respectively exit) points by the weight of each entry (respectively exit) point:

$$R_{E_i} = W_{E_i} \times R_E\ where\ R_{E_i}\ is\ the\ revenue\ to\ be\ collected\ from\ entry\ point\ i$$
$$R_{X_j} = W_{X_j} \times R_X\ where\ R_{X_j}\ is\ the\ revenue\ to\ be\ collected\ from\ exit\ point\ j$$

---

[5] This can be done by calculating the shortest distance from each entry- to exit-points

7. Determine reference prices by dividing the share of the revenues to be collected from a point by its forecasted booked capacity;

$$T_{E_i} = \frac{R_{E_i}}{BC_{E_i}} \, where \, T_{E_i} \text{ is the reference price at entry point } i$$

$$T_{X_j} = \frac{R_{X_j}}{BC_{X_j}} \, where \, T_{X_j} \text{ is the reference price at exit point } j$$

Variant B

Whereas variant A addresses all combinations of entry and exit points in the calculations, variant B relies on input from the TSO relating to peak flow assumptions, in order to:

- restrict the calculation to relevant combinations of entry and exit points, as used by the network users;
- identify to which extent the capacity from each entry (or to each exit) point contributes to the total capacity of a connected exit (or entry) point.

As a result, the calculations presented under steps 1,2, 4 and 5 above are only carried out for the relevant combinations of entry and exit points, and step 3 is based on capacities able to meet peak flow simulations as submitted by the TSO to the NRA.

3.4.1.3 Virtual point-based approach

The principle of the virtual point-based approach is to determine entry and exit reference prices for each point to which the tariff applies by weighting capacity at these points according to their distance to a virtual point. The "virtual point" (theoretical location) can be either determined mathematically (Variant A) or geographically (Variant B).

Variant A

Where it is difficult to specify an appropriate geographical point in the network (typically this is the case in meshed networks), the virtual point can be determined mathematically[6]. The virtual point is accounted for by adjusting the initial reference prices produced by the steps below so that the average distances from entry points to the virtual point and average distances from virtual point to exit points reflect the assumed entry-exit split.

First, a network representation is developed and divided into segments.

1. The first step is to identify capacity used at peak[7] at each of these segments.

   This is achieved by minimising the flow multiplied by the distance (i.e. flow distance) such that the peak exit flows (capacity used) is matched by the assumptions of the peak entry flows. This gives a flow distance for each segment in the direction of flow.

---

[6] Please note that this Variant of the virtual point based approach can only be used with incremental costs but not with observed costs.
[7] See possible assumptions on capacity in Section 3.2

2. The second step is to calculate the marginal distances per entry and exit point

A node is chosen on the network arbitrarily to act as a reference node for calculating the marginal distance of flows to and from exit and entry points (the choice of reference node is not important as there is an adjustment, described below, to find the 'actual' virtual point). For each entry point in turn, we add a small increase in supply, and then sum the flow distances in each segment, from that entry point to reach the reference node. Similarly, for each exit point in turn we add a small amount of demand and sum the flow distances in each segment from the reference node to that exit point. Note that where the flows in these summations are against the direction of flow for that segment as determined in step 1, they will be recorded as negative values. The marginal distance is calculated for each point by dividing these flow distances by the small increase in supply or demand. We have therefore generated, for all exit and all entry points, a marginal distance.

Since the marginal distance is calculated for each entry and exit point on the basis of a reference node which is chosen arbitrarily a correction is required to these marginal distance values. The next step is to locate the actual virtual point. This is done by adding to all entry marginal distances or subtracting from all exit marginal distances the same constant.

We can calculate this constant in the case of a 50:50 entry-exit split, by solving the following equation: the sum for each entry point of the marginal distance plus the constant (where this is greater than zero) divided by the total number of entry points equals the sum for each exit point of marginal distance less the constant (where this is greater than zero) divided by the total number of exit points.

The effect of adding this constant to the marginal distances at all entry points and subtracting this from the marginal distance at all exit points thus moves the reference node to the 'actual' virtual point. This is the virtual point in the network where average distance for entry and average distance for exit reflect the entry-exit split. This can be shown in the equation below:

$$Split_{en} \cdot \frac{\sum max(0, en_i + d)}{N_i} = Split_{ex} \cdot \frac{\sum max(0, ex_j - d)}{N_j}$$

Solve for d, where:

$Split_{en}$ is the share of revenue to be collected from entry points

$Split_{ex}$ is the share of revenue to be collected from entry points

en_i is the marginal distance for all entry points i

ex_j is the marginal distance for all exit points j

N_i is the number of entry points

N_j is the number of entry points

d is the constant factor to adjust the marginal distances

3. The third step is to calculate the unit reference price per entry and exit point

Then, multiply these adjusted marginal distances by the expansion constant and annuitisation factor to determine reference price.[8]

Variant B

Variant B is appropriate in systems with a single dominant node which can be clearly identified as reference virtual point. This may be the case in non-meshed networks.

Steps to follow:

1. Define capacity at each entry and exit point:

C_{E_i}: Capacity at entry point i
C_{X_j}: Capacity at exit point j

BC_{E_i}: Forecasted Booked Capacity at entry point i
BC_{X_j}: Forecasted Booked Capacity at exit point j

2. Determine the geographical location of the virtual trading point:

The virtual point can be determined geographically by selecting a dominant node in the network where most flows occur. The virtual point can be also determined geographically based on the capacity weighted average geographical locations of all entry and exit points.

   a. Calculate the proportion of entry (or exit) capacity at each point relative to the total entry and exit capacity:

$$P_{E_i} = \frac{C_{E_i}}{\sum C_E + \sum C_X} \; where \; P_{E_i} is \; the \; proportion \; factor \; of \; entry \; point \; i$$

$$P_{X_j} = \frac{C_{X_j}}{\sum C_E + \sum C_X} \; where \; P_{X_j} is \; the \; proportion \; factor \; of \; exit \; point \; j$$

   b. Multiply the geographical locations (longitude and latitude) of each entry (and exit) point with its proportion factor:

$$L_{E_i} = \left[long_{E_i} \times P_{E_i}; lat_{E_i} \times P_{E_i} \right],$$
$$where \; L_{E_i} \; is \; the \; capacity \; weighted \; geographic \; location \; of \; entry \; point \; i$$
$$L_{X_j} = \left[long_{X_j} \times P_{X_j}; lat_{X_j} \times P_{X_j} \right],$$
$$where \; L_{X_j} \; is \; the \; capacity \; weighted \; geographic \; location \; of \; exit \; point \; j$$

   c. Summing of the capacity weighted geographic locations to determine location of the virtual point:

---

[8] The expansion constant is a figure used to represent the standard annual cost of constructing and operating one unit of gas transmission pipeline and is homogeneous to m3/day per km or transporting one unit of gas by one kilometer.

$$L_{VP} = \sum L_E + \sum L_X \ where \ L_{VP} \ is \ the \ location \ of \ the \ virtual \ point$$

3. Calculate distance between each entry point and the virtual point as well as each exit point and the virtual point:

$$\left[D_{E_iVP}\right]: distance \ from \ entry \ point \ i \ to \ VP$$

$$\left[D_{X_jVP}\right]: distance \ from \ exit \ point \ j \ to \ VP$$

4. Calculate the revenue to be collected from all entry points and all exit points from the capacity-weighted distance to the virtual point.
Calculate the capacity-weighted distance to the virtual point for entry and exit points separately:

$$DC_{E_iVP} = D_{E_iVP} \times \frac{C_{E_i}}{\sum C_E};$$

$$where \ DC_{E_iVP} \ is \ the \ capacity$$
$$- weighted \ distance \ from \ entry \ point \ i \ to \ the \ virtual \ point$$

$$DC_{X_jVP} = D_{X_jVP} \times \frac{C_{X_j}}{\sum C_X};$$

$$where \ DC_{X_jVP} \ is \ the \ capacity$$
$$- weighted \ distance \ from \ exit \ point \ j \ to \ the \ virtual \ point$$

Use the sum of capacity-weighted distances for entry points and the sum of capacity-weighted distances for exit points to determine the entry-exit split. Calculate the revenue collected from all entry points (or respectively revenue collected from all exit points) by multiplying the total revenue by the entry share (or respectively the exit share).

5. Determine reference prices by minimising the difference between the calculated revenue from entry and exit points, on the one hand, and the revenue to be obtained by multiplying reference prices by booked capacities on the other hand.

3.4.1.4 Matrix approach

Under this option, the entry and exit capacity charges result from an optimisation process, which minimises the difference between network charges paid by users and the costs allocated to the individual entry and exit points (path costs).

Steps to follow:

1. description of the capacity in the system[9];

2. determination of the costs associated with each segment[10];

3. creation of the matrix.

---

[9] See Section 3.2 above for possible variants on assumptions on capacity
[10] See Section 3.2 above for possible variants on assumptions on costs

To calculate the unit cost for each possible path (every possible combination of entry and exit points) sum up the unit costs of all segments included in the path considering the direction of flows. The result is a unit cost matrix, which has as many rows as exit points and as many columns as entry points.

4. reference price calculation

The sum of the reference price at a particular entry point and of the reference price at a particular exit point shall be as close as possible to the corresponding value in the unit cost matrix.

Once the costs of all paths have been determined, entry and exit charges shall be calculated by an optimisation algorithm. For every path, the difference between the unit cost (Cij) and the sum of the corresponding entry and exit charges (ETi and XTj) is calculated and squared. Then, the sum of the squared differences for the entire matrix is minimised.

To avoid negative entry or exit reference prices a constraint shall be put in place.

Formally, minimise $\quad \sum_{ij} (C_{ij} - (ET_i + XT_j))^2$

$\quad\quad\quad\quad$ Subject to $ET_i + XT_j > 0$ V i,j

Where:

C_{ij} $\quad$ = sum of the unit cost for transporting gas from entry i to exit j

ET_i $\quad$ = reference price for entry i (to be calculated)

XT_j $\quad$ = reference price for exit j (to be calculated)

No unique solution is guaranteed. This issue must be resolved by either:

a) fixing the split between entry and exit; or

b) applying a further derivation to arrive to a unique solution[11]; or

c) fixing one reference price: this will act as a constraint on the optimization.

3.4.2 Secondary adjustments

The above methodologies establish the *reference price per entry and exit point, unless secondary adjustments are performed.*

---

[11] See "Entry–Exit Transmission Pricing with Notional Hubs: Can it Deliver a Pan-European Wholesale Market in Gas?", Paul Hunt, Oxford Institute for Energy Studies, February 2008, p. 22 & 23.

Secondary adjustments are not strictly necessary to allocate the allowed revenues to the different entry and exit points in the system, as described above. The setting of tariffs involves certain trade-offs. In order to address those trade-offs, NRAs may decide to adjust methodologies and associated initial tariffs at national level, via secondary adjustments. In the event secondary adjustments are used, only the ones listed below shall be allowed. If used, they can be applied at the end or, in the case of equalisation, be embedded in the various methodologies by creating a homogenous set of points at the beginning of the calculation.

3.4.2.1 Rescaling

Rescaling consists in increasing or decreasing the initial tariffs for the entry and/or exit point.

Reasons for a rescaling are:
- to adjust the allocated initial tariffs that result from the methodology to recover the allowed revenue;
- to avoid negative capacity charges.

While following these objectives, a rescaling may take into account additional constraints, such as the assumed entry-exit split.

Rescaling shall be performed either by topping up the calculated charge with a constant or by multiplying it by a constant. The corresponding multiplier or top-up shall uniformly apply to all entry points in the system and/or all exit points in the system.

The description of a tariff methodology relying on rescaling shall include an assessment of the effect of this rescaling on the entry/exit split obtained from the strict application of the main methodology. In addition, where rescaling is used to recover costs the assessment shall cover the consistency of this rescaling with the economic signals, locational signals in particular, expected from the chosen allocation methodology.

3.4.2.2 Equalisation

Equalisation results in the same tariff for a certain set of points in the system. In order to avoid cross-subsidisation between cross-border and domestic customers because of equalisation, each set of points subject to equalisation can only include either domestic or cross-border points.

Reasons for equalisation are:
- security of supply, applied for points that connect assets that serve such purpose;

- fostering competition on the retail market;

- simplicity;

- price stability, in order to mitigate local forecast errors and compensate for local flow variations; or

- renewable energies.

For each homogenous set of points[12], NRAs can decide between implementing locational signals and equalising the tariffs. Justification for this decision shall be provided at national level, taking into account the stability and the predictability of the flow patterns and comparing the potential benefits from the efficiency gains expected of locational signals and the potential benefits of the tariff stability enabled by equalisation.

Regardless of whether individualised or equalised tariffs apply, they shall be cost reflective, enable shippers to efficiently use the system, i.e. minimise costs, and provide for effective cost recovery mechanisms.

3.4.2.3 Benchmarking

Benchmarking shall only be used where the tariffs following from a pure application of the chosen methodology impede effective competition. Benchmarking is a complementary step to any main methodology. Benchmarking implies reducing the tariff at one point and compensating this decrease by increasing the tariffs at other points in order to collect the allowed revenues, while taking into account the increased capacity sales at the point, where the tariff is reduced.

Benchmarking shall be limited to the point(s) where the TSO faces effective competition from other TSOs' point(s) or route(s). The tariff reduction shall be limited to what is strictly necessary to adjust to the competitive tariff level.

NRAs shall apply benchmarking on a case by case basis and shall reason such decision, including the following

- the demonstration that "effective pipeline-to-pipeline competition" exists, based on national and EU competition law, by proving that the relevant competing systems imply a real choice for the system users;
- the demonstration that the outcome of any methodology would not allow to meet the competitive tariff level;
- the demonstration that the outcome of benchmarking leads to better meeting the objectives of the Gas Regulation;
- the effect of the benchmarking on the entry/exit split obtained from the strict application of the main methodology.

In this process, neighbouring NRAs shall cooperate with each other in order to ensure a consistent and compatible approach across the Member States concerned.

The proposal for reducing a tariff based on benchmarking, as well as the corresponding tariff increases along with the NRA's reasoning, shall be publicly consulted before the tariffs are set.

3.5 Storage

The Network Code on Tariffs shall specify that, in setting or approving the allocation of costs to entry and exit points from and to gas storage facilities, NRAs shall consider the following aspects:

---

[12] i.e. Entry interconnection points, Exit interconnection points, Domestic entries, Domestic Exits, Entries from Storage, Entries to Storage, Entries from LNG terminals, Exits to LNG terminals, Entries from production points.

1) whether an entry fee has been paid before entering the relevant transmission network and an exit fee will be paid upon exit therefrom;

2) the need to promote efficient investments in networks.

NRAs shall also minimise any adverse effect on cross-border flows.

3.6 Cost allocation test

The Network Code on Tariffs shall develop a detailed test comparing expected revenues and cost drivers of domestic and cross-border entry/exit points[13]. This test shall serve as an indicator for the appropriateness of the chosen cost allocation methodology and its implementation. The NRAs (or the relevant TSOs) shall be responsible for correctly calculating and publishing this indicator, both on the outcome of a pure application of the chosen cost allocation methodology, as on the outcome after potential secondary adjustments.

The test shall be based, *inter alia*, on:

- physical cost drivers in the system (such as, distance and capacity);

- the relative importance of cost drivers; if multiple cost drivers are identified for a system and emerge from a statistical analysis:

  o the relative importance of the cost drivers shall be proved;

  o additional cost drivers can be allowed if their explanatory value is significant;

  o the number of cost drivers applied in the test shall be limited.

The test has to create transparency regarding

- the assumptions used in connection to the cost drivers (e.g. due to the national energy policies applied);

- the cost allocation, including assumptions and specifications relating to it.

The test consists of two ratios. For the first ratio:

- the numerator shall be the sum of the revenue which will be collected at the entry points for domestic consumption and at the domestic exit points;
- the denominator shall consist of the cost driver or in case of multiple drivers, the weighted cost drivers underlying the costs incurred by TSOs in order to provide the transmission services to deliver gas to domestic points.

For the second ratio:

---

[13] For the purpose of this test, the points which connect an LNG-terminal to a transmission system are considered to be cross-border points.

- the numerator shall be the sum of the revenue which will be collected at the entry points for cross-border use and at the cross-border exit points;
- the denominator shall consist of the cost driver or in case of multiple drivers, the weighted cost drivers underlying the costs incurred by TSOs in order to provide the transmission services to deliver gas to cross-border interconnection points.

The Network Code shall define a rule to determine the split between entry capacity dedicated to cross-border and domestic uses as well as the average distance used by cross-border and domestic uses.

The Network Code shall include a mathematical formula of the two ratios. The NRAs shall justify the reasons for any deviation between the two ratios by more than 10%, where the first ratio is compared to the second.

In the interest of transparency, the NRAs, and where applicable the TSO, shall publish the input parameters (i.e. the respective sets of revenues and cost drivers used in the test), the underlying values of those and the outcome of the test.

3.7 Implementation

At the entry into force of the Network Code, NRAs shall publish all relevant information to be used in the methodologies under consideration, for at least two of the methodologies detailed in section 3.4 above, as well as the cost allocation test and its outcome. In addition, NRAs shall submit to public consultation *a detailed explanation* why a cost allocation methodology is selected, as well as the impact that the implementation of the Network Code will have on the evolution of tariff levels. This explanation shall, also detail the circumstances influencing the choice of a cost-allocation methodology. TSOs can publish and consult concerning determining or approving cost allocation methodologies whereby the responsibility for the proper execution lies with the NRA.

At the entry into force of the Network Code, TSOs in cooperation with relevant NRAs shall apply mitigating measures if tariffs (reference prices) at individual entry or exit points would increase by more than 25% from one year to the next due to the application of the provisions in the Network Code. The mitigation measures shall limit the increase of tariffs (reference prices) at individual entry or exit points for the following tariff period only.

Following the initial consultation when deemed necessary by the relevant authority and at least every 4 years, NRAs shall update the *detailed explanation* concerning its selection of a tariff methodology.