EUROPEAN COMMISSION
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CLIMATE ACTION

Directorate B - European and International Carbon Markets

Guidance Document n°7
on the harmonised free allocation methodology for the EU ETS post 2020

Guidance on allocation level changes

Version of 21 September 2021

The guidance does not represent an official position of the Commission and is not legally binding. However, this guidance aims to clarify the requirements established in the EU ETS Directive and the FAR and is essential to understanding those legally binding rules.

Table of contents

1 Scope of this guidance document

This guidance document is part of a group of documents, which are intended to support Member States, and their Competent Authorities, in the consistent implementation throughout the Union of the allocation methodology for the fourth trading period of the EU ETS (post 2020), established by the Delegated Regulation of the Commission 2019/331 on "Transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of the EU ETS Directive" (FAR)[1], and the Commission implementing regulation 2019/1842 on the adjustments to free allocation due to activity level changes (RALC)[2]. Guidance Document 1 on General Guidance to the Allocation Methodology provides an overview of the legislative background to the group of guidance documents. It also explains how the different Guidance Documents relate to each other and provides a glossary of terminology used throughout the guidance[3].

The current Guidance Document provides guidance to Competent Authorities on how to deal with activity level changes in a sub-installation. It also provides guidance on new entrants and new sub-installations in existing installations, as well as on cessation of operations. These topics are all grouped under 'allocation level changes' (ALC).

References to articles within this document refer to the revised EU ETS Directive and the FAR.

[1] FAR is available at: http://data.europa.eu/eli/reg_del/2019/331/oj
[2] RALC is available at: https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:32019R1842
[3] All Guidance Documents can be found at: https://ec.europa.eu/clima/policies/ets/allowances_en#tab-0-1

2 Legal basis relating to ALC

2.1 Articles relating to ALC in the FAR

FAR articles relevant for ALC are the following:

- The definitions in:
  - Article 2(1) on 'incumbent installation';
  - Article 2(3) on 'heat benchmark sub-installation';
  - Article 2(6) on 'fuel benchmark sub-installation';
  - Article 2(12) on 'start of normal operation';
  - Article 2(15) on 'allocation period';
- Articles 5, 17 and 18 on new entrants;
- Article 23 on changes to the allocation of an installation;
- Article 26 on cessation of operations of an installation.

In addition, the definition of 'group' in Article 2(11) of Directive 2013/34/EU on the annual financial statements, consolidated statements and related reports is also relevant.

2.2 Commission implementing regulation on ALC

The contents of this Guidance Document are mainly based on Commission implementing regulation 2019/1842 on the adjustments to free allocation due to activity level changes (RALC), as this regulation specifically focuses on ALC. Therefore, this whole regulation is relevant for this topic.

The articles that will in particular be highlighted are the following:

- Article 2 on definitions (see section 2.3 of this guidance);
- Article 3 on reporting requirements (see section 4 of this guidance);
- Article 4 on average activity levels (see section 3 of this guidance);
- Article 5 on adjustments to free allocation due to ALC (see section 3 of this guidance);
- Article 6 on other changes in the operation of the installation (see section 6 of this guidance).

2.3 Definitions relating to ALC

Mainly the following definitions are relevant for ALC:

- The definition of **average activity level** (AAL) in Article 2(1) of the RALC states that:

'average activity level' means, for each sub-installation, the arithmetic mean of the related annual activity levels for the two calendar years preceding the submission of a report referred to in Article 3(1);

This means that the average activity level of year Y ($AAL_{SubA,Y}$) for a sub-installation A is defined as follows, based on sub-installation A's activity levels in years Y-1 and Y-2 ($AL_{SubA,Y-1}$ and $AL_{SubA,Y-2}$):

$$AAL_{SubA,Y} = \frac{AL_{SubA,Y-1} + AL_{SubA,Y-2}}{2}$$

- The definition of **incumbent installation** in Article 2(1) of the FAR states that:

'incumbent installation' means any installation carrying out one or more activities listed in Annex I to Directive 2003/87/EC or an activity included in the European Union Emissions Trading System (EU ETS) for the first time in accordance with Article 24 of that Directive, which obtained a greenhouse gas emission permit before or on:
(a) 30 June 2019 for the period 2021-2025,
(b) 30 June 2024 for the period 2026-2030;

Conversely, an installation that carries out one or more activities listed in Annex I of the Directive for the first time and obtained a greenhouse gas emission permit after 30 June 2019 for the period 2021-2025 (respectively after 30 June 2024 for the period 2026-2030) will be considered a **new entrant** for the relevant allocation period in phase 4.
It should be noted that in the case of a greenhouse gas permit received between 1 July 2024 and 31 December 2025, the installation will be considered a new entrant in both allocation periods. This will however not impact the reporting process, as the same template will be used continuously from one allocation period to the next. In the case of a greenhouse gas permit received between 1 July 2019 and 31 December 2020[4], the installation will be considered a new entrant both in phase 3 and in the first allocation period of phase 4; in this case, the installation should apply for free allocation following the phase 3 new entrants' process for years 2019 and 2020, and following the phase 4 new entrants' process for 2021 (with an application that will include data from years 2019 and/or 2020 as relevant).

Similarly, a sub-installation that is either part of an incumbent installation or of a new entrant, and for which one of the following is true:

- The sub-installation has an AL>0 for the first time after 30 June 2019[5] for the period 2021-2025 (respectively after 30 June 2024 for the period 2026-2030),

OR

- The sub-installation resumes operation after having ceased operation,

will be considered a **new sub-installation** for the relevant allocation period in phase 4.

It should be noted however, that new sub-installations in incumbent installations are not considered new entrants in the revised EU ETS Directive (see also section 4.2 of Guidance

[4] For situations where an installation receives a greenhouse gas permit between 1 January 2018 and 30 June 2019, please see section 6.2 of Guidance Document 2 on Determining the allocation at installation level.
[5] For sub-installations in an incumbent installation that started operation between 1 January 2018 and 30 June 2019, FAR Art 15(7) applies, please see section 6.2 of Guidance Document 2 on Determining the allocation at installation level.

Document 2 on determining the allocation at installation level). In the calculation of the final allocation, the application of either the cross-sectoral correction factor or the linear reduction factor is done at installation level; therefore new sub-installations that are part of a new entrant will have the LRF applied in line with the rest of the installation, while new sub-installations that are part of an incumbent installation that is not an electricity generator will have the CSCF applied in line with the rest of the installation.

- The definition of **group** in Article 2(6) of the RALC refers to Article 2(11) of Directive 2013/34/EU, which states that:

'group' means a parent undertaking and all its subsidiary undertakings;[6]

- The definition of **start of normal operation** in Article 2(12) of the FAR states that:

'start of normal operation' means the first day of operations;
Furthermore, in line with Guidance Document 2 on determining the allocation at installation level, the first day of operation is defined as the first day the activity level is higher than 0.

- The definition of an **installation that has ceased operation** in Article 26 of the FAR states that:

'An installation is deemed to have ceased operations where any of the following conditions is met:
(a) the relevant greenhouse gas emissions permit has been withdrawn, including if the installation no longer meets the thresholds of the activities listed in Annex I to Directive 2003/87/EC;
(b) the installation is no longer operating and it is technically impossible to resume operation.'

Similarly, a **sub-installation will be deemed to have ceased operation** if the sub-installation is no longer operating and it is technically impossible for it to resume operation. If it is possible for the sub-installation to resume operation, then the ALC rules will apply (see example 13 in Annex 2).

[6] The "group" comprises the parent undertaking and all its subsidiary undertakings (those undertakings that are controlled by the parent undertaking). Article 22 of Directive 2013/34/EU contains further elements characterising the relationship between a parent undertaking and a subsidiary undertaking (e.g. the parent undertaking has a majority of shareholders' or members' voting rights in a subsidiary undertaking, the parent undertaking has the right to appoint or remove a majority of the members of the administrative, management or supervisory board of a subsidiary undertaking and is at the same time a shareholder in or member of that subsidiary undertaking etc.)
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0034

3 Activity level changes – general approach

In phase 4, the amount of free allocation can be impacted by activity level changes, upwards or downwards. Changes will be taken into account based on yearly reported activity levels (see section 4 of this guidance document for further guidance on reporting). Furthermore, the possible impact of energy efficiency measures as well as impacts related to other parameters may be taken into account (see section 6 of this guidance document for this specific topic). A simplified flowchart on activity level changes can be found in Annex I.

3.1 First allocation adjustment for a sub-installation

If in a given year Y, for a sub-installation **that had its allocation based on the HAL in year Y-1** (if it had an allocation adjustment, then the approach in section 3.2 should be followed):

> **Condition 1:** The average activity level (AAL_Y) is X% higher or lower than the historical activity level (HAL) of a sub-installation, with the absolute value of X > 15%,
>
> $$\frac{abs(AAL_Y - HAL)}{HAL} = abs(X)$$
>
> AND
>
> **Condition 2:** The resulting preliminary annual allocation change corresponds at least to a difference of 100 allowances allocated for free to the sub-installation compared to the latest preliminary annual allocation as set for that sub-installation for year Y,

Then the allocation of that sub-installation will be adjusted in year Y. The new allocation in year Y will be calculated using the exact AAL in place of the HAL (the AAL is not rounded, but the allocation should be rounded to the nearest allowance).

Regarding condition 1, in each year, the reference to be used to assess the relevance of an allocation adjustment is always the sub-installation's HAL. The HAL is calculated during the NIMs data collection exercise for the incumbent installations that operated at least a full calendar year during the baseline period, and calculated based on the first full calendar year AL for the sub-installations (in incumbents or new entrants) that do not meet this criterion.

Regarding condition 2, the reference to be used to assess if a change corresponds to at least 100 allowances is the annual preliminary amount of free allocation of the sub-installation in year Y. This allocation is to be understood as the preliminary allocation (as calculated in line with Article 16, paragraphs 2 and 5 and Articles 19-22 of the FAR, i.e. taking into account any corrections for the use of heat from nitric acid production and/or non-safety flaring of waste gases and/or other corrections (e.g. heat from non-ETS installations), after application of the carbon leakage factor, but before the linear reduction factor or the cross-sectoral correction factors are applied).

See examples 1 and 2 in Annex 2 which illustrate this approach.

3.2 Assessments following an allocation adjustment for a sub-installation

If in a given year Y, an activity level change has been identified that led to an allocation adjustment in Y for a sub-installation (based on value X in section 3.1), then the relevance of further allocation adjustments based on AAL in year Y+1 and/or the following years for that sub-installation will be assessed as follows. The AAL of year Y+1 and/or the following years will be compared to the HAL:

$$\frac{abs(AAL_{Y+1} - HAL)}{HAL} = abs(Z)$$

This means that even if an allocation has been adjusted, the reference to be used in the following years to assess if an adjustment is still necessary will not be the previous AAL, but will remain the HAL. In the above example, in year Y+1, AAL of year Y+1 will again be compared to the HAL.

In line with Article 5 of the RALC, an adjustment in allocation will only take place if the value abs(Z) "exceeds the nearest 5% interval, beyond the 15% change, which caused the previous adjustment of free allocation to that installation".

Abs(Z) therefore needs to be compared to abs(X), where X represents the deviation of the AAL from the HAL of the previous allocation adjustment, as calculated in the previous year Y (see section 3.1). If abs(Z) still exceeds the 15% threshold, and if furthermore it is in a different 5% amplitude interval than abs(X), then an adjustment will take place. The 5% intervals to be considered beyond the initial 15% threshold, mean that the thresholds, both for upward and downward adjustments are 15%, 20%, 25%, 30%, 35% etc. So in other words, if the value of abs(X) was 17%, then an adjustment will take place if the value of abs(Z) is above 20%; if the value of abs(Z) was 19%, it would be in the same 5% interval (i.e. in this case 15-20%) as abs(X) and thus no adjustment would take place.

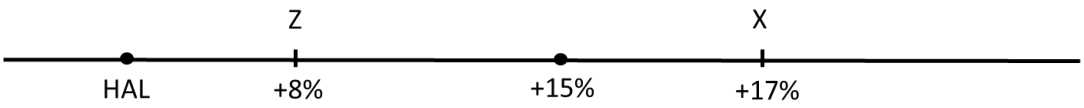
Several illustrative examples are provided below.

Examples of relevance of allocation adjustments in year Y+1 *(year Y+1 below represents year Y+1 and/or the following years as relevant)*

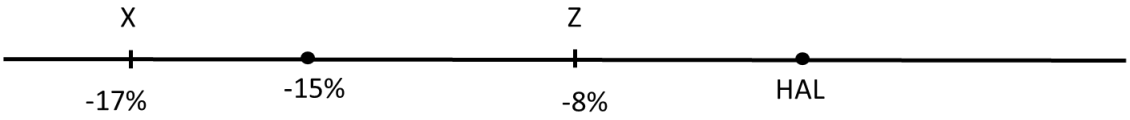
- ***Case 1: abs(Z) < 15%***

Examples of Case 1 situations:

- X=+17% and Z=+8%



- X=-17% and Z=-8%

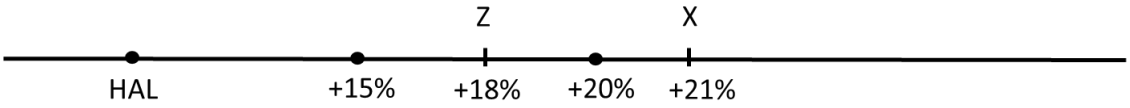


In such a case, the absolute value of AAL no longer exceeds the HAL at least by 15%. The allocation in year Y+1 will be calculated using the HAL.

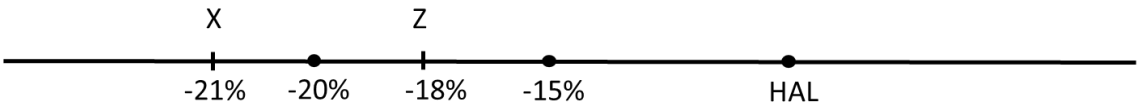
- ***Case 2: 15% < abs(Z) < nearest interval below abs(X)***

Examples of Case 2 situations:

- X=+21% and Z=+18%



- X=-21% and Z=-18%

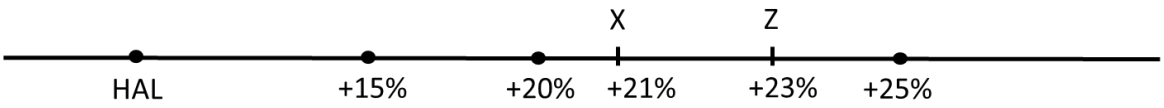


In such a case, the allocation of the sub-installation will again be adjusted if the resulting allocation change corresponds at least to 100 allowances (compared to the annual preliminary allocation of the sub-installation in year Y). The adjustment will take place in year Y+1, and the new allocation will be calculated using the exact AAL in place of the HAL.
In the first example, the resulting allocation should be higher than in year Y-1, but lower than in year Y. In the second example, the resulting allocation should be lower than in year Y-1, but higher than in year Y.

- ***Case 3[7]: nearest interval below abs(X) < abs(Z) < nearest interval above abs(X)***

Examples of Case 3 situations:

- X=+21% and Z=+23%



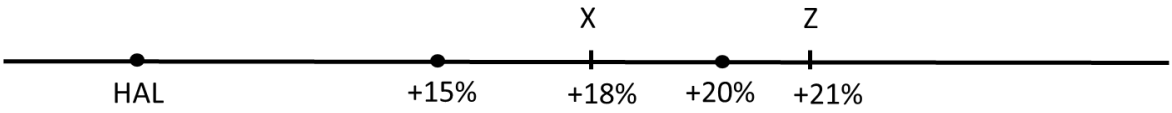
- X=-21% and Z=-23%

In such a case, the change in year Y+1 is not considered significant enough compared to the change in year Y, and therefore allocation in year Y+1 will remain the same as allocation in year Y.

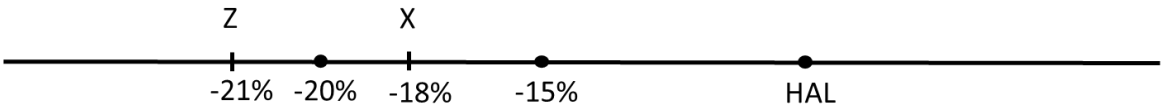
- ***Case 4: abs(Z) > nearest interval above abs(X)***

Examples of Case 4 situations:

- X=+18% and Z=+21%



- X=-18% and Z=-21%



[7] It should be noted that these are examples of possible expected situations, with the aim to illustrate and help understand the general approach. The cases however do not necessarily cover all situations. In particular, situations in which there is a decrease by more than 15% in one year and an increase by approximately the same amount in the following year will lead to an adjustment. Such a situation is not covered by Case 3.

In such a case, the allocation of the sub-installation will again be adjusted if the resulting allocation change corresponds at least to 100 allowances (compared to the annual preliminary allocation of the sub-installation in year Y). The adjustment will take place in year Y+1, and the new allocation will be calculated using the exact AAL in place of the HAL.
In the case of an increase in allocation, the resulting allocation should be higher than in year Y. In the case of a decrease in allocation, the resulting allocation should be lower than in year Y.

See example 3 in Annex 2 which illustrates this approach.

4 Reporting

In line with articles 4 and 5 of the FAR, and article 3(1) of the RALC, starting in 2021, all installations to which free allocation has been given in the period 2021 – 2025 or 2026 - 2030 have the annual obligation of reporting data relating to the Activity Levels (AL) of their sub-installations during the preceding year; these sub-installations include those that were part of the latest report (baseline data report, activity level report or new entrant report, as relevant), including any new sub-installations, and excluding sub-installations that have ceased operation and whose cessation has already been reported in the preceding year (no data is to be reported for the sub-installations that have been reported as having ceased operation). Exceptionally, for the first exercise in 2021, data from the **two** preceding years (2019 and 2020) need to be reported[8][9].
Minimum data to be reported are:

- Data on the activity level of each sub-installation;
- Data listed in sections 1, except 1.3 (c), and 2.3 to 2.7 of FAR Annex IV;
- Information relating to the structure of the group to which the installation belongs, if any;
- Information on whether any sub-installation has ceased to operate;
- Possible additional data requirements at Member State included in Annex IV of the FAR or referred to in its paragraph 1.

The data is to be reported in an **AL report**, and a template for this will be made available by the Commission (the competent authority (CA) may choose to provide a different template or format for the AL report, provided that it meets the minimum requirements for the data to be reported). The AL report needs to be submitted to the CA together with a verification report by 31 March of each year, unless the Member State has defined an earlier deadline. Incumbent installations that operated less than a full calendar year during the reference period will report their data in the same way as the other incumbent installations, via this AL report, and the data that they provide in their first report will be used to determine their HAL.

To facilitate the allocation adjustment process, Member States may decide on any of the following:

- Require the submission of a preliminary AL report, with all available data by the date set by the Member State (in the case of such a preliminary AL report, which could be a report that has not yet been verified, a final version that has been verified will also be required within the agreed timeframe);
- Suspend the issuance of free emission allowances until the CA has established that there is no requirement to adjust the allocation to that installation or the Commission has adopted a Decision according to Article 23(4) of Delegated Regulation (EU) 2019/331 concerning the adjustments to the allocation to that installation;

[8] For the reporting timeline in the case of new entrants and new sub-installations, see section 5.

[9] Only installations that will enter the scheme in the second sub-period may be in the situation of similarly reporting data from the two years 2024 and 2025 in their first AL report.

- Claim back any excess allowances allocated.

In case of any issue in the verification process (e.g. absence of verification of the final report, non-compliance) the CA may make a conservative estimate of the sub-installations' AL in the assessment of possible AL changes. Conservative is to be understood as in line with section 5.6.3 of Guidance Document 5 on Monitoring and Reporting in Relation to the Free Allocation Rules. As indicated in that guidance: 'Conservative' means that a set of assumptions is defined in order to ensure that no under-estimation of a sub-installation's attributed emissions or over-estimation of its activity level occurs.

5 New entrants and new sub-installations

In line with articles 4 and 5 of the FAR, and article 3(1) of the RALC, starting in 2021, new entrants in an allocation period in phase 4 may apply for free allowances. As part of their application, they will have to submit their New entrant data report in the year after the first full calendar year of operation. This report, defined in FAR Art 5(2) and referred to in RALC Art 6, will be the same as the AL report template which will be made available by the Commission as indicated in the previous section. This means that if an installation starts operating after 1 January of year Y, it will have the obligation to submit its first AL report beginning of Y+2. This first report should contain data for both years Y and Y+1. The operator may also choose to submit data relating to year Y already in Y+1, and in Y+2 submit only data relating to operation in Y+1; in this case, the operator will have the possibility of receiving its free allocation relating to year Y already in year Y+1.

Similarly, an operator may include a new sub-installation that started operation after 1 January of year Y in its AL report in the year after the first full calendar year of operation of that new sub-installation (i.e. at the beginning of year Y+2). It may also include a new sub-installation for the first time in a subsequent year. This report should contain data relating to both years Y and Y+1. The operator may also choose to already include the new sub-installation in the AL report following the year of start of operation of that new sub-installation; in this case, the operator will have the possibility of receiving free allocation relating to this new sub-installation in year Y already in year Y+1.

The HAL of a new sub-installation and of sub-installations in a new entrant installation is based on the AL of the first full calendar year of operation of the relevant sub-installation.

The general approach on activity level changes (see section 3) will start applying for these sub-installations only after the first three calendar years of operation. In other words, for such a sub-installation that started operating in year Y (after 1 January), the allocation will be calculated as follows:

- Allocation for year Y: based on AL in year Y;
- Allocation for year Y+1: based on AL in year Y+1 (this AL will also define the HAL of the sub-installation);
- Allocation for year Y+2: based on the HAL;
- Allocation for year Y+3 and following years: calculated based on the rules on activity level changes if relevant (rules described in section 3).

See example 4 in Annex 2 which illustrates this approach.

6 Taking into account other parameters

Allocation can be impacted by other parameters than activity level changes. Among those are:

- Energy efficiency measures (see section 6.1);
- Changes in other parameters (see section 6.2), including:
    - Changes in the amount of waste gases flared for non-safety reasons;
    - Changes in the amount of heat imported from non-ETS (or from an installation producing nitric acid) to be used in the perimeter of a product benchmark;
    - Changes in the exchangeability factor:
    - Changes related to the steam cracking and VCM product benchmark sub-installations.

6.1 Taking into account energy efficiency

When energy efficiency aspects have an impact on the AL of a sub-installation, this may be taken into account in the calculation of the amount of free allocation of a sub-installation based on the heat or fuel benchmark, if the criteria explained here-after are met.

- ***Calculating efficiencies***

To evaluate the impact of energy efficiency, the following parameters will be assessed by comparing their values with the values in the baseline data or the new entrant data report (in other words the (average) values calculated in the year(s) of the HAL), with the average of their values in the preceding two years:

- In the case of a heat benchmark sub-installation:

$$Heat\ efficiency = \frac{Amount\ of\ heat\ used\ for\ the\ production\ of\ each\ product}{Amount\ of\ production\ of\ that\ product}$$

- In the case of a fuel benchmark sub-installation:

$$Fuel\ efficiency = \frac{Amount\ of\ fuel\ used\ for\ the\ production\ of\ each\ product}{Amount\ of\ production\ of\ that\ product}$$

The average efficiencies will be these values averaged over the preceding two years, e.g.:

$$Average\ heat\ efficiency = \frac{Heat\ efficiency_{Y-1} + Heat\ efficiency_{Y-2}}{2}$$

For the baseline efficiencies, the values of the baseline years have to be averaged taking into account the years which are considered for the HAL.

The efficiencies are to be calculated separately for each year and for each product covered by a PRODCOM code that is produced with the heat or fuel of the respective sub-installations. Products with similar PRODCOMs that contribute by less than 5% to the HAL may be calculated on an aggregated basis, if applicable. In order to evaluate the impact of energy efficiency, these efficiencies are to be combined using methodologies in line with the approved MMP. In other words, the approach should be consistent with the calculations at production level if such calculations have been included in the MMP; if such calculations have not been included in the MMP, then the operator should update the MMP with the methodology used in the calculation and the update should be approved by the CA.

In the case of several products produced, the proof of increase of the energy efficiency by more than 15% should relate to the whole sub-installation, and therefore to all products in the sub-installation, produced within the ETS installation. This energy efficiency rule cannot apply to changes in production outside of the installation (e.g. heat exported to a non-ETS installation). This, however, does not mean that energy efficiency has to improve for all products produced, but that the 15% should be reached for the sub-installation as a whole, regardless of which of the products produced increased their energy efficiency.

In the case of several products, the NIMs efficiency by product will be used as a reference, to estimate the expected amount of TJ (i.e. the amount of energy that would have been necessary to produce the new amount of product if the efficiency had not changed). The change between the expected amount of TJ and the actual amount of TJ will illustrate the evolution in terms of efficiency for a specific year. The average of this value over the previous two years will be used to check whether or not the 15% threshold has been reached (see example 7 in Annex 2). For specific situations such as heat exported and new products which started production after the NIMs, a reference efficiency of 1 is assumed for the calculation of the sub-installation's energy efficiency improvement, i.e. the expected amount of TJ consumed equals the actual amount (see example 7b in Annex 2).

It should be noted that the energy efficiency rule can only be applied in the case of heat or fuel used in the production of a specific product. Therefore, if there isn't at least one PRODCOM code that can be assigned to a product in a given sub-installation, then this rule cannot apply[10,11]. In particular, this rule will not apply to space heating, except in the case of heating of offices or canteens as described on page 19, section 3.2 of Guidance Document 2 on determining the allocation at installation level (in this case, this heat is to be assigned to the PRODCOM of the most relevant production process within the installation, in line with the definition of its carbon leakage exposure status).

[10] Only heat included in a District Heating sub-installation is expected not to be related to a PRODCOM code.
[11] If only part of the heat or fuel of a sub-installation can be attributed to a product with a PRODCOM code, the full HAL of that sub-installation still needs to be considered in the evaluation of the energy efficiency rule.

Furthermore, for some products it is common practice in industry to use a reference purity or normalized production figures in line with a reference purity. In that case, these values should be used as references for the calculation of the energy efficiency as well.

- ***Applying the energy efficiency rule in the case of AL decrease***

If the AL of a heat or fuel sub-installation has decreased by more than 15%, but the operator can demonstrate, based on the heat or fuel efficiency that this is due to an increase in energy efficiency by more than 15%, then the decrease in AL will not lead to a reduction of allocation for that sub-installation. The 15% need to be met solely by the application of energy efficiency measures, i.e. if a total decrease in AL by 17% is due only in part, and by less than 15%, to energy efficiency measures (e.g. 10% due to energy efficiency measures, and 7% due to AL decrease), then this rule will not apply, and the allocation of the sub-installation will be reduced.

A change in energy efficiency with no impact on the AL will not lead to any allocation change, i.e. if the AL decreases by less than 15%, no adjustment can be considered, whatever the possibly implemented energy efficiency measures.

In other words, if in year Y the assessment of the AAL of a heat sub-installation (resp. fuel sub-installation) would lead to an allocation decrease (based on the general approach described in section 3), but the operator can prove that the average heat efficiency (resp. fuel efficiency) over years Y-1 and Y-2 is at least 15% higher than the efficiency in the year of the HAL, then the allocation of that sub-installation will not be decreased in year Y.

If the energy efficiency of a sub-installation has increased but the impact on the AL of that sub-installation is not at least equal to 15%, then there will be no impact on the allocation of the sub-installation.

In order to apply the energy efficiency rule, the operator needs to demonstrate to the CA that the change in the activity level is not related to a change of production levels of the sub-installation, but due to the increased energy efficiency of that sub-installation. If the CA considers that the change in energy efficiency does not justify the change in activity level, then the allocation should be adjusted (e.g. if the increase in energy efficiency is 16% but the decrease in activity level is much higher the CA could consider that the operator has not demonstrated that the change in activity level is not due to a change in production). If the CA accepts that the change in activity level is justified by the change in energy efficiency, then the allocation shall not be adjusted.

- ***Applying the energy efficiency rule in the case of AL increase***

Following the calculation of the AAL, if upon request of the CA an operator cannot demonstrate that an increase in the AL of a heat or fuel sub-installation by at least 15% is due to a change in production levels of the sub-installation and not to a decrease in the energy

efficiency of that sub-installation, then the CA may reject the adjustment of free allocation. The demonstration should be based on a comparison of the values of the quotients presented at the beginning of this chapter in the year of the HAL, with the average of their values in the two years preceding the evaluation.

In this case, before taking a decision, the CA will request the operator to justify why the level of allocation should be adjusted.

- ***Full application of the rules***

These rules can only apply fully, i.e. it cannot apply only to part of an AL change. Therefore, when the 15% criterion on energy efficiency is met, the rule either applies, when the provided evidence represents sufficient justification, or does not apply, if evidence is insufficient.

- ***Changes in subsequent years***

There can also be cases when the energy efficiency rule applies in a year, as the operator was able to provide evidence that AL reduction was linked to an energy efficiency increase above 15%, but in later years the energy efficiency does not increase any further while the AL reduces further; in such a case, the CA may consider that although the rule applied in the first year, it will no longer apply in the later years, as the increase in energy efficiency does not justify the decrease of activity level. In such cases, the CA might decide that the allocation should be adjusted (see example 5b).

See examples 5, 5b, 6, 7 and 7b in Annex 2 which illustrate this approach.

6.2 Taking into account changes in other parameters

In the calculation of free allocation, other parameters than the AL are to be taken into account which in some cases may evolve over time. In particular a change in the following parameters may have an impact on allocation:

- Amount of waste gases flared for non-safety reasons in the case of a product benchmark sub-installation, after 2025;
- Amount of heat imported from non-ETS (or from an installation producing nitric acid) in the case of a product benchmark sub-installation;
- Exchangeability of fuel and electricity factor;
- Amount of supplemental feed of hydrogen, ethylene and/or HVC in the case of a steam cracking product benchmark sub-installation;
- Hydrogen-related correction factor in the case of a VCM product benchmark sub-installation.

In sub-installations for which one or more of these parameters are relevant, the evolution of these parameters should be calculated each year together with the AAL, to evaluate a

possible impact on allocation. The assessment is to be made in a similar way as in the case of AL changes, i.e. calculating in year Y:

$$Average\ parameter_{SubA,Y} = \frac{Parameter_{SubA,Y-1} + Parameter_{SubA,Y-2}}{2}$$

If the average parameter is higher or lower by at least 15% compared to the value of the parameter used to calculate the initial allocation (either the parameter used in the last NIMs exercise, or for new entrants, the parameter related to the first full calendar year), and each impact in terms of preliminary allocation change is at least equal to 100 allowances compared to the preliminary allocation in the previous year, then the new allocation should be calculated in year Y using the value of the average parameter. The approach in the calculation should mirror the approach described in section 3.1.

These changes are independent of AL changes that may happen in a sub-installation, and may be additional to such changes. If both an AL change and a change due to one of these parameters are relevant for allocation changes, each change needs to reach the minimum threshold of 100 allowances (see condition 2 in section 3.1). In other words, the AL change needs to lead to a change of at least 100 allowances to be taken into account in the preliminary allocation, and the change related to the parameter also needs to lead to a change of at least 100 allowances to be taken into account in the preliminary allocation.

See examples 8, 9, 10 and 11 in Annex 2 which illustrate this approach.

7 Cessation of operations

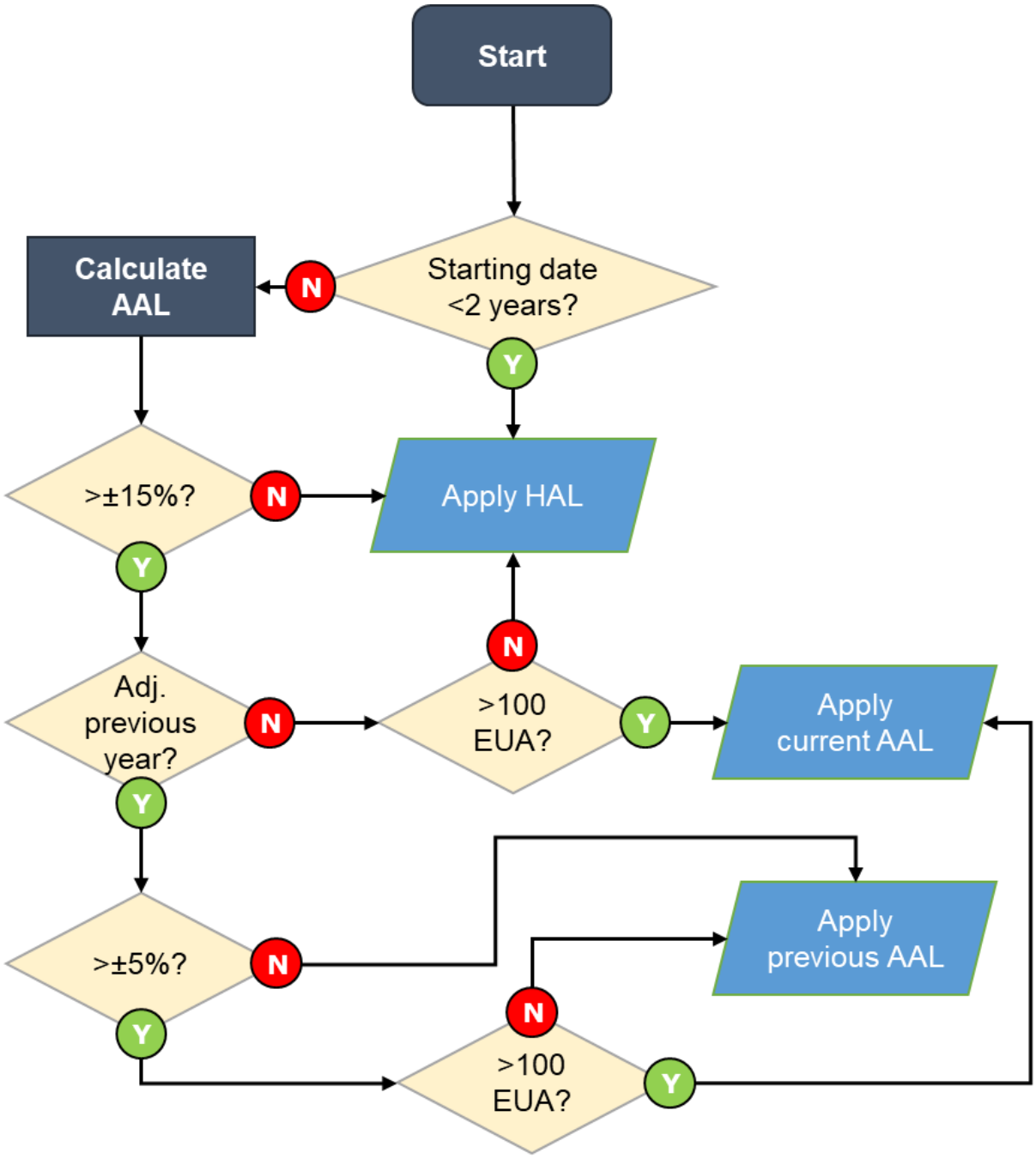
If a sub-installation is reported as having ceased operation in year Y, the free allocation of this sub-installation will be set to 0 as of year Y+1.

If an installation is reported as having ceased operation in year Y, no allocation will be issued to that installation as of year Y+1. If an installation has suspended operations and it is unclear whether operations will resume, the Member State may suspend the issuance of allowances to that installation until the situation of the installation is clarified.[12]

See examples 12 and 13 in Annex 2 which illustrate this approach.

[12] If an installation has suspended operations in year Y and it is still possible for it to resume operation, the allocation may be suspended in year Y+1 until the situation is clarified. If this installation does not restart and fully ceases operation at a later stage, its allocation will be adjusted to 0 as of year Y+1.

Annex 1 – Simplified flowchart on activity level changes



Annex 2 – examples

In the examples listed in this annex, the HAL value is indicated in the tables in a cell with a yellow background, and in the graphs by a red bar. Values in red in the tables indicate either parameters that have reached a threshold and thus (may have) triggered a change, and/or an allocation change compared to the previous allocation.

Example 1 –Activity level changes

In this example, no allocation change occurs in 2021 because the change in AL is equal to 15% but does not exceed 15%. In 2022 the change in AL exceeds 15% (in reduction) and therefore the allocation is adjusted (reduced) accordingly. In 2023 the change in AL is again below the 15% threshold, therefore the allocation is again equal to the HAL. Finally in 2025 the allocation is increased following an increase in AL by more than 15%.

Example 1 - AL changes								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level	**100 000**	80 000	90 000	79 000	110 000	110 000	124 000	
Average Activity Level (AAL)				85 000	84 500	94 500	110 000	117 000
(AAL-HAL)/HAL [%]				-15,00%	**-15,50%**	**-5,50%**	10,00%	**17,00%**
Preliminary free allocation (BM=1)				100 000	**84 500**	**100 000**	100 000	**117 000**

Example 2 – Minimum threshold

In this example, the threshold of 15% of AL change has been reached in 2021, but the change represents less than 100 allowances (reduction of 77 allowances compared to the previous allocation), and therefore the allocation is not impacted. In 2022, the allocation change is above 100 (reduction of 140 allowances compared to allocation in 2021) and the allocation is reduced in line with the AL reduction. In 2023, the AL change has reached a new threshold, but the allocation change is less than 100 allowances (reduction of 60 allowances compared to allocation in 2022). In 2024 again the AL change would trigger a change but the allocation change is below 100 allowances. Finally in 2025, the AL level is no longer exceeding a 15% change compared to the HAL. Therefore, as the allocation change is above 100 (165 more allowances than in 2024), the allocation is adjusted back to HAL level.

NB: the minimum threshold is applied after the Carbon Leakage exposure factor has been taken into account, but before the linear reduction or the cross-sectoral correction factors are applied.

Example 2 - Minimum threshold								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level	**500**	426	420	300	300	500	550	
Average Activity Level (AAL)				423	360	300	400	525
Change in amount of allowances				-77	**-140**	-60	40	**165**
(AAL-HAL)/HAL [%]				**-15,40%**	**-28,00%**	**-40,00%**	**-20,00%**	**5,00%**
Free allocation (BM=1, CL=1, CSCF=1)				500	**360**	360	360	**500**

Example 3 –Several changes in different intervals

In this example the allocation is adjusted in 2021 following an increase in AAL of more than 15%. In 2022, the allocation remains the same as in 2021, as despite a further increase in AAL, the new threshold of 20% has not been reached (nearest interval above 15%). In 2023 the change in AAL is above 20%, triggering an allocation adjustment. In 2024, the additional threshold of 25% is exceeded, triggering yet another allocation adjustment. In 2025, the change in AAL remains in the same 5% interval as in 2024, hence the allocation remains the same as in 2024.

Example 3 - Changes above ±15% and subsequent changes ±5%								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level	**100 000**	110 000	122 000	114 000	130 000	124 000	132 000	
Average Activity Level (AAL)				116 000	118 000	122 000	127 000	128 000
(AAL-HAL)/HAL [%]				**16,00%**	18,00%	**22,00%**	**27,00%**	28,00%
Preliminary free allocation (BM=1)				**116 000**	116 000	**122 000**	**127 000**	127 000

Example 4 – allocation to a new sub-installation

This example illustrates the allocation that is given to a new sub-installation that started operating in 2025 (year Y in section 5; the sub-installation is considered a new sub-installation for both allocation periods). The allocation given in years 2025 and 2026 is based on the AL in those specific years (allocation in 2025 being part of the first allocation period). The AL of year 2026 defines the HAL of the sub-installation, as it is the AL of the first full calendar year of operation. The allocation in 2027 is based on the HAL. The AAL will only be calculated as of year 2028 (Y+3) for possible allocation changes.

Example 4 - New sub-installation							
Year	**2024**	**2025**	**2026 (HAL)**	**2027**	**2028**	**2029**	**2030**
Activity Level	N/A	50 000	**100 000**	120 000	115 000	119 000	
Average Activity Level (AAL)		N/A	N/A	N/A	110 000	117 500	117 000
(AAL-HAL)/HAL [%]		N/A	N/A	N/A	10,00%	**17,50%**	17,00%
Preliminary free allocation (BM=1)		**50 000**	**100 000**	100 000	100 000	**117 500**	117 500

Example 5 – energy efficiency increase (one PRODCOM)

In this example based on a heat sub-installation, the AAL shows a decrease below the threshold of 15% in 2021 but the operator was able to demonstrate an energy efficiency increase of over 15%; therefore, the allocation remains at HAL level. In 2022, the AAL doesn't show any change in AL compared to the HAL, and therefore the energy efficiency is not looked at. In 2023, the AAL shows an increase in AL by over 15% and the operator was able to demonstrate that this increase is not due to a reduction in energy efficiency by over 15% (energy efficiency has increased by over 14% on average in the previous 2 years); therefore, the allocation is based on the AAL of that year.
It should be noted that a lower value in efficiency means less energy needed per ton of product and therefore a higher efficiency. The energy efficiency increase is best visible in the value of the "Efficiency change".

Example 5 - Energy efficiency increase (one PRODCOM)								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [TJ]	**1 000**	800	800	1 200	1 200	1 200	1 200	
Production [ton]	**20 000**	20 000	20 000	28 000	28 000	28 000	28 000	
Efficiency [TJ/ton]	**0,050**	0,040	0,040	0,043	0,043	0,043	0,043	
Average Activity Level (AAL)				800	1 000	1 200	1 200	1 200
(AAL-HAL)/HAL [%]				**-20,00%**	**0,00%**	**20,00%**	20,00%	20,00%
Average efficiency				0,040	0,041	0,043	0,043	0,043
Efficiency change				**20,00%**	17,14%	**14,29%**	14,29%	14,29%
Preliminary free allocation (BM=1)				**1 000**	1 000	**1 200**	1 200	1 200

Example 5b – energy efficiency increase (one PRODCOM), 2nd case

In this example based on a heat sub-installation, the AAL shows a decrease below the threshold of 15% in 2021 but the operator was able to demonstrate an energy efficiency increase of over 15%; therefore, the energy efficiency rule applies and the allocation remains at HAL level (as in example 5). In 2022, both the AAL and the energy efficiency remain at the same levels, and therefore the same approach applies as in 2021. In 2023 however, the AAL shows a further decrease, while the energy efficiency hasn't further increased. In the presented case, the CA has decided that the operator can no longer demonstrate any link between this further decrease in production and any energy efficiency measures, and therefore the CA has decided that the application of the energy efficiency rule is no longer justified; the allocation is thus reduced in that year. As the AAL is further reduced in 2024, the allocation is reduced again in that year, in line with section 3.2.

It should be noted that a lower value in efficiency means less energy needed per ton of product and therefore a higher efficiency. The energy efficiency increase is best visible in the value of the "Efficiency change".

Example 5b - Energy efficiency increase (one PRODCOM), 2nd case								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [TJ]	**1 000**	800	800	800	600	600	600	
Production [ton]	**20 000**	20 000	20 000	20 000	15 000	15 000	15 000	
Efficiency [TJ/ton]	**0,050**	0,040	0,040	0,040	0,040	0,040	0,040	
Average Activity Level (AAL)				800	800	700	600	600
(AAL-HAL)/HAL [%]				**-20,00%**	-20,00%	**-30,00%**	**-40,00%**	-40,00%
Average efficiency				0,040	0,040	0,040	0,040	0,040
Efficiency change				**20,00%**	20,00%	20,00%	20,00%	20,00%
Preliminary free allocation (BM=1)				**1 000**	1 000	**700**	**600**	600

Example 6 – energy efficiency decrease

In this example based on a heat sub-installation, the AAL of the sub-installation showed an increase in AL by 20% in 2021 compared to the HAL, but the operator could not demonstrate that this was not linked to a decrease in efficiency (as the efficiency decreased by 20%), therefore the allocation stayed at HAL level despite the increased AL. In 2022, as the efficiency decrease was still above 15% (at 17.14%), the operator still could not demonstrate that the AL increase was not linked to the energy efficiency decrease. In 2023 however, the AL increase of over 15% was still valid, and the average efficiency over the preceding 2 years did not reach the 15% reduction threshold; therefore in 2023 the allocation was increased to the ALL level of that year.

It should be noted that a higher value in efficiency means more energy needed per ton of product and therefore a lower efficiency. The energy efficiency decrease is best visible in the value of the “Efficiency change”.

Example 6 - Energy efficiency decrease (one PRODCOM)								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [TJ]	**1 000**	1 200	1 200	1 200	1 200	1 200	1 200	
Production [ton]	**20 000**	20 000	20 000	21 000	22 000	22 000	22 000	
Efficiency [TJ/ton]	**0,050**	0,060	0,060	0,057	0,055	0,055	0,055	
Average Activity Level (AAL)				1 200	1 200	1 200	1 200	1 200
(AAL-HAL)/HAL [%]				**20,00%**	20,00%	**20,00%**	20,00%	20,00%
Average efficiency				0,060	0,059	0,056	0,055	0,055
Efficiency change				**-20,00%**	-17,14%	**-11,69%**	-9,09%	-9,09%
Preliminary free allocation (BM=1)				**1 000**	1 000	**1 200**	1 200	1 200

Example 7 – energy efficiency increase (more than 1 PRODCOM)

In this example, the installation has a heat sub-installation including heat consumed for the production of two different products, each with a specific heat efficiency. In 2022 and 2023, the AAL is over 15% lower than the HAL, and although the overall energy efficiency has increased, it has not reached the 15% threshold; therefore, in that year allocation is reduced and based on the AAL. In 2024, the AAL is further reduced, and the energy efficiency has improved beyond the 15% threshold compared to the HAL efficiency values; therefore, in 2024, if the operator can demonstrate that the decrease in AAL by more than 15% is explained by an energy efficiency increase of over 15%, and if this is validated by the CA, then the

allocation will be set back to HAL level. The situation is similar in 2025 but the sub-installation was less efficient in terms of heat consumption, and the 15% threshold is no longer exceeded; the allocation in 2025 is therefore based on the AAL of that year.

The proportional efficiency in a given year Y is calculated as follows:

$$Proportional\ efficiency\ change\ in\ year\ Y = 1 - \left[\frac{\sum_i HeatCons_i + \sum_j HeatCons_j}{\sum_i \left(Production_i * Efficiency_{i,NIMs}\right) + \sum_j HeatCons_j}\right]$$

The evolution of this value (called here the "Evolution of proportional efficiency") in year Y+2 will be the average of proportional efficiency changes in year Y and in year Y+1, in line with the following formula:

$$Evolution\ of\ proportional\ efficiency = 1 - \frac{1}{2} \cdot \sum_y \frac{\sum_i HeatCons_i + \sum_j HeatCons_j}{\sum_i \left(Production_i * Efficiency_{i,NIMs}\right) + \sum_j HeatCons_j}$$

In both formulas above:

$Efficiency_{i,NIMs} = \frac{HeatCons_{i,NIMs}}{Production_{i,NIMs}}$

$Efficiency_{i,NIMs}$ *is the product-specific heat consumption derived within the NIMS procedure.*

with

y: the two calendar years before submission of the report referred to in Article 3(1) (corresponding to Chapter 2.3 of this Guidance Document)
i: number of product
j: heat consumption other than for products produced within the installation (i.e., exports, heating/cooling, mechanical energy)

It should be noted that a lower value in efficiency means less energy needed per ton of product and therefore a higher efficiency. The energy efficiency increase is best visible in the value of the "Evolution of proportional efficiency".

Example 7 - Energy efficiency increase (more than 1 PRODCOM)								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [TJ]	**10 000**	9 000	8 500	8 000	7 900	8 200	8 500	
Heat attributed to product 1 [TJ]	**6 000**	5 000	4 500	4 000	3 900	4 200	4 500	
Heat attributed to product 2 [TJ]	**4 000**	4 000	4 000	4 000	4 000	4 000	4 000	
Production product 1 [ton]	**100 000**	80 000	70 000	65 000	80 000	80 000	80 000	
Production product 2 [ton]	**100 000**	120 000	120 000	120 000	120 000	120 000	120 000	
Efficiency product 1 [TJ/ton]	**0,060**	*0,063*	*0,064*	*0,062*	*0,049*	*0,053*	*0,056*	
Efficiency product 2 [TJ/ton]	**0,040**	*0,033*	*0,033*	*0,033*	*0,033*	*0,033*	*0,033*	
Average Activity Level (AAL)				8 750	8 250	7 950	8 050	8 350
(AAL-HAL)/HAL [%]				-12,50%	**-17,50%**	**-20,50%**	**-19,50%**	**-16,50%**
Evolution of proportional efficiency				5,9%	6,8%	12,9%	**16,1%**	13,0%
Preliminary free allocation (BM=1)				10 000	8 250	7 950	**10 000 (if approved)**	8 350

Example 7b – similar to example 7 (more than 1 PRODCOM, heat export and new product)

In this example, the installation from example 7 also exports heat (e.g. to connected non-ETS installations for the production of products under the same CL status), and starts producing a new product after the NIMs baseline period.

Note that since any production associated with heat export occurs outside the system boundaries of the installation, the corresponding production level is zero as any energy efficiency improvements would also occur outside the system boundaries. Therefore, for the heat export and for heat consumed for the new product, the actual TJ equal the expected TJ (i.e. the reference efficiency remains 1 by default).

Example 7b - Energy efficiency increase (more than 1 PRODCOM, heat export, new product)				
Year	**HAL**	**Year Y (actual)**	**Year Y (expected)**	
Heat attributed to product 1 [TJ]	**600**	500	480	= 8 000 * 0,06
Heat attributed to product 2 [TJ]	**400**	400	480	= 12 000 * 0,04
Heat attributed to heat export [TJ]	**200**	150	150	actual equals expected TJ
Heat attributed to new product 3 [TJ]	**0**	200	200	actual equals expected TJ
Total heat consumption (HAL) [TJ]	**1 200**	1 250	1 310	
Production product 1 [ton]	**10 000**	8 000		
Production product 2 [ton]	**10 000**	12 000		
Production heat export [ton]	**0**	0		
Production new product 3 [ton]	**0**	5 000		
Efficiency product 1 [TJ/ton]	**0,060**			
Efficiency product 2 [TJ/ton]	**0,040**			
Efficiency heat export	**n.a.**			
Efficiency new product 3 [TJ/ton]	**n.a.**			
Evolution of proportional efficiency		4,6%		= 1 - (1250/1310)

Example 8 – reduction of amount of waste gases flared for non-safety reasons

In this example, the amount of waste gases flared for non-safety reasons by a product benchmark sub-installation has been reduced on average by 20% over the years 2024 and 2025, and therefore this reduction is taken into account in the calculation of the allocation

for year 2026 (see Guidance Document 8 for more details on how the allocation is calculated in this case): the reduction in allocation linked to these waste gases is no longer calculated using the amount of waste gases in the HAL, but using the average over the years 2024-2025 (leading to a reduction of 518 800 allowances instead of 648 500 allowances calculated initially). In 2027 there is no change compared to 2026 (the AL change is below 15%). In 2028, the amount of waste gases flared is the same as in 2026, so the reduction linked to those is identical, but the AAL of the sub-installation shows an increase in AL which leads to a higher allocation to the sub-installation. In 2030, the AAL shows a level of AL close to HAL and an amount of waste gases flared close to HAL as well; in that year the allocation is therefore based on the HAL values.

Example 8 - Reduction on non-safety flaring of waste gases								
Year	**HAL**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Activity Level [t]	**4 000 000**	4 000 000	4 000 000	4 500 000	5 000 000	4 500 000	4 000 000	
VWG_i [t]	**1 000 000**	800 000	800 000	800 000	800 000	800 000	1 000 000	
Free allocation [no correction]	**5 000 000**							
WG reduction	**-648 500**							
Average Activity Level (AAL)				4 000 000	4 250 000	4 750 000	4 750 000	4 250 000
2-year rolling average WG (VWG_{2y})				800 000	800 000	800 000	800 000	900 000
(AAL-HAL)/HAL [%]				0,00%	6,25%	**18,75%**	18,75%	**6,25%**
(VWG_{2y}-VWG_{HAL})/VWG_{HAL} [%]				**-20,00%**	-20,00%	-20,00%	-20,00%	**-10,00%**
Free allocation [no correction]				5 000 000	5 000 000	**5 937 500**	5 937 500	**5 000 000**
WG reduction				**-518 800**	-518 800	-518 800	-518 800	**-648 500**
Preliminary free allocation				**4 481 200**	4 481 200	**5 418 700**	5 418 700	**4 351 500**

BM_p [allowances/t]	1,250
NCV_{WG} [TJ/t]	0,0025
EF_{WG} [tCO_2/TJ]	259,4
$CLEF_{p,k}$	1

Example 9 – change in amount of heat imported from a non-ETS installation

In this example, a product benchmark sub-installation imports heat from a non-ETS installation. This amount of heat is reduced by 25% on average during years 2019 and 2020, and therefore the allocation reduction linked to it is also reduced in 2021 (the reduction is calculated based on the 2-year average of imported heat). In 2023 the AAL of the sub-installation shows an increase in AL by more than 15%, which leads to an allocation increase. The amount of imported heat has stayed the same as in the previous years, and therefore the amount of allowances deducted because of that imported heat remains the same as in the preceding years. In 2025, the AAL shows that another threshold in AL increase has been reached, and in parallel the amount of imported heat has gone up again leading to a difference of less than 15% compared to the amount that had been calculated for the HAL. Therefore in 2025 the share of the allocation based on the AAL increases and the deduction linked to imported heat is calculated based on the HAL.

Example 9 - Change in heat imported from a non-ETS installation								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [t]	**1 000 000**	1 000 000	1 000 000	1 200 000	1 200 000	1 250 000	1 300 000	
Imported heat non-ETS [TJ]	**4 000**	3 000	3 000	3 000	3 000	3 000	4 000	
Free allocation [no correction]	**1 000 000**							
Heat import reduction	**-241 724**							
Average Activity Level (AAL)				1 000 000	1 100 000	1 200 000	1 225 000	1 275 000
2-year average heat import ($Heat_{2y}$)				3 000	3 000	3 000	3 000	3 500
(AAL-HAL)/HAL [%]				0,00%	10,00%	**20,00%**	22,50%	**27,50%**
($Heat_{2y}$-$Heat_{baseline}$)/$Heat_{baseline}$ [%]				**-25,00%**	-25,00%	-25,00%	-25,00%	**-12,50%**
Free allocation [no correction]				1 000 000	1 000 000	**1 200 000**	1 200 000	**1 275 000**
Heat import reduction				**-181 293**	-181 293	-181 293	-181 293	**-241 724**
Preliminary free allocation				**818 707**	818 707	**1 018 707**	1 018 707	**1 033 276**

BM_p [allowances/t]	1
BM_{heat} [allowances/TJ]	60,431
$CLEF_{p,k}$	1

Example 10 – change in the amount of direct emissions in the exchangeability factor

In this example a product benchmark sub-installation for which exchangeability of fuel and electricity is relevant has evolved in 2020-2021 on average by more than 15%. The exchangeability factor to be taken into account for the allocation in 2022 will therefore be based on the average factor over the 2 previous years. In 2023 the exchangeability factor was still in the same range, while the AAL showed an increase in AL of more than 15%; therefore the allocation in 2023 was calculated based on the AAL in 2023 and the new exchangeability factor for that year. In 2025, the AL has reached a new threshold, therefore the allocation in that year was calculated based on the AAL of that year.

Example 10 - Change on the exchangeability of fuel and electricity								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [t]	**1 000 000**	1 000 000	1 000 000	1 200 000	1 200 000	1 250 000	1 300 000	
Direct emissions [$tCO_{2\,eq}$]	**500 000**	500 000	500 000	600 000	600 000	625 000	650 000	
Imported heat [TJ]	**4 000**	7 000	7 000	7 000	7 000	8 000	8 000	
Imported heat emissions [$tCO_{2\,eq}$]	**241 724**	423 017	423 017	423 017	423 017	483 448	483 448	
Electricity consumption [MWh]	**500 000**	400 000	200 000	200 000	200 000	200 000	180 000	
Indirect emissions [$tCO_{2\,eq}$]	**188 000**	150 400	75 200	75 200	75 200	75 200	67 680	
Exchangeability factor (Exch) [%]	**79,78%**	85,99%	92,47%	93,15%	93,15%	93,65%	94,37%	
Average Activity Level (AAL)				1 000 000	1 100 000	1 200 000	1 225 000	1 275 000
2-year average Exch ($Exch_{2y}$)				89,23%	92,81%	93,15%	93,40%	94,01%
(AAL-HAL)/HAL [%]				0,00%	10,00%	**20,00%**	22,50%	**27,50%**
($Exch_{2y}$-$Exch_{baseline}$)/$Exch_{baseline}$ [%]				11,84%	**16,33%**	**16,76%**	**17,07%**	**17,83%**
Additional allowances due to Exch change				*NA*	**130 306**	**3 430**	**2 965**	**7 277**
Preliminary free allocation				**797 789**	**928 096**	**1 117 830**	**1 120 796**	**1 198 577**

BM_p [allowances/t]	1
BM_{heat} [allowances/TJ]	60,431
EF indirect emissions [$tCO_{2\,eq}$/MWh]	0,376
$CLEF_{p,k}$	1

Example 11 – change in the amount of hydrogen used as a fuel substitute in the VCM production

In this example, the installation did not use any hydrogen as fuel substitute during the baseline period. It started using some in year 2019, and the impact on the hydrogen correction factor was above 15% in year 2022; therefore in 2022, the 2-year average hydrogen correction factor of that year is taken into account for the calculation of the preliminary allocation. Whether article 6.2 applies is checked each year, and therefore the preliminary allocation calculation in 2023 is again based on that year's values, as the evolution of the average is still above 15%. In 2024, the AAL has increased by over 15%, which also impacts the preliminary allocation calculation in addition to the application of article 6.2.

Example 11 - VCM production: changes in amount of hydrogen used as fuel substitute								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level [t]	**500 000**	500 000	500 000	550 000	580 000	580 000	580 000	
Direct emissions [tCO_2]	**100 000**	95 000	85 000	100 000	110 000	110 000	110 000	
Virtual emissions from H_2 combustion [tCO_2]	**0**	5 000	15 000	20 000	25 000	25 000	25 000	
H_2 related correction factor	**1,00**	0,95	0,85	0,83	0,81	0,81	0,81	
Average Activity Level (AAL)				500 000	525 000	565 000	580 000	580 000
2-year average H_2 corr. Factor (H_2Corr_{2y})				0,90	0,84	0,82	0,81	0,81
(AAL-HAL)/HAL [%]				0,00%	5,00%	13,00%	**16,00%**	16,00%
(H_2Corr_{2y}-H_2 baseline)/H_2 baseline [%]				-10,00%	**-15,83%**	-17,59%	-18,52%	-18,52%
Preliminary free allocation				102 000	**85 850**	**84 056**	**96 409**	96 409

BM_p [allowances/t]	0,204
$CLEF_{p,k}$	1

NB: as the new benchmark values are not yet known at the time of writing, the Phase 3 benchmark value was used in this example.

Example 12 – cessation of operations

This sub-installation has reported a cessation in year 2021 and therefore received no more free allocation as of year 2022.

Example 12 - Cessation of operations								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level	**100 000**	110 000	110 000	50 000	0			
Average Activity Level (AAL)				110 000	80 000			
(AAL-HAL)/HAL [%]				10,00%	-20,00%			
Preliminary free allocation (BM=1)				100 000	**0**	0	0	0

Example 13 – sub-installation that stops operating

In this example, the sub-installation has stopped operating in year 2021 but it is still technically possible for it to operate. In this case, the allocation change rules apply. As the allocation is 0 in 2024, if this sub-installation starts operating again in 2025 or in later years, the general rules will apply.. If on the other hand the sub-installation declares a cessation of operation in 2024, this will have no further impact.

Example 13 - Sub-installation that stops operating								
Year	**HAL**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Activity Level	**100 000**	110 000	110 000	50 000	0	0	0	
Average Activity Level (AAL)				110 000	80 000	25 000	0	
(AAL-HAL)/HAL [%]				10,00%	**-20,00%**	**-75,00%**	**-100,00%**	
Preliminary free allocation (BM=1)				100 000	80 000	25 000	0	0