EUROPEAN COMMISSION
DIRECTORATE-GENERAL
CLIMATE ACTION
Directorate B - European & International Carbon Markets
CLIMA.B.2 - ETS Implementation & IT

EU ETS Monitoring and Reporting (M&R) – **Training: M&R of free allocation rules**

M&R Training Event of 26 November 2021

This document comprises training material for Monitoring and Reporting of Free Allocation Data under the EU Emission Trading System (ETS)

Table of content

1. LEGAL BACKGROUND

Article 4(2)(b) and Article 8(1) of the "Free Allocation Rules" (FAR) Regulation (EU) 2019/331 require all operators of EU ETS installations to submit a monitoring methodology plan (MMP) to the competent authority for approval, if they want to receive free allocation[1]. The monitoring principles and requirements for the MMP are set out in Articles 6 to 8 of the FAR. Annex VI of the FAR lists the minimum content of the MMP while Annex VII contains a set of methods to be used for monitoring all relevant data for free allocation.

Furthermore, as of 2021, all installations to which free allocation has been given are required to submit annually an activity level report, in accordance with Article 3(1) of the Allocation Level Change Regulation (EU) 2019/1984 (ALC-R).

2. OBJECTIVE

The M&R training event of 26 November 2021 aimed at:

- Providing a more detailed understanding of the legal requirements for monitoring & reporting of free allocation data in the FAR and ALC-R
- Providing an overview of the existing body of guidances, templates and tools and how they are linked together, by the means of specific examples.
- Target audience:
  - Medium-experienced staff members
  - But also advanced experts for specific aspects (CA staff members approving MMPs, checking ALC reports, verifiers and NABs)

An additional objective for the training was to allow for further cascading to other Member State and verificiation body audiences based on this document.

[1] 'free allocation' in accordance with Article 10a of Directive 2003/87/EC.

3. SET-UP OF THE TRAINING EVENT

#	Time	Agenda point and details
1.	10:00 – 10:15	**Opening, welcome and introduction (DG CLIMA)**
2.	10:15 – 11:05	**Introduction (Consultants)** ● Free allocation M&R rules ● Available Guidance and Tools
3.	11:05 – 11:10	*Coffee break*
4.	11:10 – 12:00	**Member States sharing experience (MS representatives)** ● Checking process and procedures ● Common challenges ● Best practices
5.	12:00 – 13:00	*Lunch break*
6.	13:00 – 13:50	**Case studies - 1** ● Introduction ● Group discussion
7.	13:50 – 14:20	**Findings and model answers (plenary) - 1**
8.	14:20 – 15:20	**Case studies - 2** ● Introduction ● Group discussion (incl. *tea break*)
9.	15:20 – 15:50	**Findings and model answers (plenary) - 2**
10.	15:50 – 16:00	**Wrap-up and close of the meeting (DG CLIMA)**

Annex: Presentation

EU ETS Monitoring and Reporting of free allocation issues

M&R Training Event

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26 November 2021

Set-up of the training

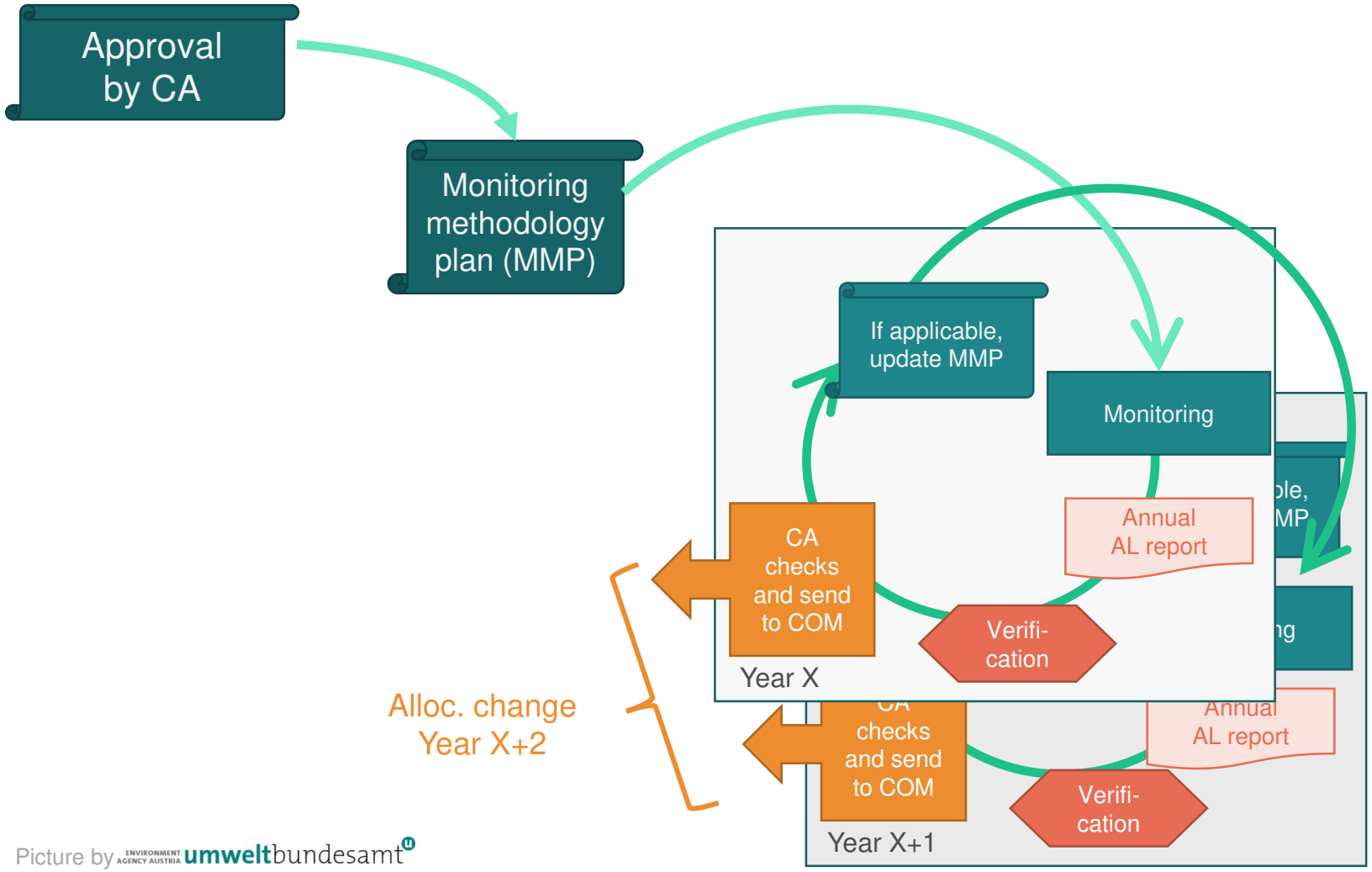
- **Monitoring & reporting** aspects of the **free allocation rules**
  - Follow-up to a similar training event on **A&V aspects** on 16 Sep 2021
- **Target audience:**
  - Medium-experienced staff members
  - But also advanced experts for specific aspects (CA staff members approving MMPs, checking ALC reports, verifiers and NABs)

Agenda

#	Time	Session
1.	**10:00 – 10:15**	**Opening, welcome and introduction (DG CLIMA)**
2.	**10:15 – 11:05**	**Introduction (Consultants)**
		• Free allocation M&R rules
		• Available Guidance and Tools
3.	11:05 – 11:10	*Coffee break*
4.	**11:10 – 12:00**	**Member States sharing experience (MS representatives)**
		• Checking process and procedures
		• Common challenges
		• Best practices
5.	12:00 – 13:00	*Lunch*
6.	**13:00 – 13:50**	**Case studies - 1**
		• Introduction
		• Group discussion
7.	**13:50 – 14:20**	**Findings and model answers (plenary) - 1**
8.	**14:20 – 15:20**	**Case studies - 2**
		• Introduction
		• Group discussion *(incl. tea break)*
9.	**15:20 – 15:50**	**Findings and model answers (plenary) - 2**
10.	**15:50 – 16:00**	**Wrap-up and close of the meeting (DG CLIMA)**

Introduction

The annual free allocation cycle



Picture by umweltbundesamt

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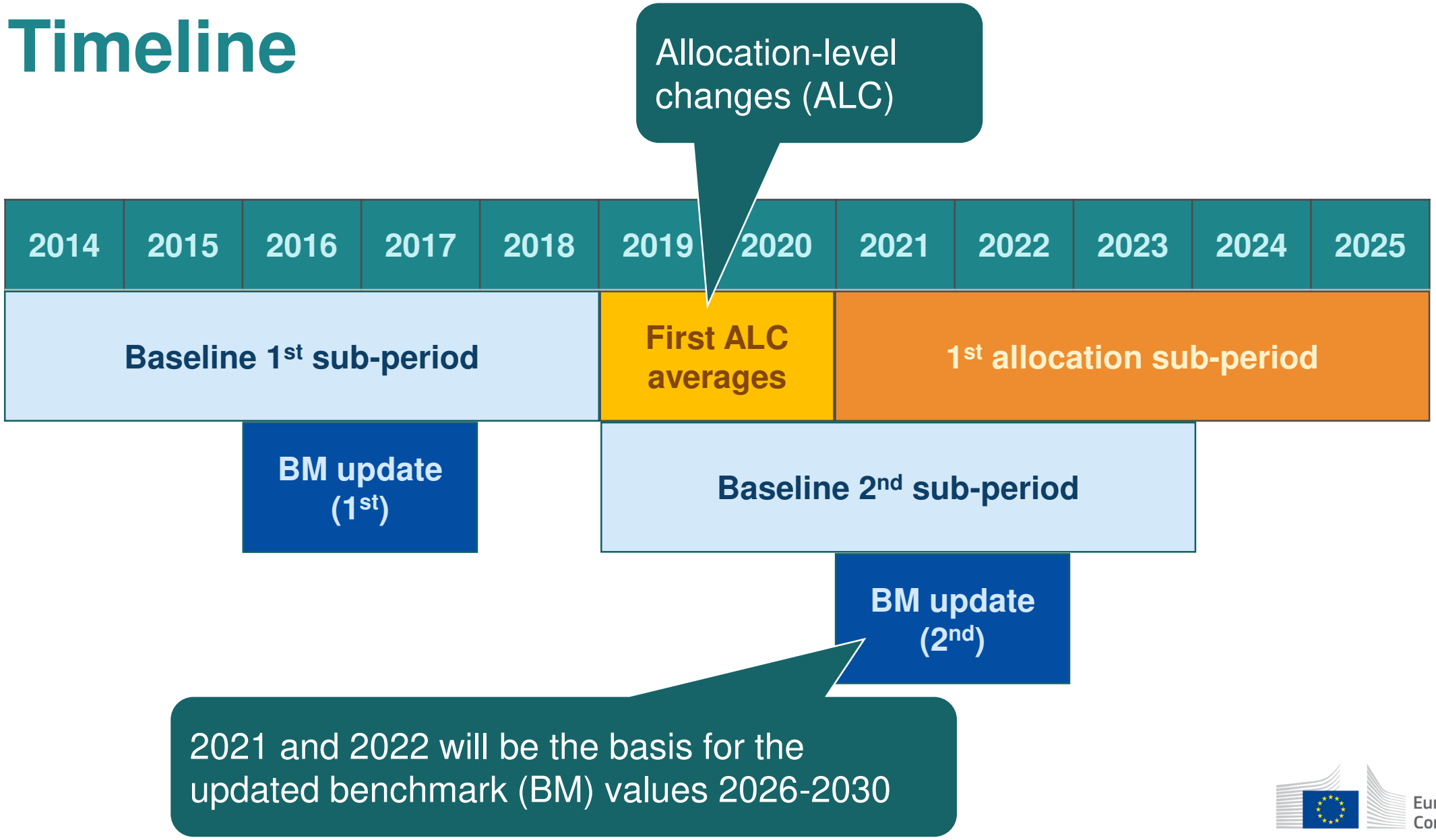
Timeline



Calculation of allocation

- Preliminary allocation at sub-installation level

$$F_i = \left(BM_i \times HAL_i \times \frac{Em_{dir} + Em_{NHI}}{Em_{dir} + Em_{NHI} + Em_{elec}} \times VCM_i - nonETS_i + HVC_i \right) \times CL_i$$

F_i = Annual preliminary allocation for sub-installation i
BM_i = Applicable benchmark value for sub-installation i
HAL_i = Historical Activity Level of sub-installation i
Em_{dir} = Direct emissions
Em_{NHI} = Emissions related to heat import
Em_{elec} = Emissions related to electricity consumption
VCM_i = Vinyl chloride monomer factor
$nonETS_i$ = non-ETS heat import
HVC_i = High value chemicals (steam cracking) correction
CL_i = Carbon Leakage factor

MMP needs to describe data acquisition methodologies for all (incl. underlying) parameters

ALC Allocation Level Changes Rules

- **Condition 1**
  - The average activity level (AAL_Y) is X% higher or lower than the historical activity level (HAL) of a sub-installation, **X > 15%**

Art. 5
ALC-R

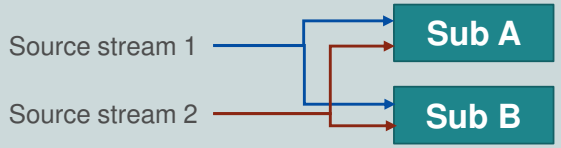
- **Condition 2**
  - The resulting preliminary annual allocation change ≥**100 allowances**
- **Both is true:** adjustment to the **exact AAL**
  - Subsequent adjustments **within 5% intervals**
- Both conditions also apply to parameters:
  - **ElExch-F, non-ETS heat import into productBM, HVC, VCM**
  - **No further 5% intervals** → always adjusted to actual value if >15%

Art. 6
ALC-R

- Exemptions where **energy efficiency** changed by >15%

Monitoring rules

FAR MRR

Parameter	MMP	MP
System boundaries	 **Sub-installations' annual activity levels**	Source stream 1 → Emissions 1 Source stream 2 → Emissions 2 **Installation's annual emissions**
Data to be monitored & reported	Flows of: fuels, materials, heat, electricity, waste gases, emissions	Fuels and materials giving rise to GHG emissions
Required data quality	Data source hierarchy	Tiers for FQ, NCV, EF…
Deviations – technical infeasibility	✓	✓
Deviations – unreasonable costs	✓	✓
Deviations – simplified uncertainty assessment	✓	✗
Uncertainty assessment	✗	✓
Risk assessment	✓	✓
Procedures for data flow & control system	✓	✓

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Annex VII
4.4

Quantification of fuels and materials

E. Sheet "EnergyFlows" - DATA ON ENERGY INPUT, MEASURABLE HI

I Energy input from fuels

1 Overview and split into use categories

(a) Energy input from fuels, total installation (taken from sheet "D_Emissions", section I):

	Unit	2019	2020
Total energy input from fuels	TJ / year	820,00	

(b) Input method: Abso

You can choose the method for entering the values in the table below under point (c). Available options

For fast data entries in simple cases, where most entries will be "100%" or zero, percentages are the be

(c) Distribution of fuel input to different uses

Please enter in the table below the amount of energy consumed for each use type, or - depending on inp

- *Fuel input to product BM is the sum of direct fuel input and f*
- *Fuel input for production of measurable heat not used for pr*
- *Fuel input to fuel BM sub-installations*

  If there is heat recovery from a fuel BM sub-installation, the
  the fuel input here and attributed to "fuel input for production
- *Fuel input for electricity production*

For attributing fuel input from cogeneration (CHP) to production of measurable heat and electricity, the "

Special care should be taken for attribution of energy input to the two sub-installations whic

Fuel benchmark sub-installation "CL" (exposed to a significant risk of Carbon Leakage) and "non-CL" (

For control purposes, the rest (100% minus total of inputs) is displayed in the bottom line. This refers to

Usage type of fuel input	Unit	2019	
i. Fuel input to product BM sub-installations	TJ / year	50,00	
ii. Fuel input for production of measurable heat	TJ / year	200,00	
iii. **Fuel benchmark sub-installation, CL**	**TJ / year**	**410,00**	
iv. **Fuel benchmark sub-installation, non-CL**	**TJ / year**	**160,00**	
v. Fuel input for electricity production	TJ / year	0,00	
vi. Rest	TJ / year	0,00	0,00

ALC template

I Historic Activity levels and disaggregated production details

1 Sub-installation with product benchmark: Bottles and jars of coloured glass

The name of the product benchmark sub-installation is displayed automatically based in the inputs in sheet "A_InstallationData".

(a) Activity levels

Under this point the "main activity levels" should be reported, i.e. the data which is directly applicable for the calculation of the allocation.

Usually this is the production data of the product, e.g. tonnes of grey cement clinker or tonnes of glass bottles, as defined by Annex I of the FAR.

However, if a message appears under point (b), the appropriate calculation tool has to be used, and its results are automatically copied into this table under (ii).

Annual activity levels:	Unit	2019	2020	2021	2022	2023	2024	2025
i. Bottles and jars of coloured glass	tonnes	100 000	123 000	121 000	120 000	115 000		
ii. From sheet "H_SpecialBM":	tonnes							
iii. Values used for calculation:	tonnes	100 000	123 000	121 000	120 000	115 000		

iv. **Special reporting requirements:**

Some product benchmarks require special information to be reported (e.g. CWT values). If relevant, an automatically generated message will appear here.

(b) Determination of any activity level adjustments

The historic activity level (HAL) will be determined automatically on entries under point a) above and entries in sheet B+C_SubInstallations. For new sub-installations, the HAL will be displayed under v.

Based on the values for HAL and those entered under point a) above, the average activity levels are determined here. The allocation will only be changed if all of the following thresholds in Article 5 of the ALC Regulation are exceeded:

- *the relative thresholds (15% and 5% for subsequent changes) of the average activity level compared to the HAL*
- *the absolute threshold, i.e. the change would lead to a difference in the preliminary allocation of at least 100 allowances*

Adjustments	Unit	(NIMs) HAL	2021	2022	2023	2024	2025
i. Average annual activity level (NIMs value)	tonnes	100 000	111 500	122 000	120 500	117 500	
ii. Preliminary adjustment (if relative thresholds exceeded)			0,0%	22,0%	22,0%	17,5%	
Actual adjustment (basis for subsequent years)			**2021**	**2022**	**2023**	**2024**	**2025**
iii. >=100 EUA criterion satisfied?			FALSCH	**WAHR**	FALSCH	**WAHR**	FALSCH
iv. Actual adjustment (if all thresholds exceeded)			**0,0%**	**22,0%**	**22,0%**	**17,5%**	**17,5%**
v. Actual value	tonnes	100 000	**100 000**	**122 000**	**122 000**	**117 500**	**117 500**

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Hierarchy of approaches – Quantification of fuels and materials

Annex VII 4.4

Art. 7(2) (a)(b)(c)

Technical infeasibility
Unreasonable costs
Lower uncertainty

Data source	Description
4.4a (best)	Approved with MP
4.4b (best)	Instruments under MID[1], NAWI[2], NLMC[3]
4.4c	Other instruments under the operators control
4.4d	Other instruments not under the operator's control
4.4e	Indirect determination methods (implicitly: same preferences as bullet points above)
4.4f	"Other methods" (basically not applicable for ALC)

Hierarchy

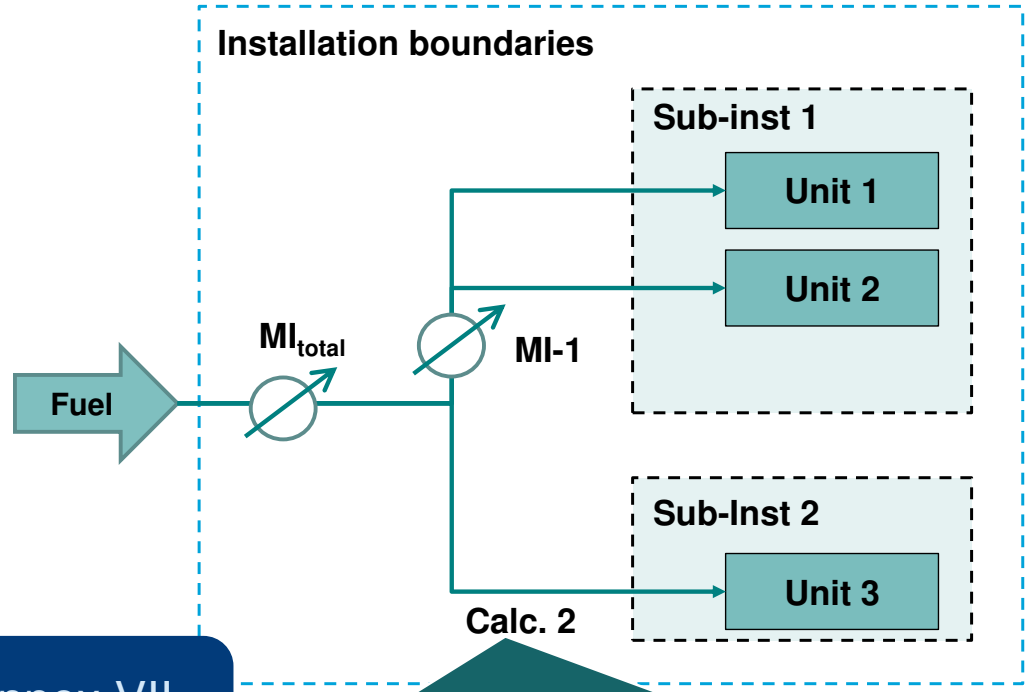
If more reliable, less prone to risk

Annex VII, 3.3

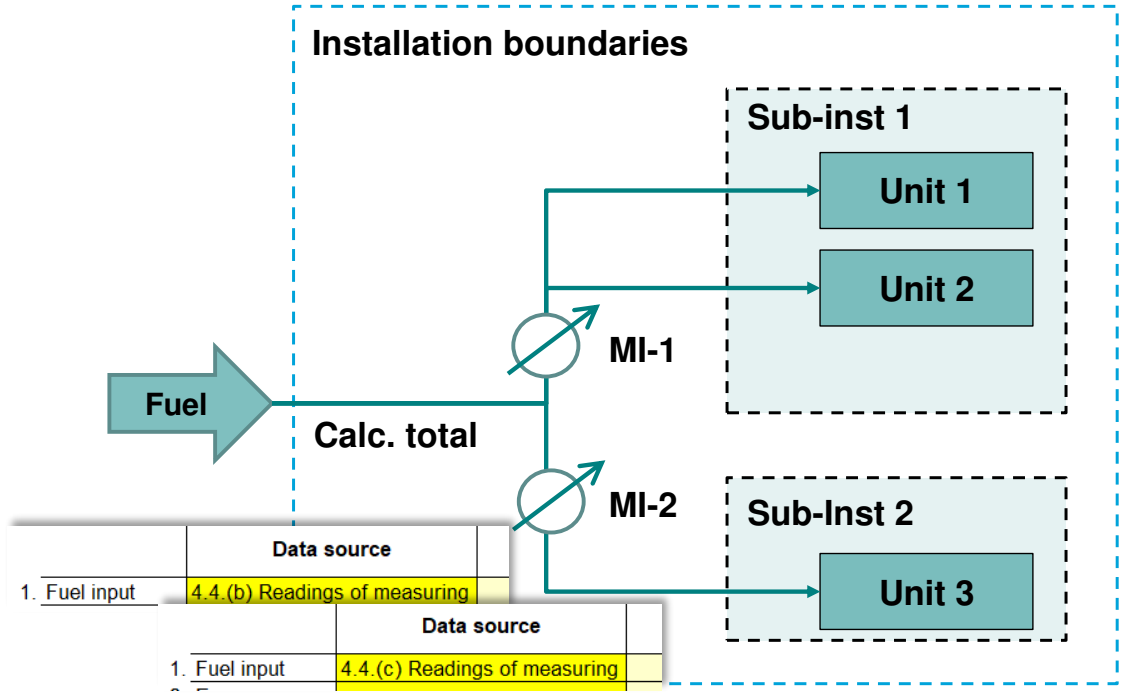
[1] Measuring Instruments Directive
[2] Non-automatic Weighing Instruments Directive
[3] National Legal Metrological Control

Metering for split into sub-installations

Case 1



Case 2



	Data source
1. Fuel input	4.4.(b) Readings of measuring

	Data source
1. Fuel input	4.4.(c) Readings of measuring

Annex VII, 3.2(2)(b)

If only one sub-installation's data unknown or of lower quality than the data of other sub-installations, known sub-installation data may be subtracted from the total installation data
→ preferred only for smaller sub-installations

4.4a or 4.4e?
→ see case study 1

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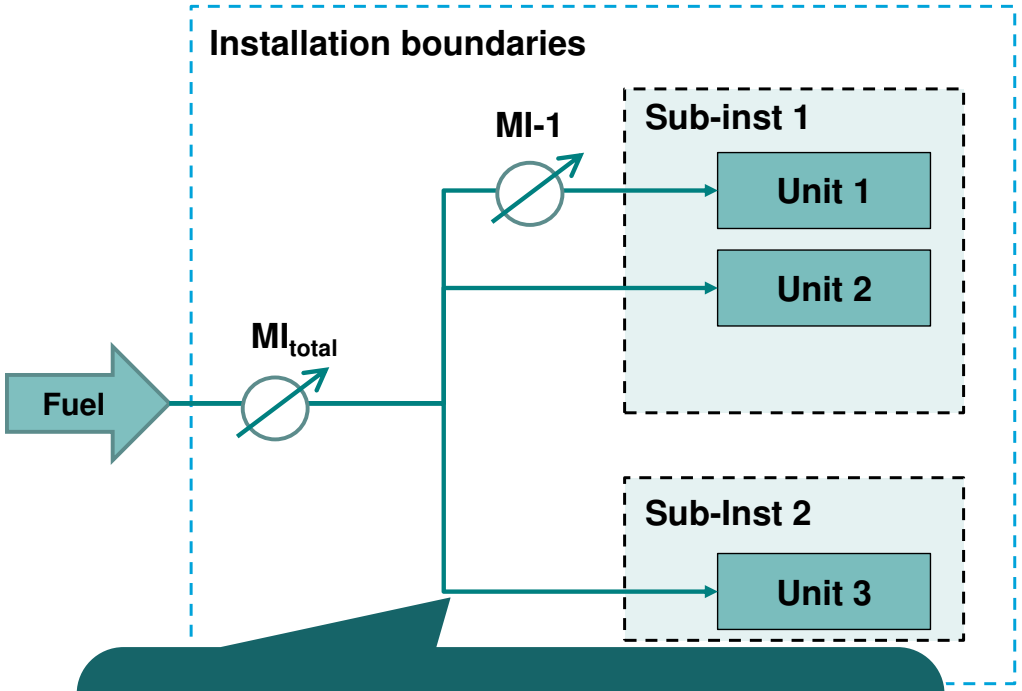
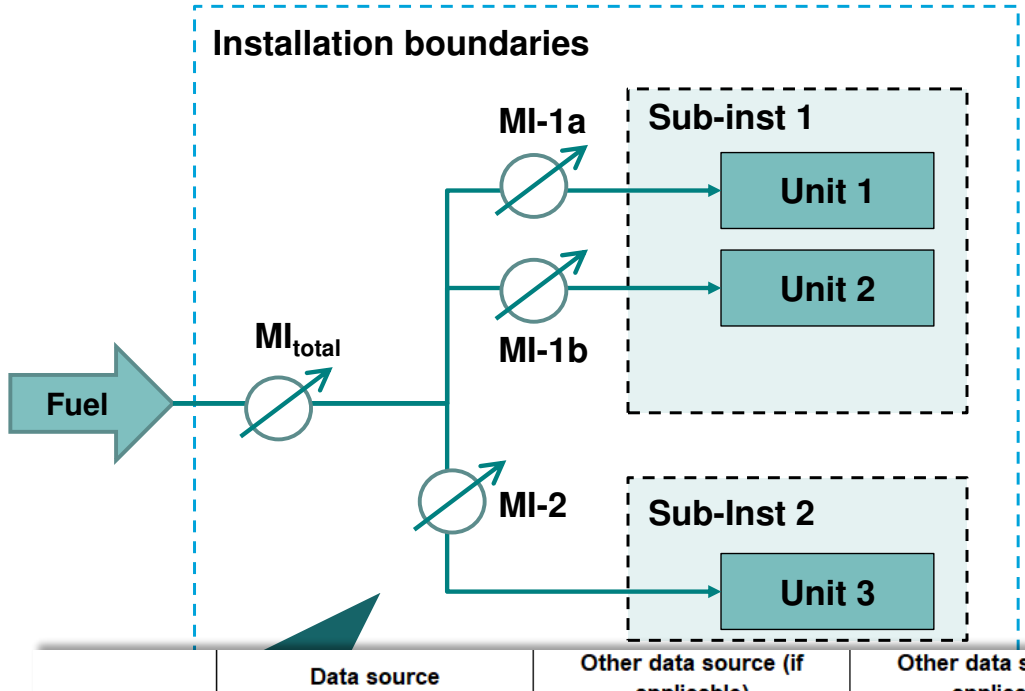
Metering for split into sub-installations

Case 3



One meter missing → corrective action or use data source of lower hierarchy (only if technically not feasible, costs unreasonable or lower uncertainty)

Case 4



	Data source	Other data source (if applicable)	Other data source (if applicable)
1. Fuel input	4.4.(a) Methods in accordance	4.4.(b) Readings of measuring	4.4.(c) Readings of measuring

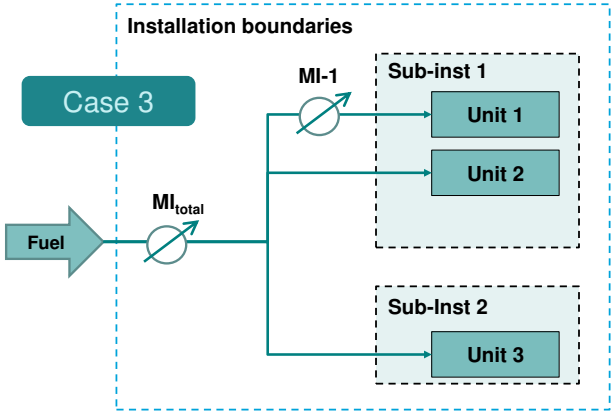
Over-determined → *reconciliation factor* may apply

$$e.g.\ MI2_{corr} = MI2_{meas} \cdot \frac{MI_{total,meas}}{MI2_{meas} + MI1a_{meas} + MI1b_{meas}}$$

Annex VII, 3.2(2)(a)

Annex VII, 3.2, 3.4 and 4.4e

Split without meters into sub-installations



Data source	Description
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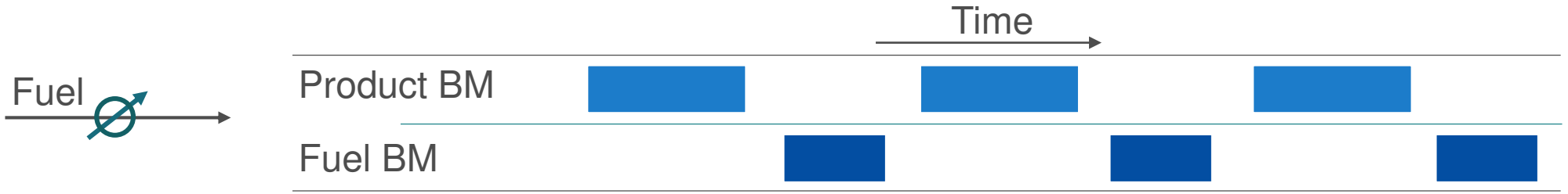
4.4e	Indirect determination methods (implicitly: same preferences as bullet points above)
4.4f	"Other methods" (basically not applicable for ALC)

- Split based on usage time of physical units
- Split based on other suitable, correlated parameters:
  - Production ratios
  - Ratios of free reaction enthalpies
  - Other methodologies based on sound science

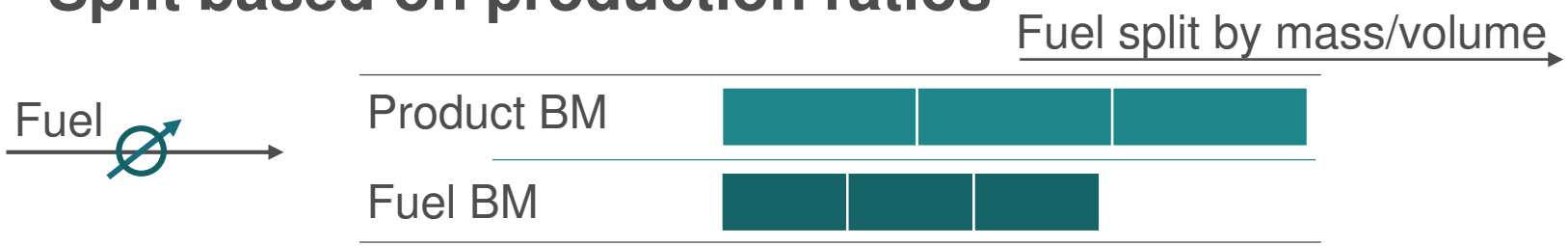
Annex VII, 3.2, 3.4 and 4.4e

Split without meters into sub-installations

- **Split based on usage time of physical units**



- **Split based on production ratios**



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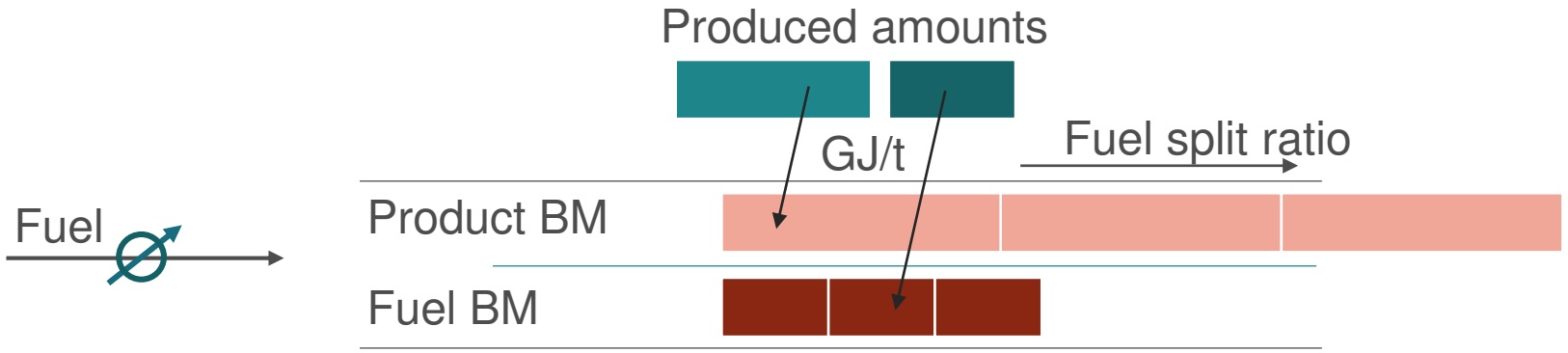
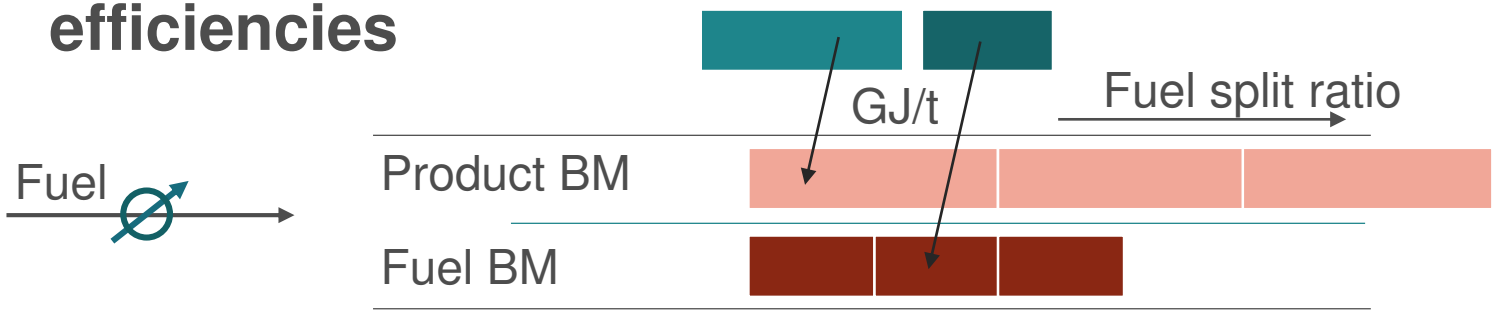
Annex VII, 3.2, 3.4 and 4.4e

Split without meters into sub-installations

- **Ratios of free reaction enthalpies**



- **Other methodologies based on sound science, e.g. standalone efficiencies**



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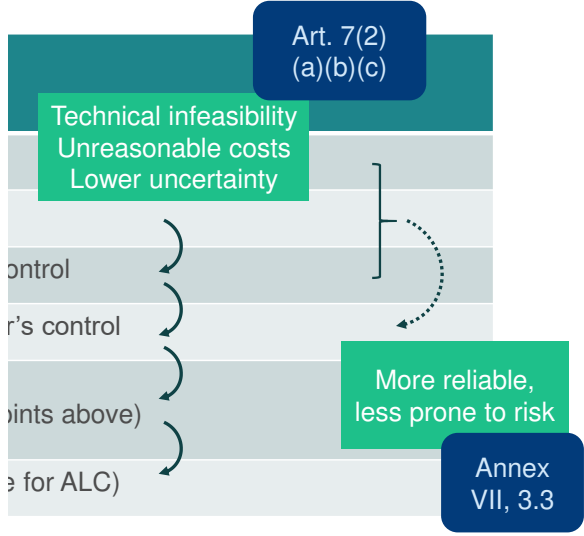
Annex VII, 3.2, 3.4 and 4.4e

Split without meters into sub-installations

- Further examples for indirect methods based on **correlations**:
  - Density of fuels and their NCV or EF (see MRR tier 2b)
  - Ratio between cement and clinker production (cement/clinker factor)
  - Furnace temperature and fuel input
  - Etc.

Reasons for deviation

- Technically not feasible — Art. 7(2)(a)
- Unreasonable costs — Art. 7(2)(b)
- Simplified uncertainty assessment — Art. 7(2)(c)



- Not explicitly mentioned as reason for deviation in Art. 7, but precondition for use of measurement system outside operator's control:
  - Risk assessment shows that this gives more reliable results and is less prone to control risks — Art. 11(1) & Annex VII, 3.3

Art. 7(2)(b)

Unreasonable costs

- FAR allows to deviate from applying the required methodologies if the operator can demonstrate **unreasonable costs**
- Costs to be taken into account:
  - Investment costs
  - O&M costs
  - Other costs, e.g. costs for analyses
- IMPORTANT! Only costs which are additional and can be clearly attributed to the improvement measures can be taken into account → no double counting

Costs are considered unreasonable, where the "costs exceed the benefit"!

Unreasonable costs

Art. 7(2)(b)

$$Benefit = P \cdot FA \cdot IF$$

- P…..specified allowance price = 20 € / t CO_2(e)
- FA…sub-installation's free allocation [EUA/year]
  (may also correspond to emission-equivalents of sub-parameters such as individual heat flows, where appropriate)
- IF….Improvement factor (1%)

Art. 7(2)(b)

Unreasonable cost tool

- Tool (link) designed for the MRR but can also be used for free allocation

1

This is an optional tool for calculating whether costs can be considered as unreasonable.

(a) **Direct impact on accuracy?** WAHR

Uncertainty currently achieved: 3,17%
Uncertainty related to the tier required: 1,50%

Select "FALSE" to set IF to 1%

(b) **Types of costs**

i. Current or reference costs

Brief description	Investment costs			O&M costs [€/year]	Other costs [€/year]	Annual costs [€]
	Investment costs [€]	depreciation period [years]	interest rate [%]			
Existing gauge				500,00	0,00	500,00
					Sum	

→ see case study 1

ii. Costs of the new equipment or new measures

Brief description	Investment costs			O&M costs [€/year]	Other costs [€/year]	Annual costs [€]
	Investment costs [€]	depreciation period [years]	interest rate [%]			
New gauge	15 000,00	8	4	500,00	0,00	2 727,92
						2

Enter allocation instead of emissions…..

(c) **Annual costs (Sum of all "additional" costs)** = **2 227,92**

		EUA price [€/t CO2e]		Average annual emissions		Improvement factor		
(d)	**Annual Benefits**	20	x	4 400	x	1,67%	=	**1 469,60**
(e)	**Costs are unreasonable?**			WAHR				

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Relation with tier requirements in the MRR

FAR

MRR

No uncertainty thresholds defined in the FAR

Data source	Description
4.4a (best)	Approved with MP
4.4b (best)	Instruments under MID[1], NAWI[2], NLMC[3]
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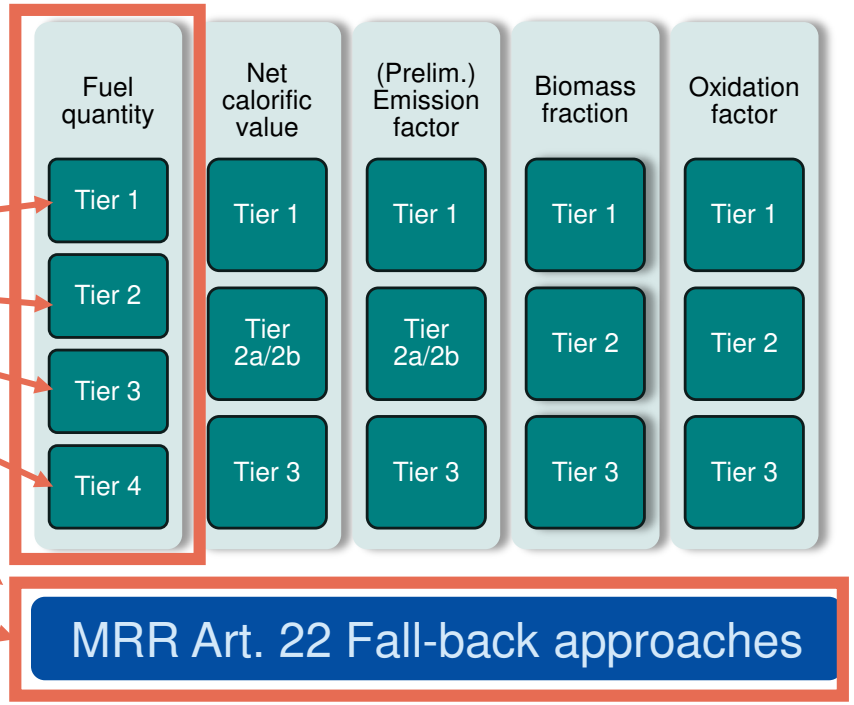

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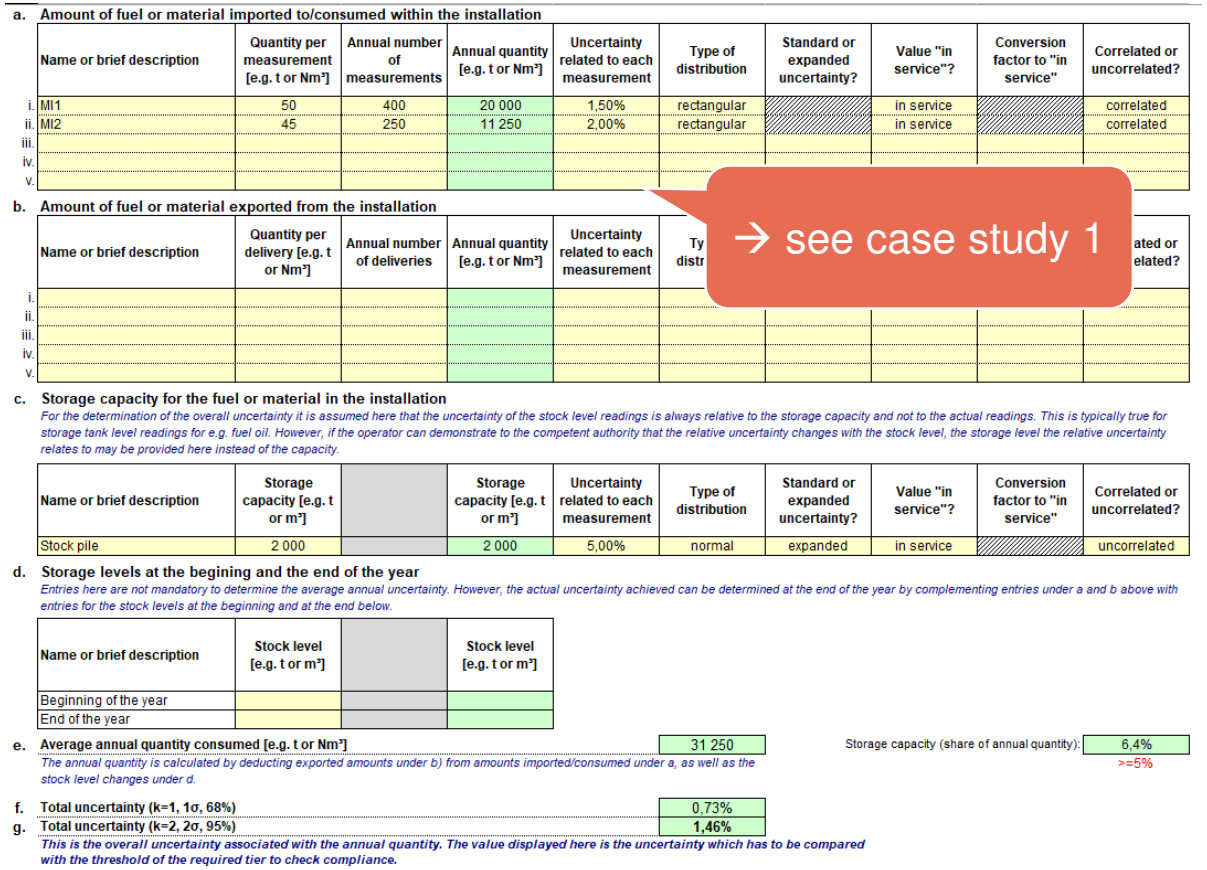
Art. 7(2)(c)

Simplified uncertainty assessment

- Simplified to be understood in comparison with MRR (e.g. no uncertainty thresholds for activity data)
- Suitable guidance and tools on DG CLIMA's MRVA website https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification-eu-ets-emissions_en
  - MRR Guidance Document 4
  - MRR Training material on uncertainty assessment
  - Tool for uncertainty assessment (link)



a. **Amount of fuel or material imported to/consumed within the installation**

	Name or brief description	Quantity per measurement [e.g. t or Nm³]	Annual number of measurements	Annual quantity [e.g. t or Nm³]	Uncertainty related to each measurement	Type of distribution	Standard or expanded uncertainty?	Value "in service"?	Conversion factor to "in service"	Correlated or uncorrelated?
i.	MI1	50	400	20 000	1,50%	rectangular		in service		correlated
ii.	MI2	45	250	11 250	2,00%	rectangular		in service		correlated
iii.										
iv.										
v.										

b. **Amount of fuel or material exported from the installation**

	Name or brief description	Quantity per delivery [e.g. t or Nm³]	Annual number of deliveries	Annual quantity [e.g. t or Nm³]	Uncertainty related to each measurement	Ty distr	ated or elated?
i.							
ii.							
iii.							
iv.							
v.							

→ see case study 1

c. **Storage capacity for the fuel or material in the installation**

For the determination of the overall uncertainty it is assumed here that the uncertainty of the stock level readings is always relative to the storage capacity and not to the actual readings. This is typically true for storage tank level readings for e.g. fuel oil. However, if the operator can demonstrate to the competent authority that the relative uncertainty changes with the stock level, the storage level the relative uncertainty relates to may be provided here instead of the capacity.

Name or brief description	Storage capacity [e.g. t or m³]		Storage capacity [e.g. t or m³]	Uncertainty related to each measurement	Type of distribution	Standard or expanded uncertainty?	Value "in service"?	Conversion factor to "in service"	Correlated or uncorrelated?
Stock pile	2 000		2 000	5,00%	normal	expanded	in service		uncorrelated

d. **Storage levels at the begining and the end of the year**

Entries here are not mandatory to determine the average annual uncertainty. However, the actual uncertainty achieved can be determined at the end of the year by complementing entries under a and b above with entries for the stock levels at the beginning and at the end below.

Name or brief description	Stock level [e.g. t or m³]		Stock level [e.g. t or m³]
Beginning of the year			
End of the year			

e. **Average annual quantity consumed [e.g. t or Nm³]** 31 250

The annual quantity is calculated by deducting exported amounts under b) from amounts imported/consumed under a, as well as the stock level changes under d.

Storage capacity (share of annual quantity): 6,4%
>=5%

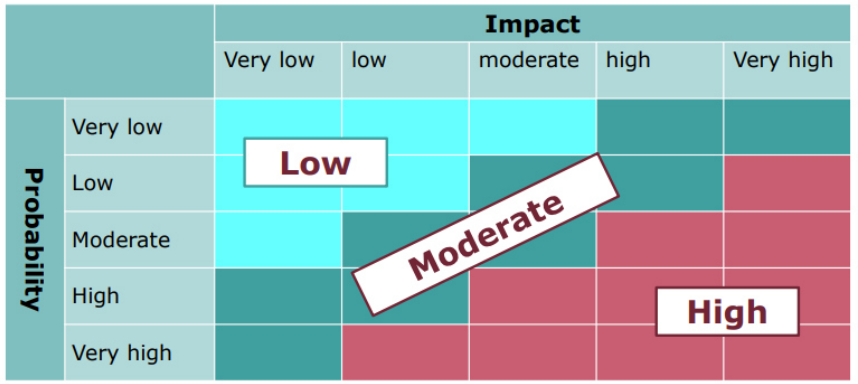
f. **Total uncertainty (k=1, 1σ, 68%)** 0,73%

g. **Total uncertainty (k=2, 2σ, 95%)** 1,46%

This is the overall uncertainty associated with the annual quantity. The value displayed here is the uncertainty which has to be compared with the threshold of the required tier to check compliance.

Risk assessment

Art. 11(1) & Annex VII, 3.3



- Operator has to carry out a risk assessment

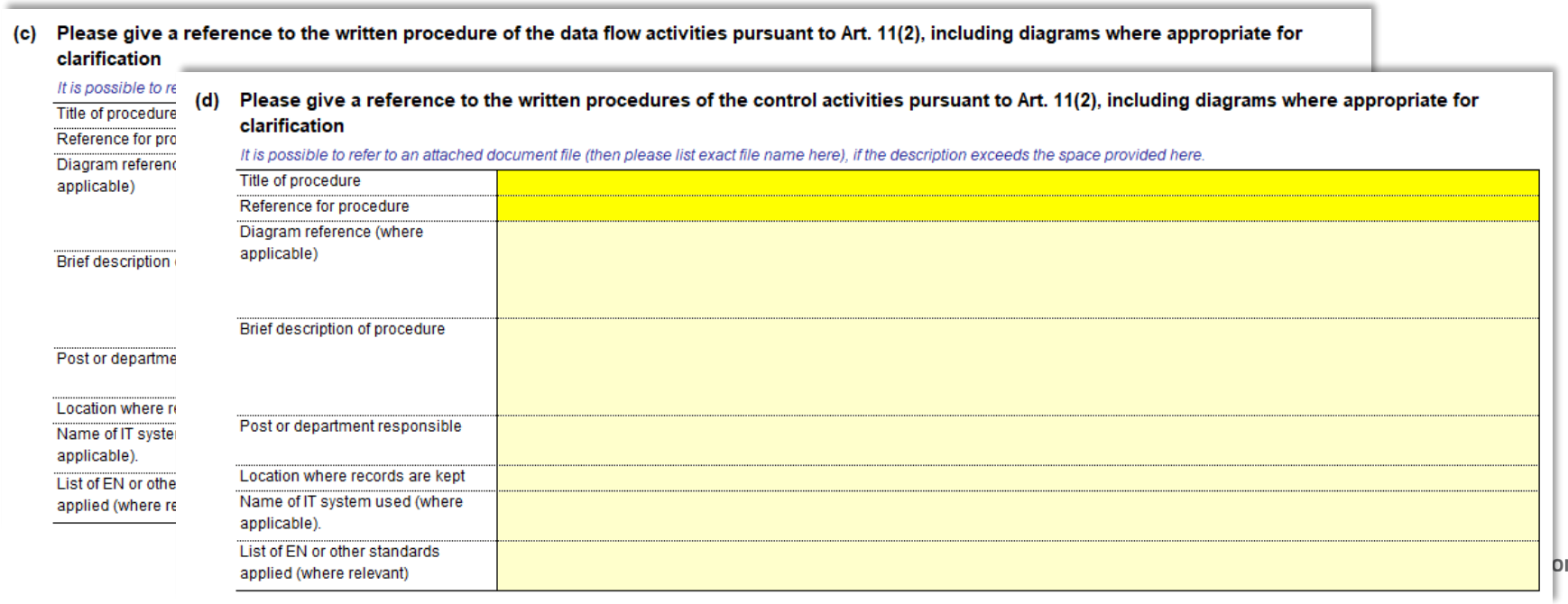
Risk [t CO_2 or EUA per year] = **Probability** [%] x **Impact** [t CO_2 per year]

- **Example to show principle:**
  - If a meter fails every five years (i.e. 20% probability in a certain year) and the meter is only read once per year, one whole year‘s data is lost, at worst.
  - If the associated allocation is e.g. 20.000 EUA per year, 4.000 EUA per year are at risk, on average.
- **How can you lower the risk?**
  - E.g. install a redundant meter → lowers the probability to 4%
  - E.g. read the meter more often, such as monthly → lowers the impact to 1/12

Art. 11(1) & Annex VII, 3.3

Risk assessment

- **Inherent risk**: Risk for (material) misstatements in the data flow before any control activities
- **Control risk**: Risk for (material) misstatements in the data flow not prevented or detected and corrected on a timely basis by the control system
- Procedures in the MMP



(c) **Please give a reference to the written procedure of the data flow activities pursuant to Art. 11(2), including diagrams where appropriate for clarification**

It is possible to re

Title of procedure
Reference for pro
Diagram referenc applicable)
Brief description
Post or departme
Location where r
Name of IT syste applicable).
List of EN or othe applied (where re

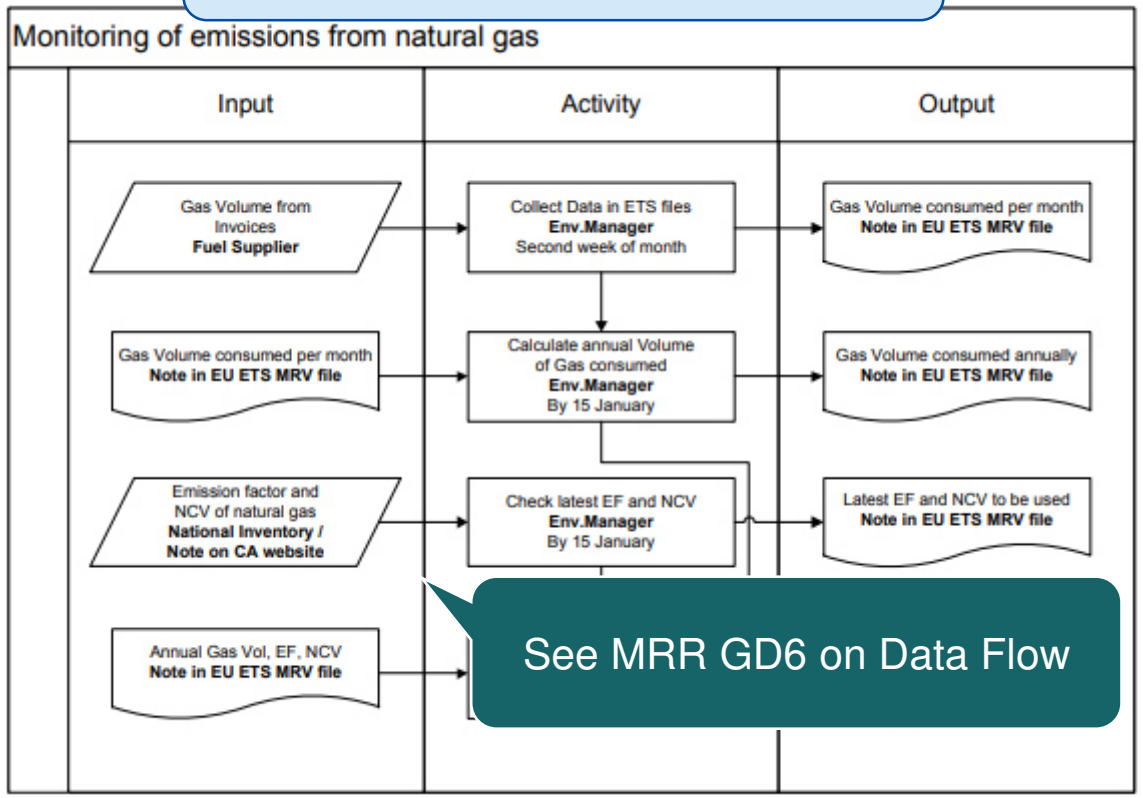
(d) **Please give a reference to the written procedures of the control activities pursuant to Art. 11(2), including diagrams where appropriate for clarification**

It is possible to refer to an attached document file (then please list exact file name here), if the description exceeds the space provided here.

Title of procedure	
Reference for procedure	
Diagram reference (where applicable)	
Brief description of procedure	
Post or department responsible	
Location where records are kept	
Name of IT system used (where applicable).	
List of EN or other standards applied (where relevant)	

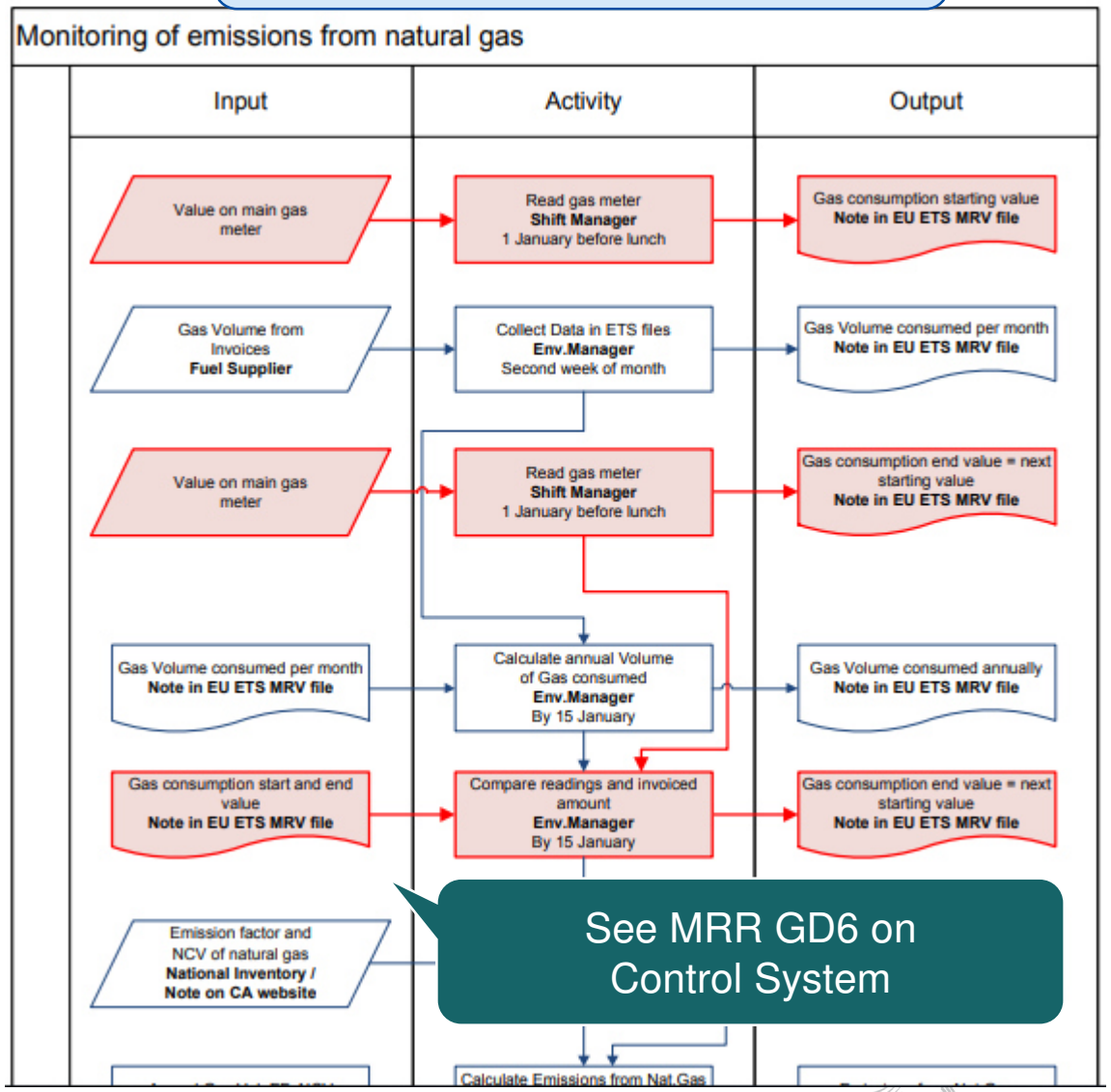
Data flow and control system

Data flow ↔ Inherent risk



See MRR GD6 on Data Flow

Control activities ↔ Control risk

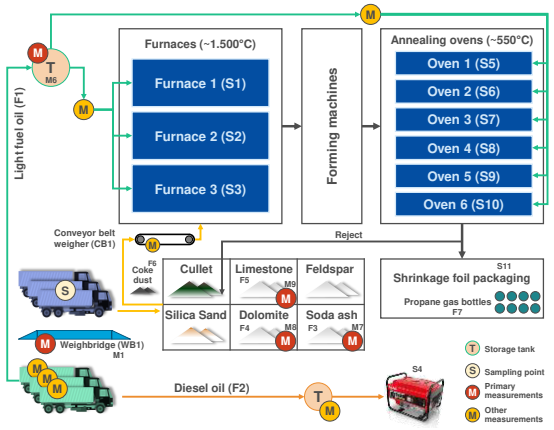


See MRR GD6 on Control System

European Commission

RA – Further guidance

- See corresponding MRR tool (link)
- See example in Round Robin test training material (link)



Process/Activity	Incident	Type of risk	Inherent Risk				Inherent Risk x Control Risk				
			P	I	Risk		Control Measure(s)	P	I	Risk	
Weigh bridge WB1 (LFO)	Gross failure	Activity data lost or inaccurate	2	5	172,0	HIGH	Temporary use of invoices as data sources; cross checks with furnace flow meters and production data; procedure for corrective actions; procedure for quality assurance and control of measuring equipment	1	3	4,3	LOW
Weigh bridge WB1 (LFO)	Meter malfunction	Activity data lost or inaccurate	3	2	43,0	MED	Cross check with invoices (supplier's metering data) cross checks with furnace flow meters and production data; procedure for corrective actions; procedure for quality assurance and control of measuring equipment	2	1	0,4	LOW
Weigh bridge WB1 (LFO)	Meter maloperation (truck not fully placed on weigh bridge or not at standstill)	Activity data incorrect	4	2	86,0	MED	Plausibility checks; cross check with invoices, with furnace flow meters and production data	2	1	0,4	LOW
Weigh bridge WB1 (LFO)	Display error or misreading, typos when entering data into IT system	Activity data incorrect	4	3	172,0	HIGH	Cross check with supplier's metering data (invoices), furnace flow meters and production data; recheck of entered data by responsible person; automatic plausibility check of data entered into IT system; independent review by 2nd person	3	1	4,3	LOW
Weigh bridge WB1 (LFO)	Not appropriate for the operating conditions or not appropriately installed	Activity data incorrect	2	4	43,0	MED	Checklist comparing conditions applied and manufacturer's specification; personnel regularly educated (see procedure for managing ETS responsibilities); cross checks with invoices	1	1	0,2	LOW
Weigh bridge WB1 (LFO)	Missing or incorrect calibration	Activity data incorrect	4	3	172,0	HIGH	Procedure for quality assurance and control of measuring equipment; cross check with invoices, furnace flow meters and production data	2	2	4,3	LOW
Stock changes (LFO)	Forgetting to determine stocks at beginning	Activity data of reporting year incorrect (but no error over a long	4	2	86,0	MED	Procedure for the determination of stock changes (monthly reminder in calendar of responsible person); cross checks with	2	2	4,3	LOW

Quantification of energy flows

MMP template

II Measurable heat at installation level

(a) Measurable heat flows (import, export, consumption and production)

For the specific purpose of the NIMs data collection, this section should cover all data provided in section E.II in the "baseline data collection" template.

i. Are measurable heat flows relevant for the installation? — WAHR

ii. Information on the methodology applied

Please select below for all measurable heat flows:

- *the data source used for the energy flows pursuant to section 4.5 of Annex VII of the FAR.*

  As more than one of the data sources might be involved, the template provides for up to three sources. If even further sources are involved, please select the three main sources and describe further details in the description of the methodology below.

  For example, if heat is imported and consumed within the installation, the imported flows might be measured by instruments subject to national legal metrological control (section 4.5(a)), while the consumed amounts might be measured by other meters under the operator's control (section 4.5(b)).

- *the method used for the determination of net amounts pursuant to section 7.2 of Annex VII of the FAR.*

	Data source	Other data source (if applicable)	Other data source (if applicable)
1. Quantification of measurable heat flows	4.5. (a) Readings of	4.5. (b) Readings of	
2. Net measurable heat flows	7.2. Method 1: Using	7.2. Method 1: Using	

3. Description of the methodology applied

Hierarchy of approaches – Quantification of energy flows

Annex VII 4.5

Art. 7(2) (a)(b)(c)

Technical infeasibility
Unreasonable costs
Lower uncertainty

Hierarchy

Data source	Description
4.5a (best)	Instruments under NLMC[1]
4.5b (best)	Other instruments under the operators control
4.5c	Other instruments not under the operator's control
4.5d	Indirect determination methods (implicitly: same preferences as bullet points above)
4.5e	Using a proxy based on efficiency (method 3 of VII 7.2)
4.5f	"Other methods" (basically not applicable for ALC, only e.g. for data gaps)

If more reliable, less prone to risk

Annex VII, 3.3

For uncertainty assessment <u>all parameters</u> needed for determining net heat flow have to be considered

1 National Legal Metrological Control

Quantification of energy flows

- Data source hierarchy similar to the one for ‘quantification of fuels & materials’
- Measuring / metering flows (4.5a-c) comprises the following parameters:
  - **Flow rate** of the heat medium (most appropriate is the mass flow) to the process
  - State of the medium entering the heat consuming process (**specific enthalpy** of the medium)
    - **Type of the medium** (hot water, steam, hot air, oil, molten salt or metal, etc.)
    - **Temperature & pressure** (in case of steam or other gases; saturation or degree of superheating)
    - Etc.
  - State and flow rate of the medium leaving the heat consuming process
- Specificity for measurable heat: determine ***net* heat flows** following the hierarchy below:
  - Method 1: measurement of the parameters above
  - Method 2: documents based on historic metering or estimation methods
  - Method 3: use measured *proxy* efficiencies
  - Method 4: use reference efficiency of 70%

Annex VII, 4.5

Annex VII, 7.2

Annex VII, 4.5 and 7.2

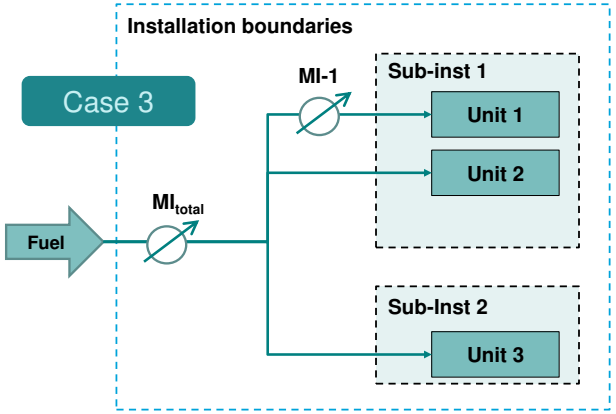
Determination of *net* measurable heat

Flow out \ Flow return		Measured	Not measured	Leakage/ sewering	Life steam injection
Measured (4.5a-c)		**Method 1**	**Method 1** (90°C)**	**Method 1** (with corrections)***	
Indirect method / correlation (4.5d)		**Method 2** (documents based on metering (historical data) or estimation methods)			
Not measured	Proxy efficiency available* (**4.5e**)	**Method 3** (90°C)**			
	Proxy efficiency not available (**4.5f**)	**Method 4** (efficiency = 70%)			

* representativeness: reasonably long period, relevant load states (operator or manufacturer's documentation)
** assumed temperature of 90°C for the return flow
*** deduction of transmitted mass flow (leakage), non-deduction of condensate (life steam injection)

Annex VII, 3.2(1), 3.4 and 4.5d

Split without meters into sub-installations



Data source	Description
4.5a (best)	Instruments under NLMC[1]
4.5b (best)	Other instruments under the operators control
4.5c	Other instruments not under the operator's control
4.5d	Indirect determination methods (implicitly: same preferences as bullet points above)
4.5e	Using a proxy based on efficiency (method 3 of VII 7.2)
4.5f	"Other methods" (basically not applicable for ALC, only e.g. for data gaps)

- See 'quantification of fuels & materials'
- Split based on usage time of physical units
- Split based on other suitable, correlated parameters:
  - Production ratios
  - Ratios of free reaction enthalpies
  - Other methodologies based on sound science

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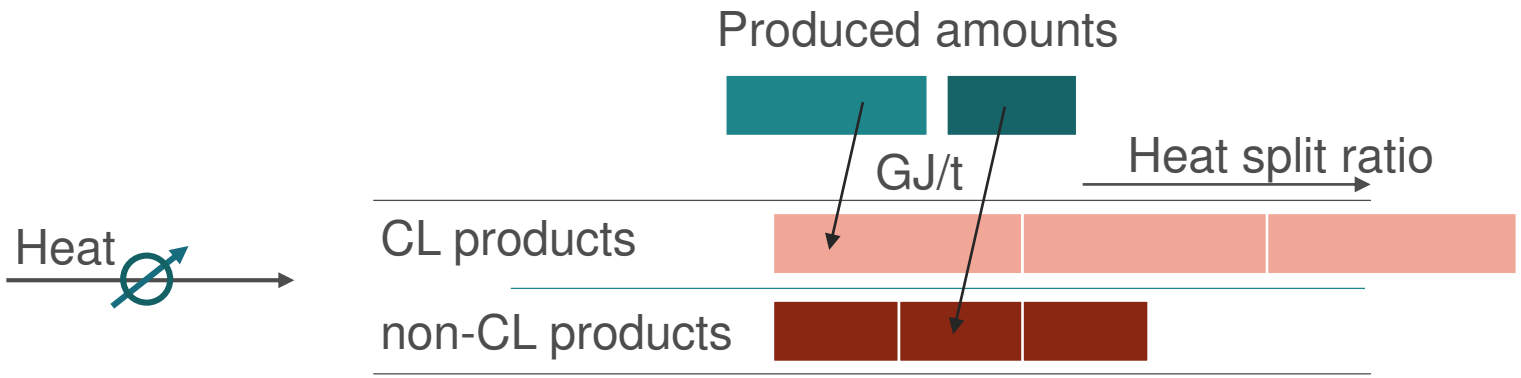
Annex VII, 3.2(1), 3.4 and 4.5d

Split without meters into sub-installations

- **Example for 4.5d (indirect method): split between CL and non-CL**



Rule for energy efficiency improvement

See Guidance Document 7

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)

Step 1: calculate expected energy consumption at NIMs efficiency (for each product produced within installation)

Step 2: add all other heat (expected = actual consumption; no improvements considered)

Step 3: calculate difference between expected and actual heat consumption
→ improvement

→ see case study 2

ALC-R
Art. 6

Rule for energy efficiency improvement

ALC template

	Use type	thin installation or port?	Product name, or heat export other than "district heating"	PRODCOM 2010
1	Production of goods	Within installation	Product A	12345678
2	Production of goods	Within installation	Product B	11111111
3	heating	non-ETS entity: Heat Export	Product C (heat export)	22222222
4				

Production levels:

	Product name, or heat export other than "district heating"	Unit	NIMs value	2019	2020	2021
1	Product A	t	10 000,00	8 000,00	8 000,00	
2	Product B	t	10 000,00	12 000,00	12 000,00	
3	Product C (heat export)	t	0,00	0,00	0,00	
4						

Enter production for products *within the installation*

Enter "0" (or leave empty) for use *outside the installation*

	Product name, or heat export other than "district heating"	Unit	NIMs value	2019	2020	2021	2022	2023	2024	2025
1	Product A	TJ	600,00	500,00	500,00					
2	Product B	TJ	400,00	400,00	400,00					
3	Product C (heat export)	TJ	200,00	350,00	350,00					
4		TJ								
	Sum of consumption	TJ	1 200,00	1 250,00	1 250,00					
	Share of a)	TJ	100,0%	100,0%	100,0%					

BUT: enter heat consumption/export *for all elements*, i.e. "share of a)" needs to equal 100%

	Adjustments: Efficiency improvements	Unit	Base value	2021	2022
ii.	Average annual efficiency	TJ / t	0,0433	0,0413	
iii.	Efficiency improvement compared to base value			4,6%	

(b.3) Adjustments: Absolute threshold						
	Absolute threshold	2021	2022	2023	2024	2025
	>=100 EUA criterion satisfied?	FALSCH	FALSCH	FALSCH	FALSCH	FALSCH

(b.4) Determination of the actual activity level adjustments including any efficiency changes						
	Actual adjustment (basis for subsequent years)	2021	2022	2023	2024	2025
i.	Competent Authority approval relevant?	FALSCH	FALSCH	FALSCH	FALSCH	FALSCH

If "TRUE" is displayed here, either the average activity level dropped below -15% compared to the HAL and at the same time the energy efficiency improved by more than 15%, or vice versa. If this is the case, it is subject to the competent authority's assessment (see ii. below) whether the allocation should be adjusted or not.

This decision will be based on whether it can be demonstrated that the changes in the activity level can be explained by changes in the energy efficiency.

ii.	Competent Authority rejects adjustment?	FALSCH

IMPORTANT NOTE: This section should only be filled in by the competent authority, or by you if the competent authority instructed you to...

Needs to be *entered by the CA (if relevant)*, or by the *operator if instructed by the CA* to do so

Properties of materials

MMP template

(d) Fuel input to this sub-installation and relevant emission factor

For the specific purpose of the NIMs data collection, this section should cover all data provided in section G.(d) in the "baseline data collection" template.

i. Information on the methodology applied

	Data source	Other data source (if applicable)	Other data source (if applicable)
1. Fuel input	4.4.(a) Methods in accordance		
2. Net calorific value	4.6. (a) Methods for		
3. Weighted emission factor	4.6. (a) Methods for		

Hierarchy of approaches – Properties of materials

Annex VII 4.6

Art. 7(2) (a)(b)(c)

Technical infeasibility
Unreasonable costs
Lower uncertainty

Hierarchy

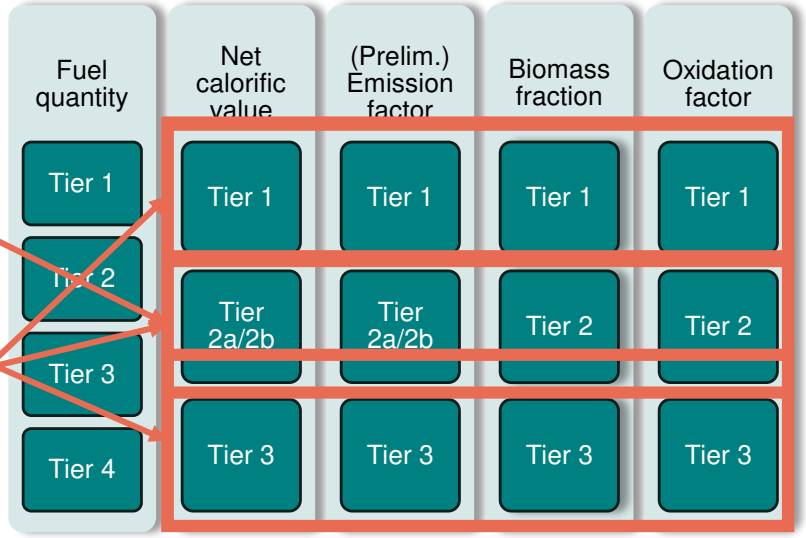
Data source	Description
4.6a (best)	Approved with MP (for “calculation factors”)
4.6b (best)	Laboratory analyses (Annex VII 6.1 = in accordance with MRR Art. 32 to 35, i.e. accredited lab etc.)
4.6c	Simplified analyses (Annex VII 6.2 = industry best practice etc.)
4.6d	Constant values “type II” (like MRR tier 2)
4.6e	Constant values “type I” (like MRR tier 1) or “other values based on scientific evidence”

Relation with tier requirements in the MRR

FAR

MRR

Data source	Description
4.6a (best)	Approved with MP (for “calculation factors”)
4.6b (best)	Laboratory analyses (Annex VII 6.1 = in accordance with MRR Art. 32 to 35, i.e. accredited lab etc.)
4.6c	Simplified analyses (Annex VII 6.2 = industry best practice etc.)
4.6d	Constant values “type II” (like MRR tier 2)
4.6e	Constant values “type I” (like MRR tier 1) or “other values based on scientific evidence”



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Annex VII
4.6

Properties of materials

- Cases mostly with data source 4.6a:
  - Fuel properties such as NCV and EF
  - EF of fuels and materials for process emissions and attribution of emissions
  - EF of products with process emissions (lime, clinker,…)

- Product characteristics:
  - Product purity (see GD9), e.g. activity level to be expressed as 100% nitric acid or hydrogen
  - Product properties such as moisture, e.g. paper amount to be expressed with 6% moisture content (example for 9.3% measured moisture):

$$P_{corr} = P_{measured} \cdot \frac{1 - 9{,}3\%}{1 - 6\%}$$

Annex VI

Further MMP content

- MMP is a “user manual” for installation staff, basis for verification
  - start with existing, reliable data sources and check against hierarchies in Annex VII, section 4.4 to 4.6
  - keep data flow short, have effective controls
  - think like a verifier
- MMP has to contain
  - Installation description (processes, sub-installations,…)
  - Flow chart / diagram showing material and energy flows (and measuring instruments, sampling points)
  - Should contain **forward-looking** monitoring methods for “**everything that has to be reported**” in the ALC report

Annex VI

Further MMP content

- Determine for each data set
  - Primary data sources and (where possible) corroborating data sources
  - For avoiding and closing data gaps, there is more formalised than in the MRR a need to have a “corroborating data source” readily available – also used for temporary unavailability of the primary data source
- Too detailed or frequently changing elements should be put into procedures (no formal approval needed for updates)
  - e.g. replacing measuring equipment of the same quality, use of different accredited laboratories

Cross-cutting: methods in the MMP

- Header in sheets E, F, G and H

Annex VI, last paragraph

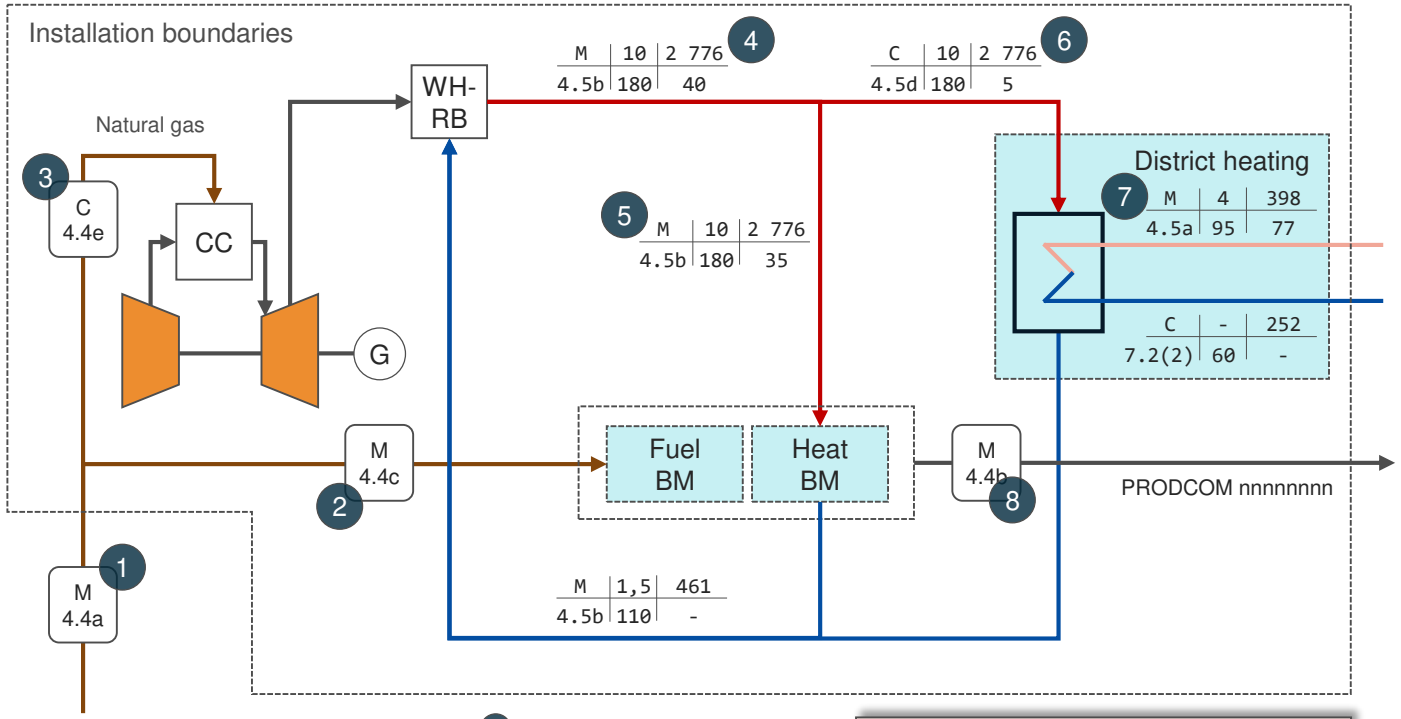
MMP template

All descriptions of the methods used in subsequent sections below to quantify parameters to be monitored and reported shall

- *calculation steps*
- *data sources*
- *calculation formulae*
- *relevant calculation factors including unit of measurement*
- *horizontal and vertical checks for corroborating data*
- *procedures underpinning sampling plans*
- *measurement equipment used with reference to the relevant diagram and a description how they are installed and maintained*
- *a list of laboratories engaged in carrying out relevant analytical procedures*

The description shall include the result of a simplified uncertainty assessment in accordance with Article 7(2), where required.
For each relevant calculation formula the plan shall contain one example using real data.

Good example: Flow diagram in the MMP



E.I.a	installation fuel input	$= 1\,000$ TJ
E.I.a	Fuel-BM	$= 100$ TJ
E.I.a	Fuel for measurable heat	$= 1\,000$ TJ $- 100$ TJ $= 900$ TJ
E.II.a	produced measurable heat	$= \left[40\frac{t}{h} \cdot \left(2776\frac{MJ}{t} - 461\frac{MJ}{t}\right)\right] \cdot 24\frac{h}{day} \cdot 365\frac{days}{year} \cdot 10^{-6}\frac{TJ}{MJ} = 811$ TJ
E.II.l	consumed measurable heat	$= \left[35\frac{t}{h} \cdot \left(2776\frac{MJ}{t} - 461\frac{MJ}{t}\right)\right] \cdot 24\frac{h}{day} \cdot 365\frac{days}{year} \cdot 10^{-6}\frac{TJ}{MJ} = 710$ TJ
E.II.m	District heating	$= \left[77\frac{t}{h} \cdot \left(398\frac{MJ}{t} - 252\frac{MJ}{t}\right)\right] \cdot 24\frac{h}{day} \cdot 365\frac{days}{year} \cdot 10^{-6}\frac{TJ}{MJ} = 98$ TJ

M	bar	kJ/kg
4.x	°C	t/h

M **M**easured data
C **C**alculated data
4.x Data source, Annex VII FAR

European Commission

Art. 9

MMP updates

- The improvement principle
  - Similar approach as under MRR – distinguish significant and other MMP updates – approval by CA or only notification
  - No approval, if only procedure is concerned

MMP template

A. Monitoring Methodology Plan versions

I List of monitoring methodology plan versions

This sheet is used for tracking the actual version of the monitoring methodology plan. Each version of the monitoring plan should have a unique version number, and a reference date.

Depending on the requirements of the Member State, it is possible that the document is exchanged between competent authority and operator with various updates, or that the operator alone keeps track of the versions. In any case, the operator should keep in his files a copy of each version of the monitoring methodology plan.

The status of the monitoring methodology plan at the reference date should be described in the "status" column. Possible status types include "submitted to verifier", "assessed by verifier", "submitted to the competent authority (CA)", "returned with remarks", "approved by the CA", "working draft" etc.

In the "date of application" column, the date as of which the monitoring methodology as described in the plan applies, if applicable.

At several occasions this document makes reference to external files. Please note that any information contained in such still forms an integral part of the monitoring methodology plan.

Version no.	Reference date	Status at reference date	Date of application	Chapters where modifications have been made. Brief explanation of changes
1	15.05.2020	approved by competent author	15.05.2020	
2	20.20.2021	submitted to competent autho	20.20.2021	E.I.a

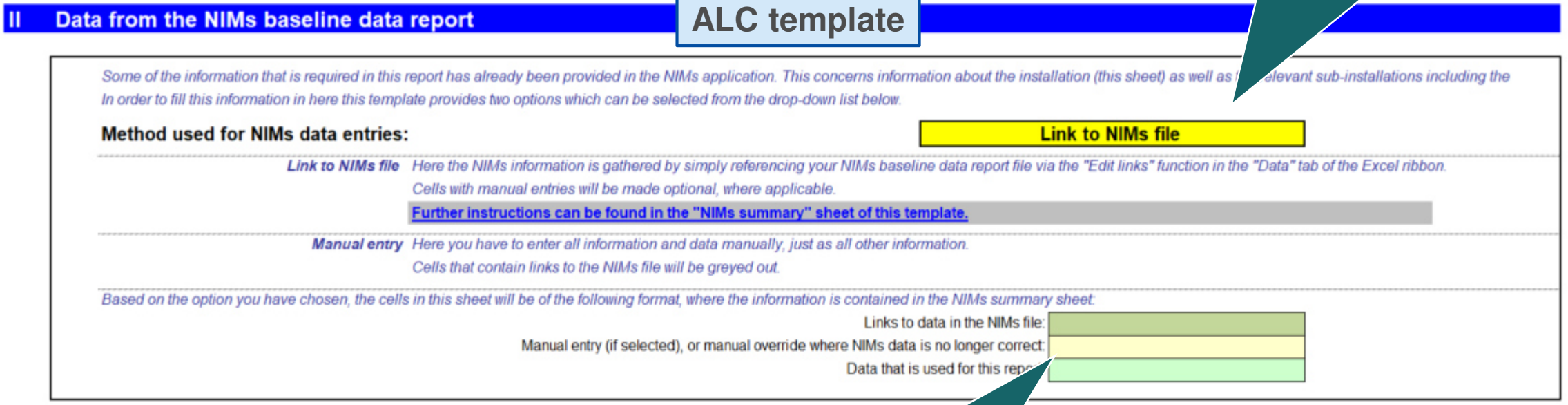
New version of the MMP

ALC report – specific issues

Data from the NIMs baseline data report

Step 1: Link to NIMs or manual entry

ALC template



II Data from the NIMs baseline data report

Some of the information that is required in this report has already been provided in the NIMs application. This concerns information about the installation (this sheet) as well as [illegible] relevant sub-installations including the
In order to fill this information in here this template provides two options which can be selected from the drop-down list below.

Method used for NIMs data entries: Link to NIMs file

Link to NIMs file *Here the NIMs information is gathered by simply referencing your NIMs baseline data report file via the "Edit links" function in the "Data" tab of the Excel ribbon.*
Cells with manual entries will be made optional, where applicable.
Further instructions can be found in the "NIMs summary" sheet of this template.

Manual entry *Here you have to enter all information and data manually, just as all other information.*
Cells that contain links to the NIMs file will be greyed out.

Based on the option you have chosen, the cells in this sheet will be of the following format, where the information is contained in the NIMs summary sheet:

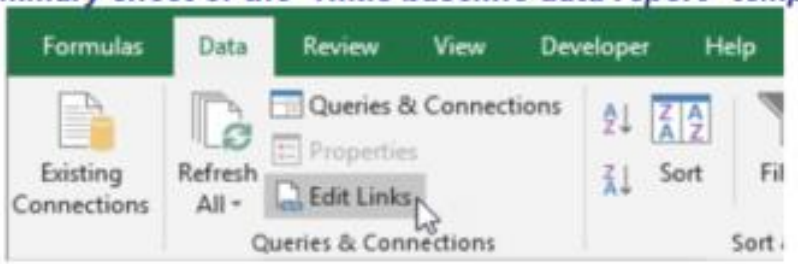
Links to data in the NIMs file:
Manual entry (if selected), or manual override where NIMs data is no longer correct:
Data that is used for this rep[illegible]

Step 2: depending on step 1

Data from the NIMs baseline data report

ALC template

This sheet has the same structure as the summary sheet of the "NIMs baseline data report" template and contains links to an empty template.



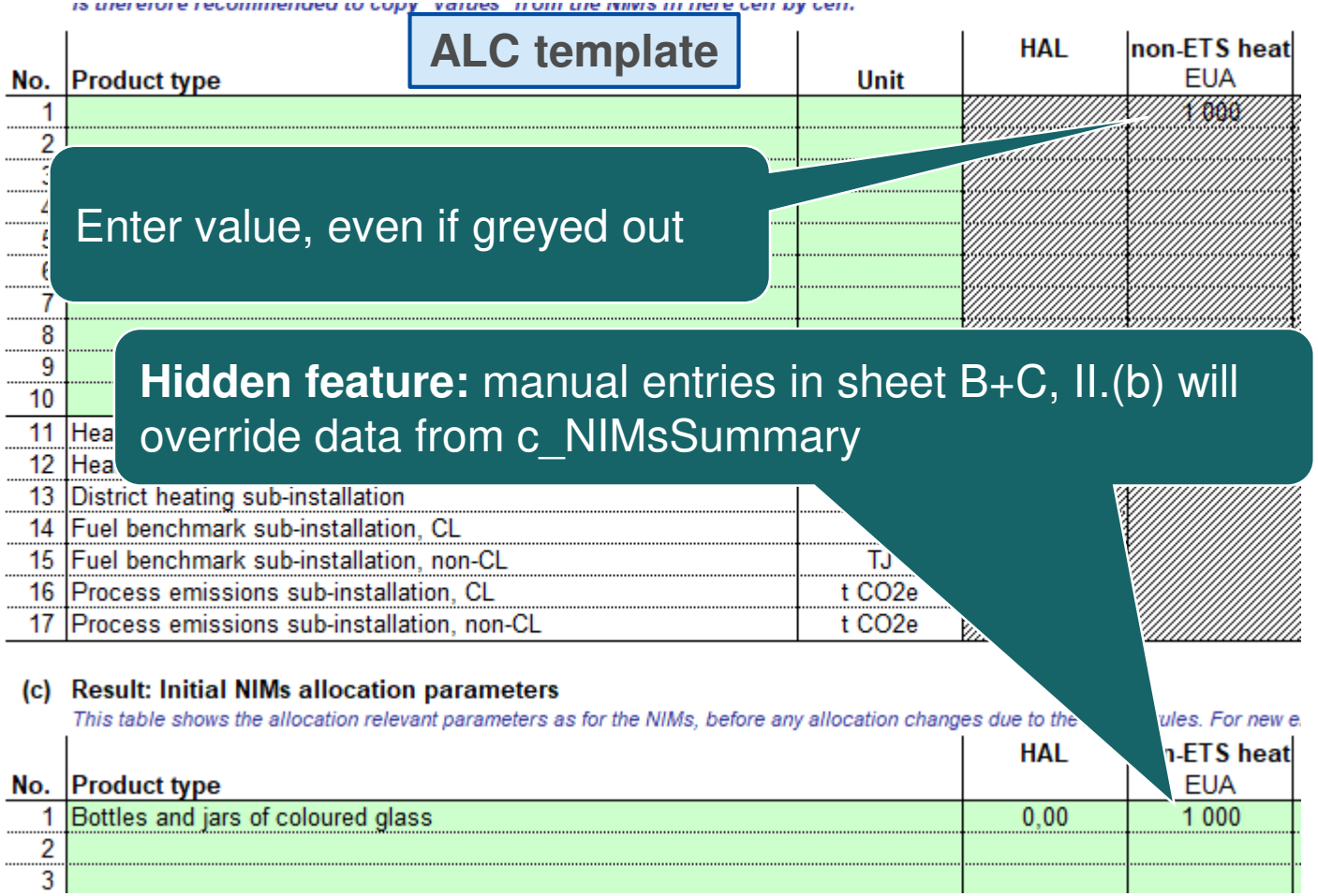
Step 1 *In order to gather the data from your specific file, in which all your NIMs data is contained, please change the file reference via the "Edit links" function in the "Data" tab of the ribbon of Excel.*

Step 2 *Select "Edit links" under the "Connection" or "Queries & Connections" group, depending on the Excel version you use.*

European Commission

Data from the NIMs baseline data report

- What if links have been broken but a NIMs correction (e.g. update of BM values) is necessary?



European Commission

Fuel EF

B	C	D	E	F	G	H
E. Energy flows			Navigation area:		Table of contents	
			Top of sheet		Attribution of Fuels	
			End of sheet		Electricity	

For control purposes, the rest (100% minus total of inputs) is displayed in the bottom line. This re

ALC template

	Usage type of fuel input	Unit	2019	2020	2021	2022	
i.	Fuel input to product BM sub-installations	TJ / year	50,00	50,00	50,00	50,00	
ii.	Fuel input for production of measurable heat	TJ / year	200,00	240,00	240,00	240,00	
iii.	**Fuel benchmark sub-installation, CL**	**TJ / year**	**410,00**	**410,00**	**375,00**	**350,00**	
iv.	**Fuel benchmark sub-installation, non-CL**	**TJ / year**	**160,00**	**210,00**	**210,00**	**210,00**	
v.	Fuel input for electricity production	TJ / year	0,00	0,00	0,00	0,00	
vi.	Rest	TJ / year	0,00	0,00	-25,00	0,00	

For control purposes, the inputs are displayed here in the unit which you have not chosen for input:

	Usage type of fuel input	Unit	2019	2020	2021	2022	
vii.	Fuel input to product BM sub-installations	%	6,10	5,49	5,88	5,88	
	ction of measurable heat	%	24,39	26,37	28,24	28,24	
	ub-installation, CL	**%**	**50,00**	**45,05**	**44,12**	**41,18**	
	ub-installation, non-CL	**%**	**19,51**	**23,08**	**24,71**	**24,71**	
	production	%	0,00	0,00	0,00	0,00	
		%	0,00	0,00	-2,94	0,00	

See FAQ 1.6

(d) Emission factor for fuels use measurable heat and electricity production

Please enter in the table below the weighted ge emission factor for all fuels, and for the fuels that are used to produce any measurable heat and electricity have any direct impact on either the allocation or the ributed emissions. They are only used for checking plausibility.

For attributing fuel input from cogeneration (CHP) to produc of measurable heat and electricity, the results of the "CHP tool" in section D.III. can be used.

	Emission factor (EF)	Unit	2019	2020	2021	2022	
i.	Fuel EF for total fuel input	t CO2 / TJ	75,40	75,75	75,40	75,40	
ii.	Fuel EF for measurable heat	t CO2 / TJ	75,40	75,75	75,40	75,40	
iii.	Fuel EF for electricity	t CO2 / TJ	n.a.	n.a.	n.a.	n.a.	n.a.

ALC template: BM values in BDR

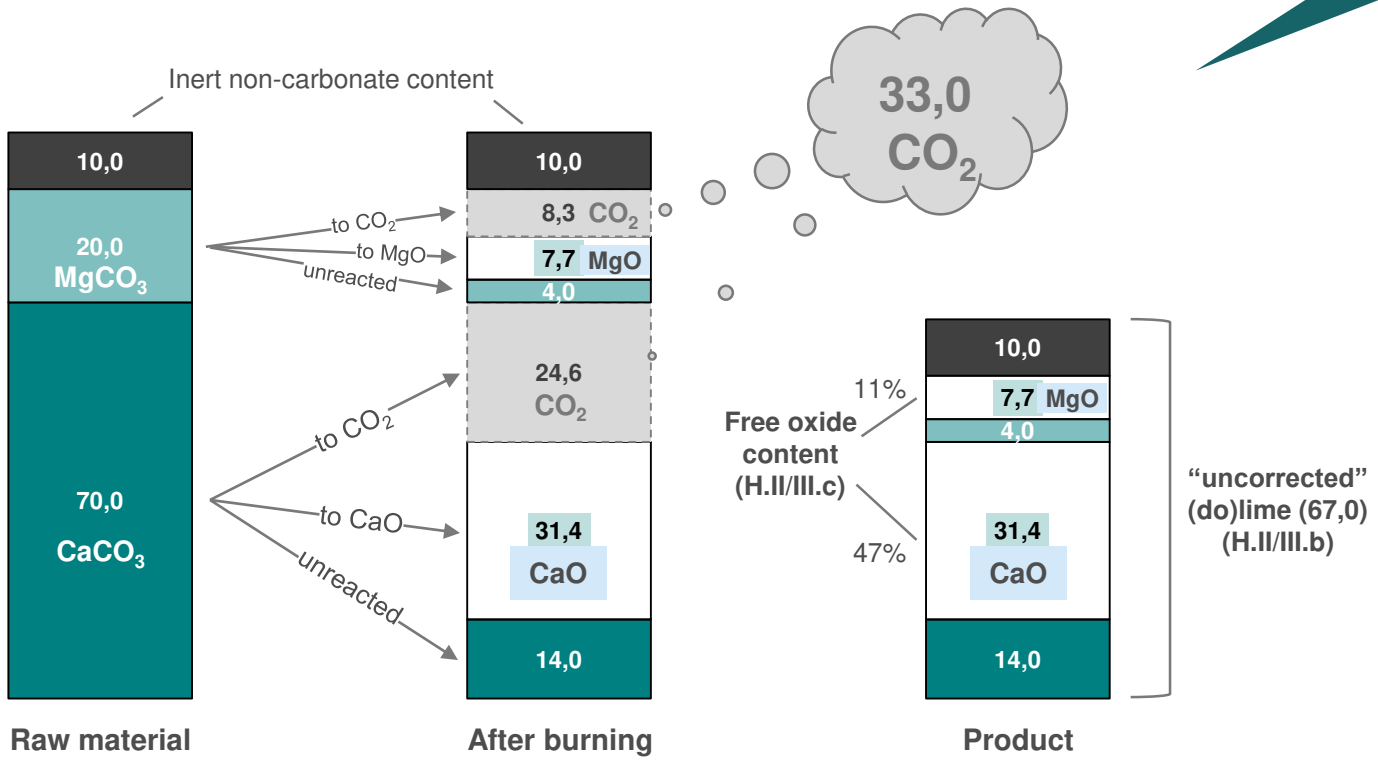
See FAQ 1.7

Case	BM values in BDR	Installation has product BM sub-installations	Displayed Value in column 'BM values in the linked NIMs file are correct'
Operator chooses to enter NIMs values manually	N.A. (cannot be checked)		
Operator imports NIMs data from BDR	correct	TRUE	TRUE
		FALSE	TRUE
	wrong	TRUE	FALSE*
		FALSE	TRUE

***only a problem if ElExch-F, non-ETS heat import or VCM-F are relevant for any product BM sub-inst.**

(do)lime production

See FAQ 2.1



$$uncorrected\ (do)lime\ production\ [t] \cdot (0.785 \cdot free\ CaO\ [\%] + 1.092 \cdot free\ MgO\ [\%])$$
$$= process\ emissions\ (t\ CO_2)\ as\ per\ annual\ emissions\ report$$

European Commission

CHP tool

ALC template

Relevant for attribution of emissions (BM update)

Net heat output has to be reported, not gross (consistent with E.II)

Reference efficiencies (Reg. 2015/2402) to be entered here, weighted by fuel input where different types of fuels are relevant

Tool for calculating the emissions attributable to heat production in combined heat and pow

Detailed instructions for data entries in this tool can be found at the first copy of this tool. (D.III.1

(a) Total amount of fuel input into CHP units

	Unit	2019	2020
Fuel input into CHP	TJ / year	100,00	100,00

(b) Heat output from CHP

	Unit	2019	2020
Heat output from CHP	TJ / year	70,00	70,00

(c) Electricity output CHP

	Unit	2019	2020
Electricity output from CHP	MWh / year	5 000,00	5 000,00
Electricity output CHP	TJ / year	18,00	18,00

(d) Total emissions from CHP

	Unit	2019	2020
i. From fuel input to CHP	t CO2 / year	0,00	0,00
ii. From flue gas cleaning	t CO2 / year	0,00	0,00
iii. Total emissions	t CO2 / year	0,00	0,00

(e) Default efficiencies:

(f) Efficiencies for heat and electricity

	Unit	2019	2020
i. Heat production	-	0,7000	0,7000
ii. Electricity production	-	0,1800	0,1800

(g) Reference efficiencies

	Unit	2019	2020
production		90,00%	90,00%
	-	52,50%	52,50%

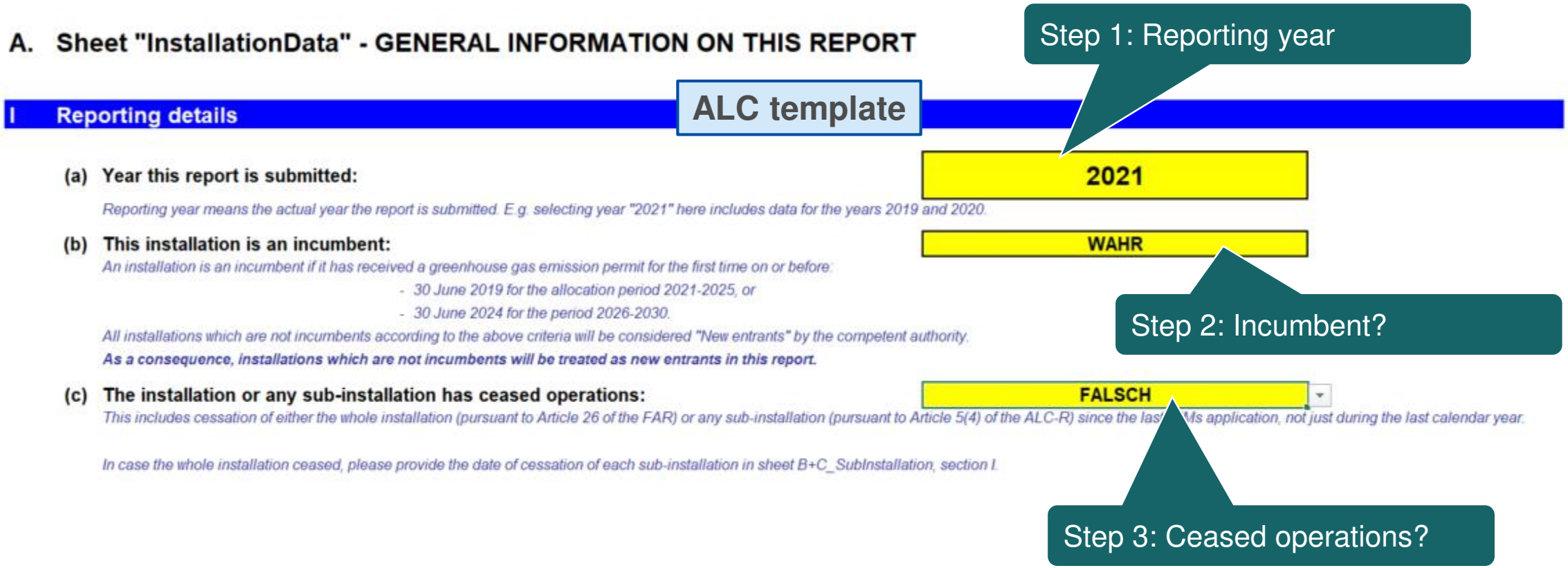
sions attributable to heat production from CHP

	Unit	2019	2020
sions attributable to heat output	t CO2 / year	0,00	0,00
sion factor, heat	t CO2 / TJ	0,00	0,00

(i) Fuel input attributable to heat and electricity production

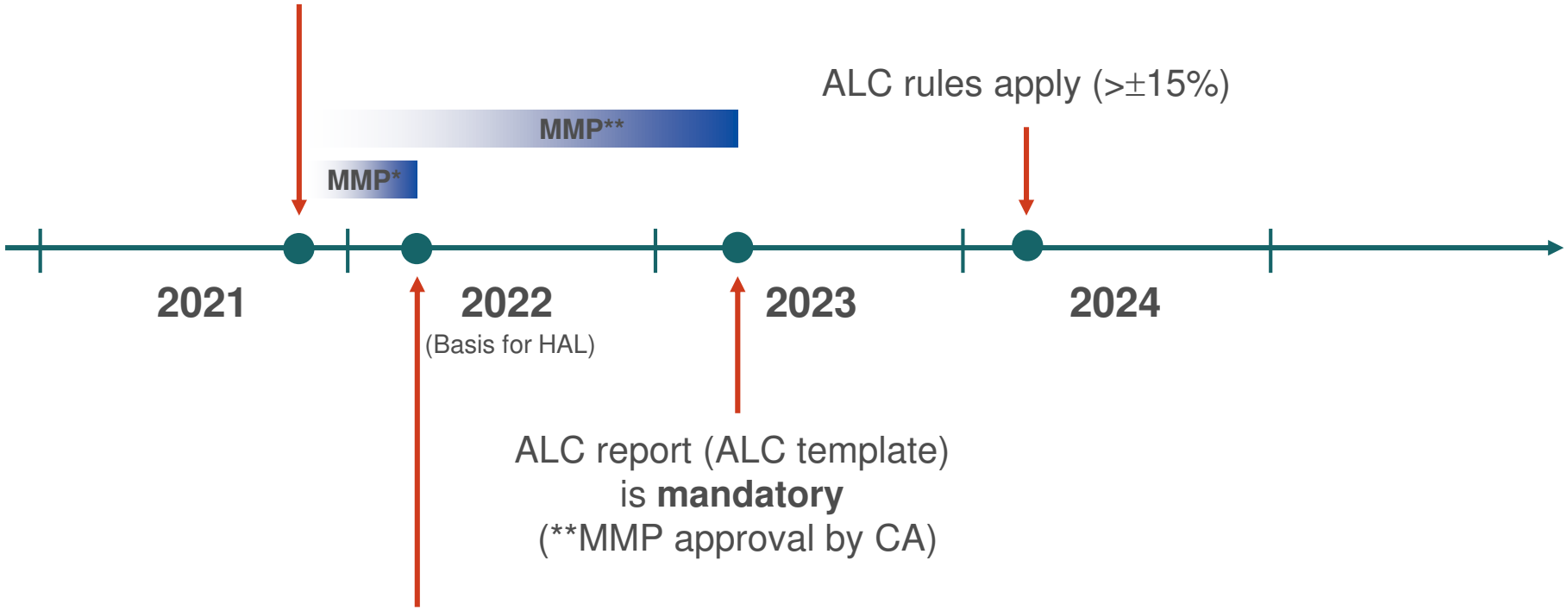
	Unit	2019	2020
i. Fuel input for heat	TJ / year	69,41	69,41
ii. Fuel input for electricity	TJ / year	30,59	30,59

New entrants and cessations



New entrants reports

Example: new entrant starts operation on 26 Nov 2021
(same would apply for new sub-installations in incumbents)



European Commission

Process emissions

- Stronger alignment between MRR and FAR as of phase 4
- Still: two separate legislative acts
- One of the most prominent examples: pore-forming agents in the ceramic industry:
  - **FAR**: carbon-containing additive or raw material with primary purpose other than heat generation

Art. 3(10)(e)

  - **MRR**: rules now clarified for non-carbonate materials, still OK to report emissions as combustion

Guidance, templates and FAQs

Where can I find information?

https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/free-allocation_en

FAR Guidance and Tools 1

Item	Content
Guidance Document 1	General guidance on the allocation methodology
Guidance Document 2	Guidance on determining the allocation at installation level
Guidance Document 3	Data collection guidance (Focus on BDR, but also applicable for ALC)
Guidance Document 4	Verification of FAR Baseline Data Reports and validation of Monitoring Methodology Plans

FAR and ALC Guidance and Tools 2

Item	Content
Guidance Document 5	Guidance on Monitoring and Reporting in Relation to the Free Allocation Rules **(Main basis for this training)**
Guidance Document 6	Cross-Boundary Heat Flows
Guidance Document 7	Guidance on allocation level changes
Guidance Document 8	Waste gases and process emissions sub-installation

FAR and ALC Guidance and Tools 3

Item	Content
Guidance Document 9	Sector-specific guidance
Guidance Document 10	Guidance on allocation for mergers and splits
Baseline Data Report Template	Relevant for mergers & splits and for baseline data collection in 2024
Monitoring Methodology Plan template	
Verification Report template	For verification of the BDR

FAR and ALC Guidance and Tools 4

Item	Content
ALC template	Reporting allocation level changes, new sub-installations and new entrants
Activity Level Changes (ALC) Verification Report template	For verification of the ALC report
Activity Level Changes (ALC) FAQs	https://ec.europa.eu/clima/system/files/2021-09/p4_alc_faqs_mga_en.pdf
FAR workshops and FAQs	https://ec.europa.eu/clima/news-your-voice/events/technical-workshops-free-allocation-rules-phase-4-eu-ets_en
Helpdesk for CAs	**Helpdesk for CAs** on CIMs (where still relevant), FAR and ALC rules

Member States sharing experience

BE (W), FR, IE, NL, DE

Wallonie environnement Awac

MMP and ALC reports
Experience in Wallonia (BE)

Introduction

- Wallonia:

  AwAC is the CA for ETS Implementation (excl. register + auctioning)

- Operational team AwAC:

  3 persons (+ 1 coordinator)

- 88 fix installations (76 eligible to free allocation)

Experience regarding MMP

- MMP forward: checking process and procedures
  - MMP submitted in 2 steps:
    - Backward methodology (data 2014-2018) with NIMs application
    - Forward methodologye (data from 1st January 2019) in november 2019
  - Detailed checks done as quality of MMP-backward was quite low
  - Discussions with operators to improve the MMP (often 3-4 versions before approval possible)
  - Some MMPs approved with comments in the approval letter (improvement still to implement after approval)

Experience regarding MMP

- Common challenges
  - Confusion between MMP and MP
  - Rules are complex => ETS operators hired consultants
  - Difficult for operators to understand the different data sources of the hierarchies and when derogation is needed
  - Heat benchmark sub-installation particularly difficult (subtraction of all heat losses, derogation, lack of control activities)
  - The description of methodology was sometimes too vague
  - The template is complex (a lot of parameters to monitor + some sections are similar but slightly different)
  - In a few cases, errors in NIMs have been detected as part of the MMP approval process => submission of corrected NIMs to the Commission

Experience regarding ALC 2021

- Checking process and procedures
  - Checks made for all ALC reports based on a common check-list
    - Assessment of the risk based on completeness check, consistency check (between Verification report, ALC, NIM's and MMP) and trend analysis (trend overall emissions, production data and allocation data)
    - Further detailed checks depending on the result of the risk analysis

Experience regarding ALC 2021

- Common challenges:
  - In Wallonia, use of EU ETS reporting tool for AER (+MPs and IRs) for phase IV but no workflow for verifiers and operators for ALC reports (development COM would really be very useful) => need to have an extra IT tool
  - Details of information in verification reports vary a lot
  - Number of ALC-reports that needed correction was limited. Sometimes more information required to understand some issues (ex: methodology used for data gaps).
  - Energy efficiency improvement/deterioration: a few cases in 2021. However, cases are often complex and difficult to analyse. Decisions might have big financial impact
  - Not always possible to report the production data using the same unit for fallback sub-installations

Identified best practices

- 1 installation = 1 contact person at CA side (emission and allocation)
- Tools to enhance internal harmonization within the CA for MMP assessment: check-lists, shared question/answers and regular internal short meetings
- Use of “compare files” feature in excel to identify changes between 2 MMP versions
- Publication of guidance documents and FAQ + information by newsletter
- Risk based approach for 2021 ALC report assessment => gain of time!
- Different trainings for operators and verifiers
  - NIMs + MMP backward (January 2019)
  - 2021 ALC report (march 2021 + June 2020 for verifiers only)

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MINISTÈRE
DE LA TRANSITION
ÉCOLOGIQUE

Liberté
Égalité
Fraternité

M&R TRAINING

MS SHARING EXPERIENCE (MMP, ALC) : FRANCE

26/11/2021

Paul ANDRÉ – In charge of ETS allowances implementation

Bureau de la qualité de l'air – Ministère de la transition écologique

I. Competent authority organisation in France

II. MMP

III. ALC

IV. General concerns and futur

I. Competent authority organisation in France

- 1060 ETS installations

- Central Competent Authority (CA) : In Paris
  - 4 people full time (1 for allowances, 1 for emissions, 1 for registry* and verifiers management, 1 for European law discussions)
  - Implementation, national transposition and diffusion of European legislation to the local CA, training, tool provision, help with specific cases
  - Centralisation of the files once treated by local CA, UBA tools and link with the Commission

- Local CA : 13 regions
  - 1 or 2 people working part time on ETS because of the temporality of the task (1/3 of their time) => Represents around 11 full time positions => 1 person per 100 installations on average in a year
  - Link with operators, treatment of the AER, ALC, MP, MMP files

* In France, the national administrator is a proper independent entity

II. MMP

- Timeline :
  - MMP : Operators had to submit their phase 4 MMP in November 2019
  - Local CA had to validate the MMP before 31st December 2020

- Tools :
  - Publication of a guide for local CA and operators
    - Available in April 2020 to explain operators how to correct their file and answer the local CA questions
    - Explaining the methodology of derogations : we asked the operator to demonstrate that each data source higher in the classification than the one proposed was not technically feasible or not reachable at reasonable cost or lower uncertainty.
  - Web platform to submit the files and discussions between operators and local CA

- Objective
  - 100% of MMP verified

II. MMP

- <u>Challenges 1 (2019/2020):</u>

  - Local CA had to be trained, and operators helped to do their MMP in a short time // Operators were not trained
  - Lots of derogations without demonstrations or justifications => Long discussions and explanations to operators
  - Late European regulation
  - Local CA have other tasks different from ETS (2/3 of their time). In fact, some of them spent their all time on ETS in 2019/2020

  ⇒ Late validations

II. MMP

- Challenges 2 :

  - Some MMP have been validated for years 2019 and 2020 only, with the obligation to update the MMP for data from 2021 (new validation from local CA needed). Because :
    - Not enough time to do the modification asked by the local CA
    - Implementing new activity level monitoring methods was not possible before 2021 and this would have led to many unvalidated MMP and therefore ALC reports.

    We validated some MMP for which some new monitoring methods were being implemented onsite, but not yet available. In this case, the operator must follow an alternative monitoring methods until the implementation of the new procedure (this includes for examples installations that should wait for a future planned interruption to set the new methods)

  - Still some MMP are being updated currently and validated for data monitoring from 2021.

III. ALC

- Timeline and facts:
  - ALC had to be submitted by operators before the 15 of April 2021
  - Due to verifiers difficulties to verify the report in time, we gave more time for the submission of the ALC reports
  - We performed automatic tests to detect the main mistakes and direct the checks by local CA
  - In France, we don't modify the report of the operator directly, he is responsible for the file he submits. Then its taking time to do the modifications
  - When a modification of the ALC report is needed the verifier needs to validate again the report
  - Submission to the Commission in July of all the validated files (75%)

- Tools :
  - Information sessions for local CA
  - Web platform to submit the files, verification by verifiers and validation by local CA. Next year, the 2021 operator ALC reports will be available on it, so that they can report their activity levels in the same file. Also, automatic tests will be directly performed on the platform, so that the operator cannot submit its ALC in some cases, and must comment the potential mistake in other cases.

- Objective : The files which did not pass the automatic checks had to be checked

III. ALC

- Challenges :

  - Difficult timing due to late templates and BM : ALC template filled by operators was the initial version, without the BM updated and linked to the not updated BDR. The general update of ALC files with UBA tool did not work for all files => we had to ask some operators to fill another ALC template with their BDR updated

  - Some difficulties to use the energy efficiency section (not filled by operators and time consuming to check)

  - Facing operators misunderstanding of the allowances delivering timings

  - The verification of ALC files is still ongoing. The objective is to deliver allowances to operators before they have to surrender it in April 2022.

IV. General concerns and future

- The phase 4 took lots of time to prepare with the assimilation of all new documents and the understanding of the new regulation.
- We are worried that the workload will not truly decrease in the next years (ALC examination can be extended on the all year, all MP to be validated again …)
- We are developing more and more automatic tools to help local CA to verify the templates
- Local CA are now mostly trained on ETS phase 4 and more concerned.
- Some modifications of the global organisation are still ongoing to improve efficiency of verifications and help to the transfer of information over time.

Irelands experience of checking MMPs and ALC Reports Compliance Forum Training 26/11/21

Annette Prendergast
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Review of Monitoring Methodology Plans

Process

- In mid 2020 the **detailed assessment process** of the MMPS began, to approve methodologies to be applied for annual activity level monitoring. A **detailed compliance check sheet was completed for each MMP** to asses compliance with monitoring requirements in the FAR, ALC Regulation and GD 5 (Monitoring and Reporting) and GD7 (Activity Level Changes) and list any additional information required.
- Due to the **complex rules, time pressure, poor quality of reports, lack of understanding by Operators** and to ensure the **Verifiers were clear on the methodology required** for each installation during annual activity level verification the MMP was approved by letter. This **approval was contingent** on the Operator making a list of updates to the MMP and submitting this for final EPA approval and sign off. This process is still ongoing.

Review of Monitoring Methodology Plans

Issues that required correction and challenges

- The MMP for **annual activity level monitoring was incomplete**.
- The **description of the installation and/or flow diagram was inadequate** and did not meet the requirements of 1(c) and 1(d) of Annex VI of the FAR.
- All the data sets required for annual activity level monitoring were not included.
- Descriptions were **not sufficiently clear for understanding the methodology** to determine all the parameters. Procedure descriptions did not cover all elements of **Art. 11 (control system)** of the FAR.
- Where data sources of highest available accuracy were not used, in-adequate or no details to demonstrate evidence for unreasonable cost, technical infeasibility justification or simplified uncertainty assessments were submitted.

Review of Monitoring Methodology Plans

Issues that required correction and challenges

- Operators have great difficulty implementing the **highest measurement requirements** for determining **net heat** output.
- There are difficulties obtaining **relevant data for the CHP tool** particularly for small CHP units < 5MW thermal input.
- A methodology to determine the energy efficiency for each heat and fuel benchmark sub-installation was not included. Operators with large numbers of Products and products that change year on-year **struggle to calculate energy efficiency per product** as metering is not available to that level on-site.
- Details of the alternative methods to be applied to conduct **horizontal and vertical checks** for corroborating reported data in sheet E, F and G were inadequate or not supplied.

Review of Annual Activity Level Reports

Process

- There are **66 Operators** on the NIMS list for which ALC reports were expected.
- When received all reports were initially **run through the enhanced Commission checking tool** to get an overview of the number of reports that were reporting activity level changes, identify errors in the reporting of the HAL, number and type of sub-installations, electricity generator status, installation ID, benchmark data applied.
- A **detailed compliance check sheet** is being completed for each report to asses compliance with ALC Regulation, monitoring and reporting requirements in the FAR, updated carbon leakage list, benchmark legislation, and GD 5 (Monitoring and Reporting) and GD7 (Activity Level Changes) and list any additional information required. Compliance checks are also being completed for the Verification report to additionally assess compliance with the Accreditation and Verification Regulation and relevant guidance.
- Data is **cross checked** with **baseline data**, verified **annual emission reports** and the current **permit**. Detailed calculations of activity level and other information reported in sheet D, E F and G are checked.
- Where there are errors in the ALC report that affect the allocation reports are sent back for correction and re-verification. Where there are errors that do not change the allocation updated information is obtained from the Operator and the ALC report updated by the EPA.

Review of Annual Activity Level Reports

Issues and Challenges

- In general the completion, verification and assessment of ALC reports is a very time consuming process for Operators, Competent Authorities, Verifiers and Accreditation Bodies. This puts a strain on existing resources. All parties were under time pressure as final templates, benchmarks and allocation data were only available late in the process.
- In relation to the ALC reports the following issues were noted to date:
  - **Mandatory fields were not completed** in the reports
  - Information about installations belonging to the same **group not filled correctly or missing**
  - **Data errors in sheet D and E** –emissions and fuel input not aligned, fuel input distribution incorrect, activity level not calculated correctly and split between CL and non CL not calculated correctly. Incorrect AER data reported in ALC report.
  - **Basic information incorrect** such as MMP version no and date, company name and ID, NACE/PRODCOM codes

Review of Annual Activity Level Reports

Issues

- **Data errors in sheet G**; energy efficiency data not reported or reported incorrectly, errors in the calculation and reporting of data for determining benchmark improvement rate.
- **Incorrect HAL reported**, incorrect sub-installations compared to baseline, incorrect electricity generator status.
- In relation to the **Verification Report**:
  - The Verifier had a positive statement with no comments but information on energy efficiency was not reported or was in-correct in the ALC report, the ALC report was in-complete, there were errors in the calculation and reporting of activity level.
  - The Verifier did not detect that the incorrect HAL was reported, that the incorrect number and type of sub-installations were reported, that the electricity generator status did not match BDR.
  - There were errors in the PRODCOM codes reported by the Verifier or Operator errors not detected by the Verifier.

Review of Annual Activity Level Reports

Best Practice/Conclusions

- This is a new, detailed process with complex rules compared to phase 3 allocation as evidenced from the number of issues reported so far, Operators and Verifiers are struggling to understand the process and meet all the requirements.
- The number of reports with yearly changes has increased from about 5% in phase III to about 40% in phase 4.
- We intend to use a variety of means to communicate issues and aid continuous improvement including:
    - formal information exchange with the accreditation bodies and Verifiers
    - a year end communication to all Operators and Verifiers outlining common mistakes and errors in the MMP and ALC reports
    - organise an information day in 2022 for Operators and Verifiers, deal on a one to one basis with Operators as time allows to explain what is required.

Review of Annual Activity Level Reports

Best Practice/Conclusions

- It is anticipated that Verifiers, and Operators will apply **corrective and preventative actions following feedback and there will be a big improvement in 2021** reports and continuous improvement year on year**. Accreditation bodies have a crucial role** to ensure the Verifier maintains competence in the free allocation process and meets the requirements of the Accreditation and Verification Regulation

- The **availability of example ALC templates** completed for various types of sub-installations with notes highlighting the importance of correct information and highlighting how data input in each section affects the calculation of the correct allocation change would be very helpful for Operators. It should cover for example installation identification data, HAL data, number and type of sub-installations, electricity status, group information, relevant data required for sheets D, E, F, G and H.

- The **availability of worked examples** for determining input data into the CHP tool, fuel input data split in sheet E, calculation of net heat output and splitting heat and emissions between heat and fuel CL and non CL benchmarks and calculation of energy consumption per product would be very helpful for Operators.

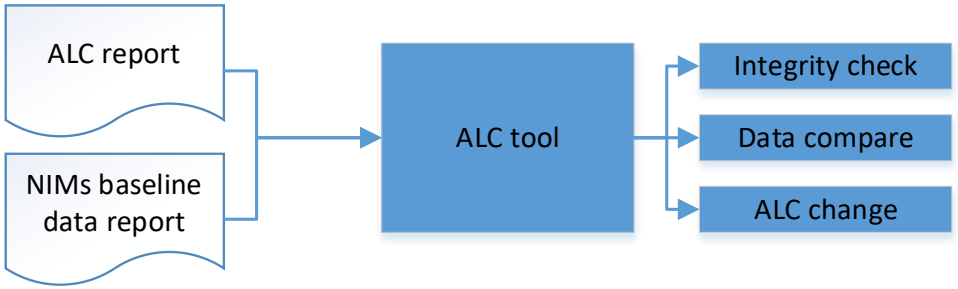
Nederlandse Emissieautoriteit
Dutch Emissions Authority

MS Experience

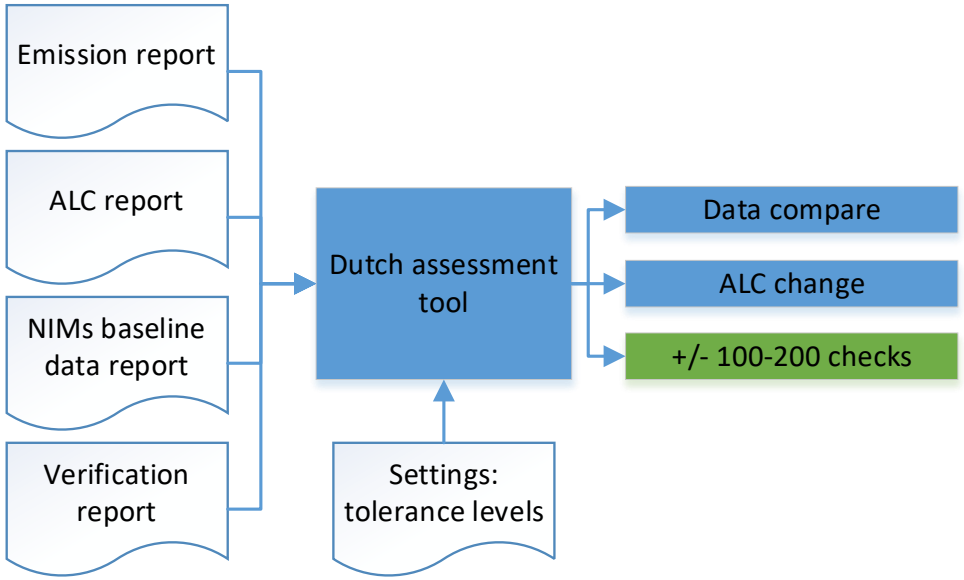
Tools used for checking process ALC

Tools used for checking process ALC

- Step 1: ALC tool



- Step 2: Use of customized assessment tool



How does this tool work?

- 115 checks in 17 different categories
  a. Internal checks within ALC report and verification report
  b. External checks with Emission report
  c. External checks with NIMs baseline data report
     - Trend checks (any trend break noticed)
     - Changes in subinstallations and tools such as CHP
- Each check has a tolerance level (settings), e.g.:
  a. Emissions emissions report / emissions ALC report = 1,00
  b. Use CHP tool NIMs BDR = Use CHP tool ALC report
  c. $-2\sigma <$ Efficiency subinstallation $< +2\sigma$
  d. Number of changed subinstallations = 0
  e. ....
- When the tolerance is exceeded, it leads to a(n):

Error **Warning** **Pop-up**

What do the results look like?

- Shows the results of all installations in 1 overview

	Toleranties			Toleranties			Toleranties			Toleranties			Toleranties			Toleranties		
Naam installatie	1 Import Datarapport			2 Gegevens installatie			3 Technische verbindingen			4 Subinstallaties			5 Emissies			6 WKK		
	F	W	A	F	W	A	F	W	A	F	W	A	F	W	A	F	W	A
Installation 1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Installation 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Installation 5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Installation 6	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Installation 7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 8	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Installation 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Installation 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Installation 11	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Installation 12	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2	0
Installation 13	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Installation 14	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Installation 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Installation 16	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Installation 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Installation 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 26	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 29	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 33	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 34	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 37	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Installation 38	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Also able to review a single installation in more detail

Example – heat generation efficiency

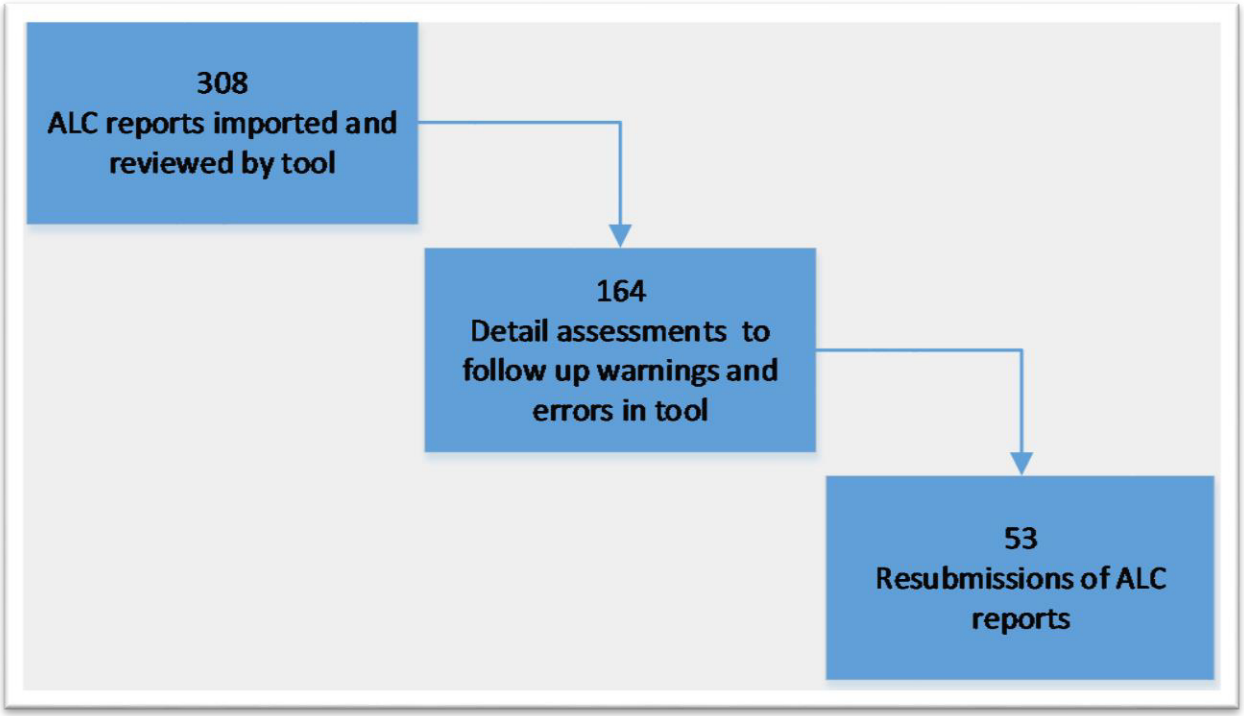
- Relates to data from sheet "*E_EnergyFlows*"
- This entails:
  - Check the efficiency for 2019 and 2020 without CHP
    70% <= Tolerance <= 95%
  - Check the efficiency trend; 2014-2018 vs. 2019 and 2020
    -2σ < Tolerance < +2σ

Tolarance	9 Measurable heat	F	0
		W	0
		A	0
0,99	Check Heatbalance 2019		1,00
1,01			Ok (of nvt)
0,99	Check Heatbalance 2020		1,00
1,01			Ok (of nvt)
0,7	Check Heat generation efficiency excl. CHP 2019		0,93
0,95			Ok (of nvt)
0,7	Check Heat generation efficiency excl. CHP 2020		0,93
0,95			Ok (of nvt)
- 2 σ	Check trend Heat generation efficiency excl. CHP 2019		-1,78
+ 2 σ			Ok (of nvt)
- 2 σ	Check trend Heat generation efficiency excl. CHP 2020		-1,68
+ 2 σ			Ok (of nvt)

Most common errors

- Change in subinstallations (date of start and cessation)
  B+C_SubInstallations
- Heat generation efficiency (excl. CHP)
  D_Emissions E_EnergyFlows
- EF for fuels used for measurable heat and electricity production
  E_EnergyFlows
- Technical connections; import does not equal export
  E_EnergyFlows
- Attribution of emissions for BM improvement rate
  F_ProductBM G_Fall-back
- Internal consistency (e.g. output CHP tool ≠ input energy input)
  D_Emissions E_EnergyFlows F_ProductBM G_Fall-back
- Trend break; 2014-2018 vs. 2019-2020
  D_Emissions E_EnergyFlows F_ProductBM G_Fall-back
- No review of results on sheet K_Summary

Results assessment tool



Next steps:

1. Update tool for upcoming ALC reports
2. Calibration of settings → review tolerance levels

Umwelt Bundesamt

DEHSt
Deutsche Emissionshandelsstelle

Checking and (Re-)Approving MMP
Checking Activity Level Reports in 2021

Checking and (Re-)Approving MMP Checking Activity Level Reports in 2021

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Federal Environment Agency
German Emissions Trading Authority (DEHSt), Berlin

MMPs 2019-2030 – Checking and approval procedure in 2020

- Approx. 1550 MMPs integrated in applications for free allocation (2019)
- Additional/changed MMPs following operator‘s checks acc. to Art. 9 (1) FAR (2020)
- Checking procedures (DEHSt) in 07/2020 – 12/2020
- **First approval of nearly all MMPs by end of 2020**

Challenges and Issues in Monitoring Methodology Plans

Typical problems in implementing principles of monitoring allocation data (Art. 7, 8 FAR)

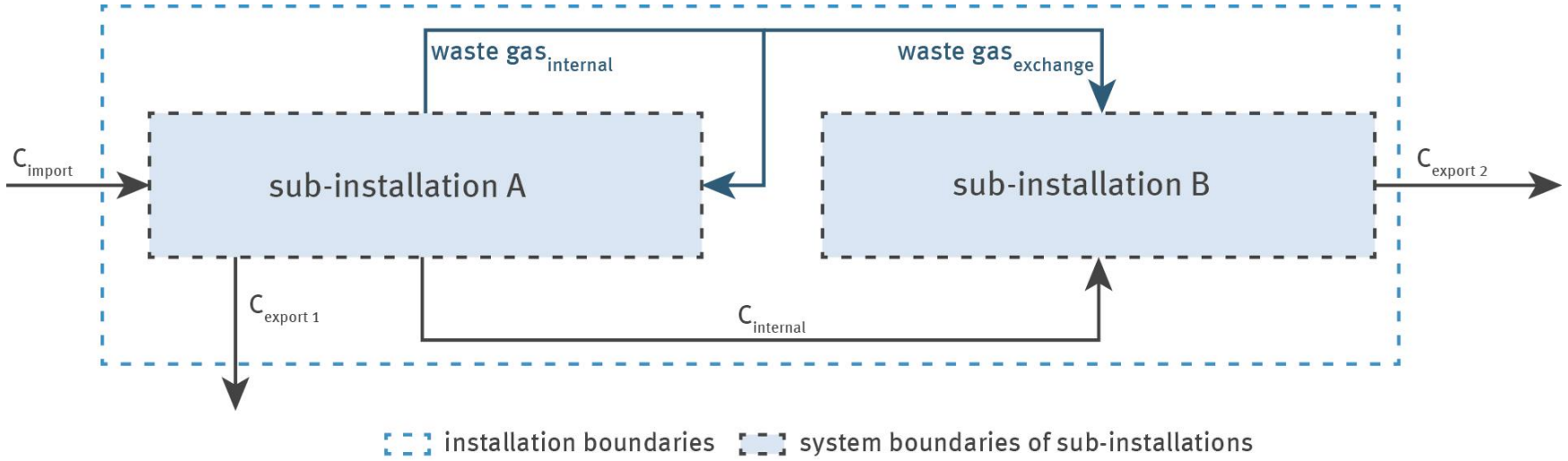
- Monitoring principle **completeness**:
  - Attribution of installation emissions (to sub-installations and to non-eligible products) incomplete

- Monitoring principle **consistency**:
  - Use of data in ALR, that are not consistent with data in emission reports
    (e.g. measured values/laboratory analyses instead of constant values for NCV or EF)

- Monitoring principle **transparency**:
  - Description of monitoring methods and data sources (in MMP and in written procedures) often too short and not detailed enough, so that exact procedures of data aquisition remain unclear
  - Missing clear diagrams concerning measuring instruments / sampling points for analyses
    (cf. subsequent figure for an installation with 2 sub-installations)

Example for an incomplete and unclear diagram

- Installation with 2 sub-installations and various source streams



- Defined sub-installations A and B are present ✓
- External source streams and internal source streams are present ✓
- Measuring points for metering quantities and sampling points missing ✖

➔ Diagram is not complete, not transparent enough and not clear / not unambiguous !

MMPs - Outlook and best practice

- Quality of MMPs is often inferior compared with MPs under the MRR for phase 3
- ➔ Improvements of MMP are necessary in many cases (following regular checks by the operator acc. to Art. 9 (1) FAR or requested by the CA)
- ➔ Monitoring principles should be concerned and applied more often
- ➔ Recommendations of verifiers for improvements of MMPs will be very important in upcoming years (corresponding to on-site visit findings)

Our experiences with Activity Level Reports (ALR)

Checking ALR – Overview

- Operators use ALR for the years 2019 and 2020 to
  - report on activity level changes;
  - notify intended modifications to the MMP (ALR for 2020 gives information for 2021)
- Checking ALR includes checking allocation data and modifications to the MMP
- Phase I (currently): focussing on allocation changes including notifications by operators that other methods than approved were applied
- Phase II (from January 2022): focussing on notifications by operators to change methods for reporting periods 2021 and following years; notifications are included in ALR for the year 2020

Checking ALR – Checking process/procedures I

- Incumbent installations – checks:
  - Did every operator with an allocation for at least one subinstallation submit a report?
  - Did the verifier give a negative verification statement?
  - Does the report consider changes to allocation data the CA made when deciding on basic allocation (NIMs)?
  - If the 15 % threshold is exceeded (art. 3 ALCR) : is this plausible?
  - If yes -> Installation data and changed allocation are submitted to European Commission
  - Goal to grant correct free allocation by end of February of 2022, but at the latest well before April 30, 2022
- Additional written information for Compliance Forum: Incumbent installations – also checked:
  - Does the report show signs of a cessation of the installation or a sub-installation?
  - Does the report consider provisions the CA gave in the MMP approval?
  - Did the operator notify a change of the approved method during the years 2019/2020 and does it effect the calculation of relevant data? (=> approx. 220 installations)

Checking ALR – Checking process/procedures II

- New entrants: before submitting data to the European Commission: Thorough checks of the application for free allocation and the verifier‘s statement.

- MMP: approval of changes (or new MMPs of new entrants): checks of monitoring methods effective from 2021 are still coming up (=> approx. 240 installations).

Checking ALR – Common challenges/best practice

Common challenges

- Number of cases with a presumed decrease or increase of the activity level is very high: approx. 50 % of installations

- IT not yet fully functional with regard to
  - Calculation of energy efficiency
  - Checking MMP changes

- Pandemic-related remote work: interrupted flow of information among colleagues

Best practice:

- Conclusions so far: 1/3 of installations reported to Commission: relevant increase in AL
  2/3 of installations reported to Commission: relevant decrease in AL

Umwelt Bundesamt | DEHSt Deutsche Emissionshandelsstelle

Thank you for your attention!

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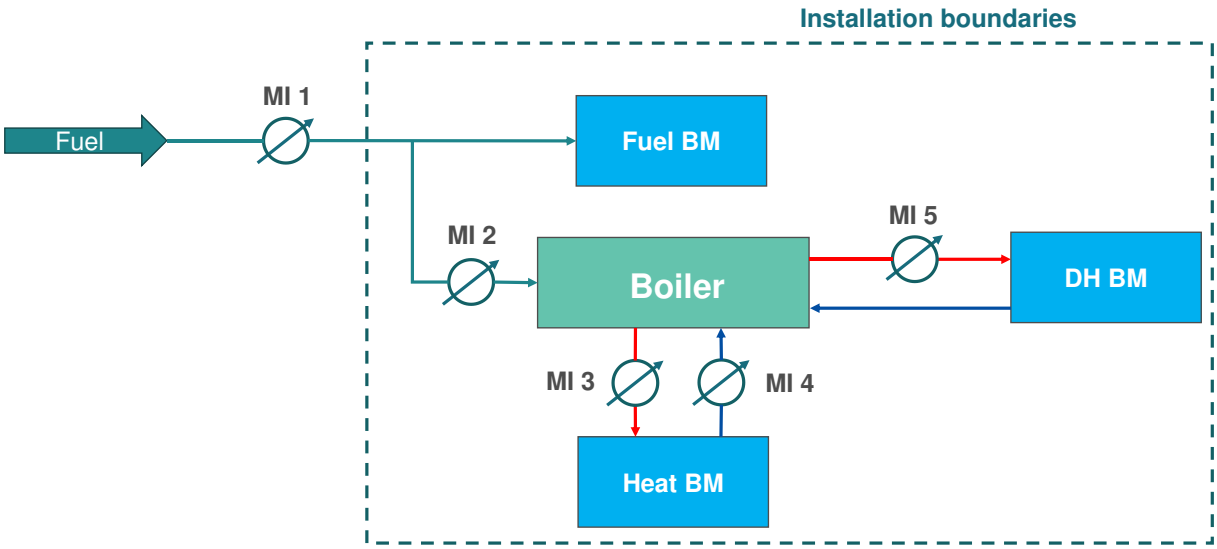
Case studies

Case study 1.1:



QUESTION 1.1) For the fuel BM sub, the operator provided the following description in the MMP.

4 Fall-back sub-installation:	Fuel benchmark sub-installation, CL		relevant
	Please enter data in this section!		
	Data source	Other data source (if applicable)	Other data source (if applicable)
1. Fuel input	4.4.(a) Methods in accordance		
2. Energy content	4.6. (a) Methods for		
3. Description of the methodology applied			
Please describe in particular any assumptions if the 95% rule in Article 10(3) of the FAR is applied.			
The list of aspects this description should cover can be found at the top of this sheet!			
Invoices from supplier as per main gas meter (MI 1), consistent with MP.			
4. Reference to external files, if relevant			
ii. The hierarchical order has been followed?	WAHR	If not, why?	

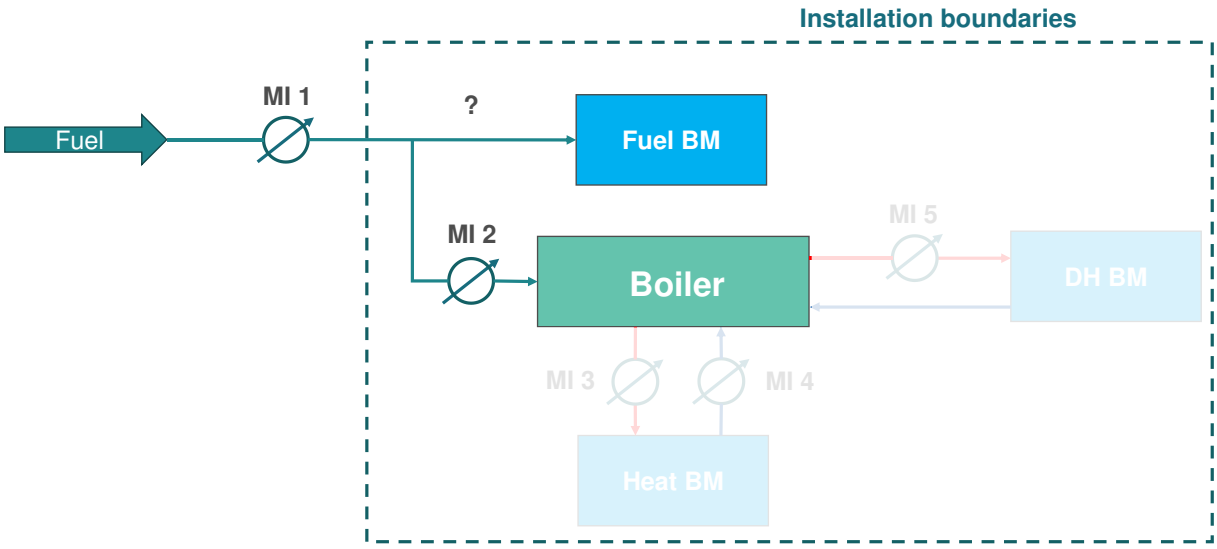
a) Are the data sources correct and the description sufficient? If not what data sources would be correct?
   a) 4.4a
   b) 4.4a and 4.4(b) or (c)
   c) 4.4e
   d) 4.4a and 4.4e

b) Would your checks (CA approval) even prompt any potential manual follow-up?
   a) yes, likely
   b) only if installation pre-selected for spot-checks
   c) likely not

Model answer to Q1.1a:

All answers seem to be reasonable, but a) 4.4a alone is least preferred and is arguably not correct, as it lacks the information that metering is done via differential metering and that no measuring instrument is installed for the fuel BM sub-installation. It also has to be seen in combination with section 3.2(2)(b) of Annex VII which states: *"If only one sub-installation's data are unknown or of lower quality than the data of other sub-installations, known sub-installation data may be subtracted from the total installation data. This method is preferred only for sub-installations which contribute smaller quantities to the installation's allocation"*

Case study 1.2:



QUESTION 1.2) Given the following parameters in the table below, would the amount of x impact your decision (try with x = 10, 50 and 90)? And if so, above which value should a separate meter for the fuel BM be considered? Try using the uncertainty assessment tool under the MRR (link)

MI	Quantity	Expanded uncertainty
MI 1	100	1.5%
MI 2	x	7.5%

a) x = 0 (evidence for not using separate meter, e.g. demonstrating unreasonable costs, always required)
b) x = 10
c) x = 50
d) x = 90
e) x = 100 (= use of differential meter is always acceptable without further evidence)

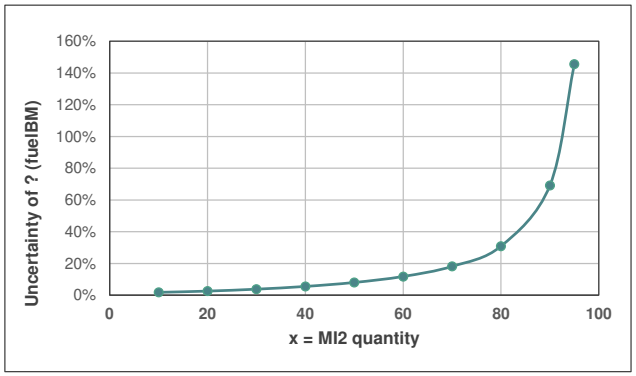
Model answer to Q1.2:

The chart on the left shows the resulting uncertainty of the fuel BM sub-installation's activity level in dependency of the quantity x measured by MI2. It shows that the differential metering leads to acceptably low uncertainty when MI2 amounts are relatively low compared to the MI1 quantity, even up values of 40 or 50 appear acceptable in this specific case. However, beyond x=50 the resulting uncertainty strongly increases.

Given those relative uncertainties, the table on the right shows the benefit against which the unreasonable nature of installing another meter for the fuel BM should assessed. When determining potential unreasonable costs, the benefit is calculated with an improvement factor (IF) of 1%, which results in a benefit of 3000€ in any case.

Were the benefit calculated based on an IF which is calculated as the difference between the uncertainty of '?' and the uncertainty of MI2 (similar to the provision in the MRR), the benefit shows a strong increase for x>50. This calculation is not relevant in the FAR. However, the CA may use it as a tool to indicate the potential benefit of installing a separate meter for the fuel BM sub-installation.

$Benefit = (u_? - u_{MI2}) \cdot 15\,000 EUA \cdot 20€$ $Benefit = 1\% \cdot 15\,000 EUA \cdot 20€$



MI2 quantity	Benefit €	
	Like MRR	1%IF
10	0	3 000
20	0	
30	0	
40	0	
50	1 733	
60	13 076	
70	32 101	
80	70 270	
90	184 940	
95	414 371	

QUESTION 1.3) for x = 50, how expensive would a separate meter have to be to demonstrate unreasonable costs in any case (assumed allocation for fuel BM of 15 000 EUA)? Try using the unreasonable cost tool (link)

a) 1733€
b) 3000€
c) 5333€

Model answer to Q1.3:

As shown in the table above, 3 000€ would be the correct answer. The closer MI2 amounts are to the ones obtained by MI1 (i.e. the smaller the difference is), the more section 3.2(2)(b) of Annex VII (see Q1.1 above) could even justify a non-compliance.

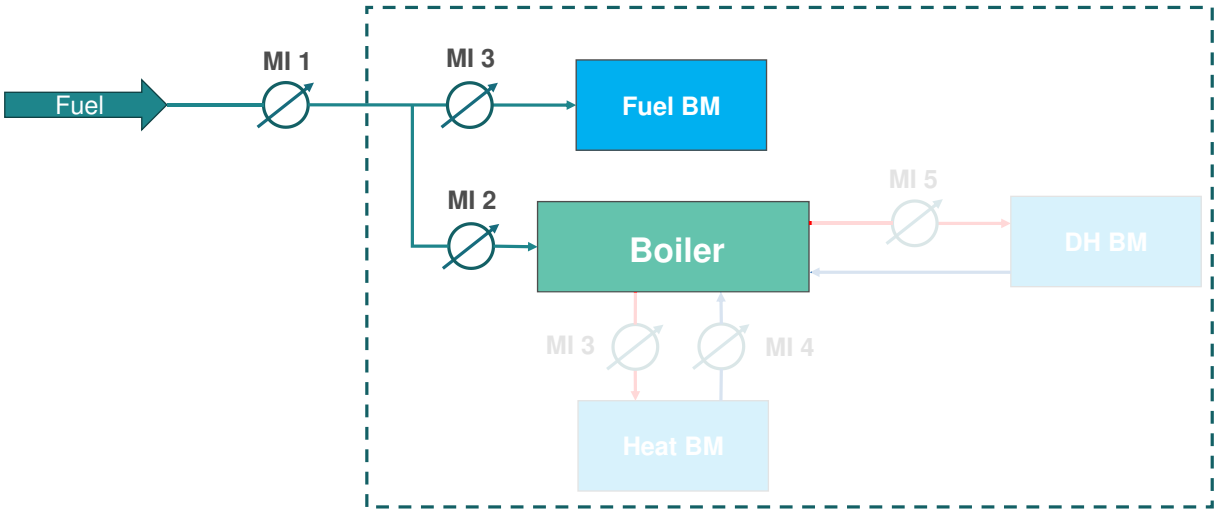
QUESTION 1.4) If the initial situation were approved by the CA with x=70, what should the verifier do during the verification?

a) no action required
b) issue non-compliance
c) issue non-conformity
d) issue recommendation for improvement

Model answer to Q1.4:

Answer d) appears most appropriate for most cases.

Case study 1.3:



QUESTION 1.5): Measured heat amounts are as follows: MI 1 = 100TJ, MI 2 = 10TJ, MI 3 = 85TJ. What should be the activity level of the fuel BM?

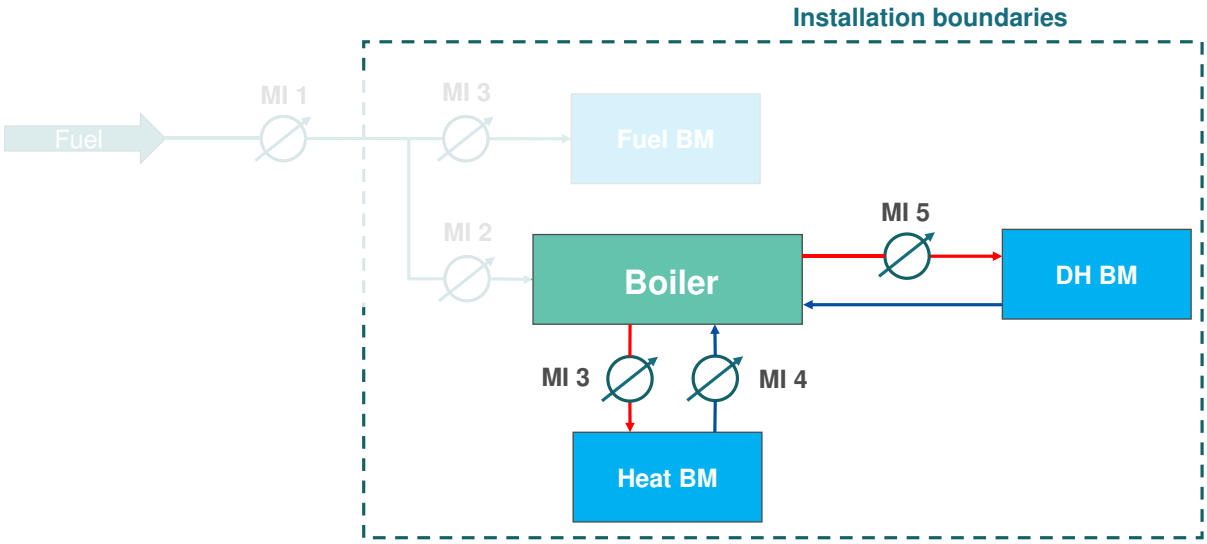
a) 85 TJ
b) 89.5 TJ
c) 87.8 TJ
d) 80.8 TJ
e) Depends on the specific situation

Model answer to Q1.4:

Answer b) would be correct in most cases, following the provisions in section 3.2(2)(a) by applying a reconciliation factor. The corrected value for MI3 would be determined as follows:

$$MI3_{corr} = 85 \cdot \frac{100}{85 + 10} = 89.5TJ$$

Case study 1.4:



QUESTION 1.6):

A) What primary methods in section 7.2 of Annex VII should be considered to determine net heat flows?

a) Heat BM: method 1, DH BM method 1
b) Heat BM: method 1, DH BM method 2
c) Heat BM: method 1, DH BM method 3
d) Heat BM: method 3, DH BM method 3

B) If there were no MI 3 and MI 4, which method would you consider first to determine net heat flows for the heat BM

a) Method 2
b) Method 3
c) Method 4

Model answer to Q1.6:

A) methods under a) should be considered first (for DH with a default condensate temperature of 90°C).
B) method 2 should be considered first (indirect methods), unless method 3 (proxy) shows lower uncertainty.

Flow out \ Flow return		Measured	Not measured	Leakage/ sewering	Life steam injection
Measured (4.5a-c)		**Method 1**	**Method 1** (90°C)**	**Method 1** (with corrections)***	
Indirect method / correlation (4.5d)		**Method 2** (documents based on metering (historical data) or estimation methods)			
Not measured	Proxy efficiency available* (**4.5e**)	**Method 3** (90°C)**			
	Proxy efficiency not available (**4.5f**)	**Method 4** (efficiency = 70%)			

* representativeness: reasonably long period, relevant load states (operator or manufacturer's documentation)
** assumed temperature of 90°C for the return flow
*** deduction of transmitted mass flow (leakage), non-deduction of condensate (life steam injection)

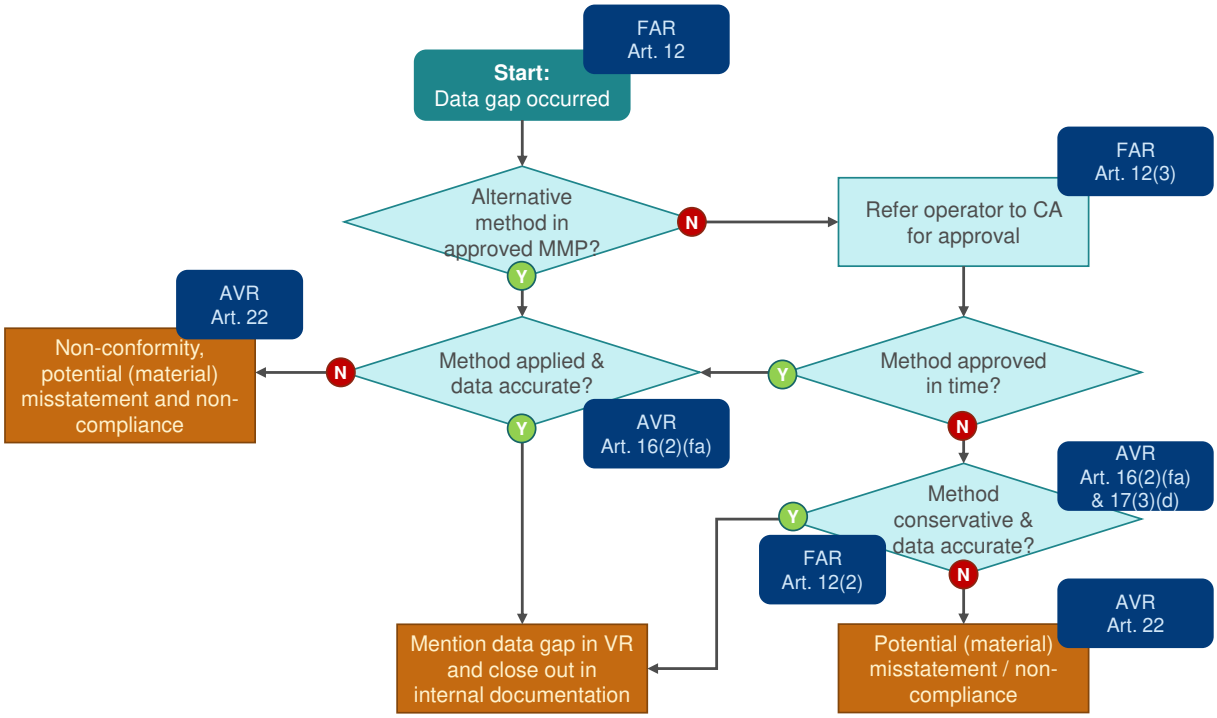
QUESTION 1.7): What would be suitable evidence that exported heat does only serve district heating and is not consumed in industrial process?

Model answer to Q1.7:

Design temperature is <130°C (see p.20 of Guidance Document 2), or use of invoices, if applicable.

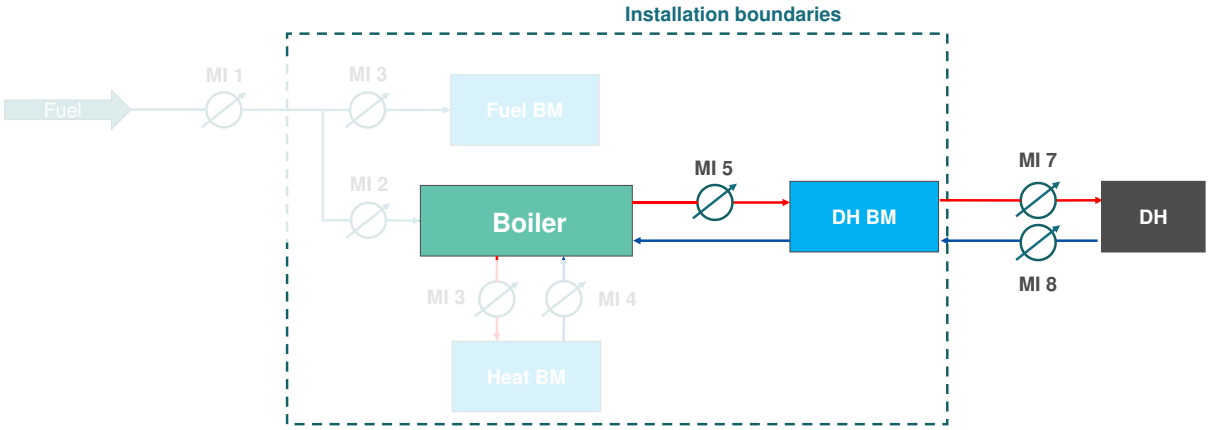
QUESTION 1.8): During verification, the verifier notices that MI3 was malfunctioning for 3 weeks before being replaced by new one. The operator replaced values with averages of the 3 weeks before and after. How should the verifier proceed?

Model answer to Q1.8:



see FAR Guidance Document 4 (link), in particular section 7.3 on data gaps

Case study 1.5:

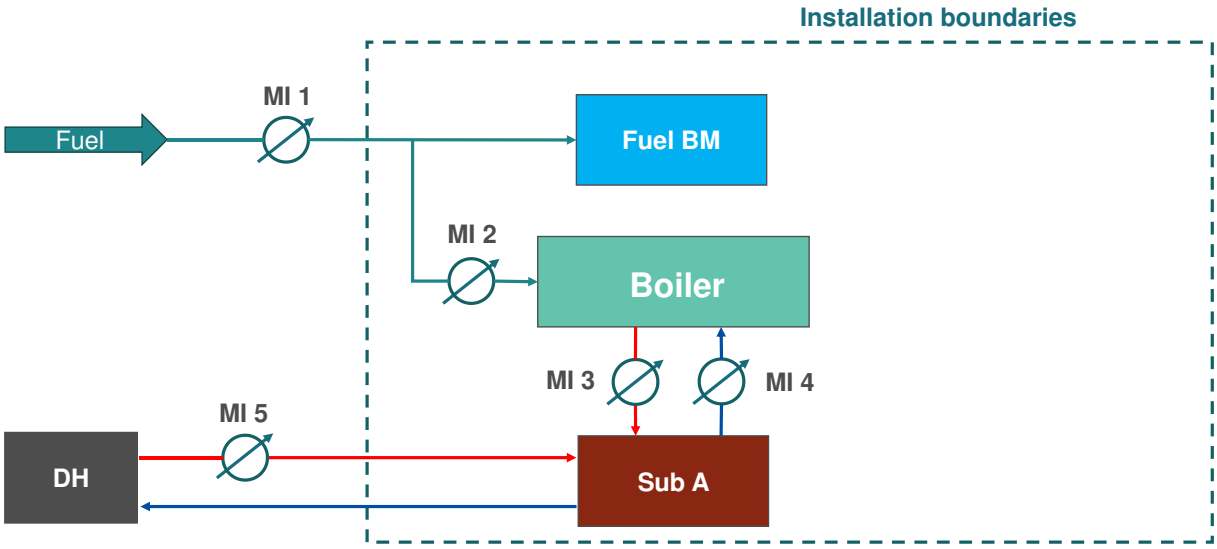


QUESTION 1.9): The operator wants to use MI5 (4.5b) instead of MI7/MI8 (4.5a), although the latter is of higher quality and both data sources are available (i.e. no unreasonable costs incur in either case). What options does the operator have and what role does the system boundary of the district heating sub play?

Model answer to Q1.9:

MI7/MI8 should be used by default. However, if the operator can demonstrate that significant length of the pipelines are owned by the DH operator, it can be argued that any losses there are outside the system boundaries of the installation (needs to be clearly defined and approved in the MMP and the GHG permit).

Case study 1.6:



QUESTION 1.10):

a) How would the allocation change in the subsequent year if Sub A were a heat BM, consuming the same amount of heat but 10% from non-ETS DH network as of 2022.

a) Allocation stays the same
b) Allocation decreases by 5% (average of two years)
c) Allocation decreases by 10%

Model answer to Q1.10(a):

The average annual activity level of the heat BM sub-installation would only decrease by 5%, i.e. below the 15% threshold. Therefore, answer a) is correct.

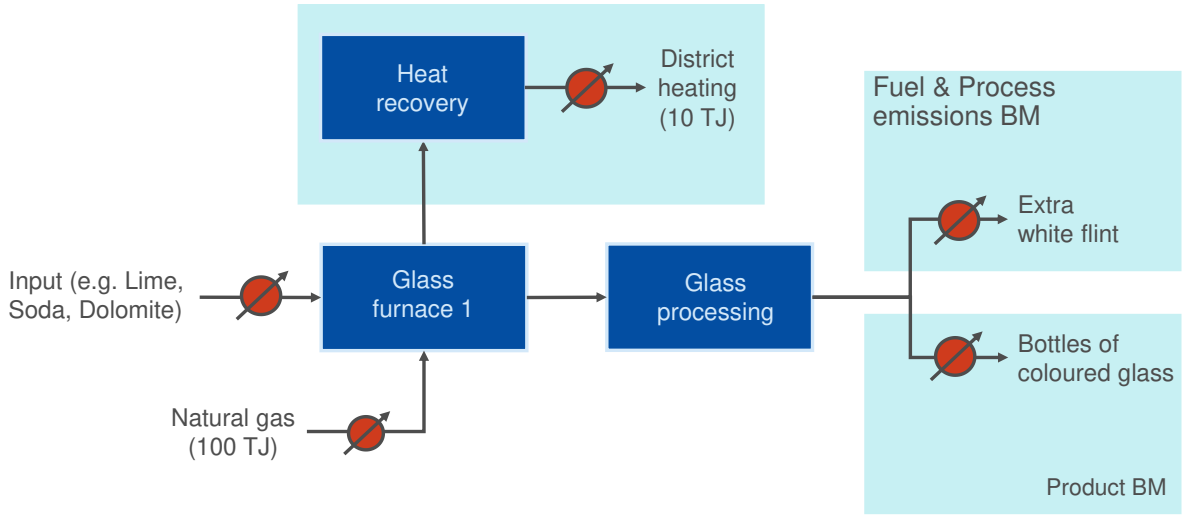
b) Similar to Q1.10, how would the attributed emissions (AttrEm) and allocation (Alloc) change if Sub A were a product BM?

a) AttrEm same, Alloc same
b) AttrEm decrease, Alloc same
c) AttrEm decrease, Alloc decrease
d) AttrEm same, Alloc decrease

Model answer to Q1.10(b):

In contrast to the above, non-ETS heat import to a productBM sub-installation would instantly lead to an allocation decrease pursuant to Article 6(4) of the ALC-R because of the change in the parameter (non-ETS heat import) pursuant to Article 21 of the FAR.

Case study 2.1:



QUESTION 2.1) How would you attribute the fuel input from natural gas to the product BM?

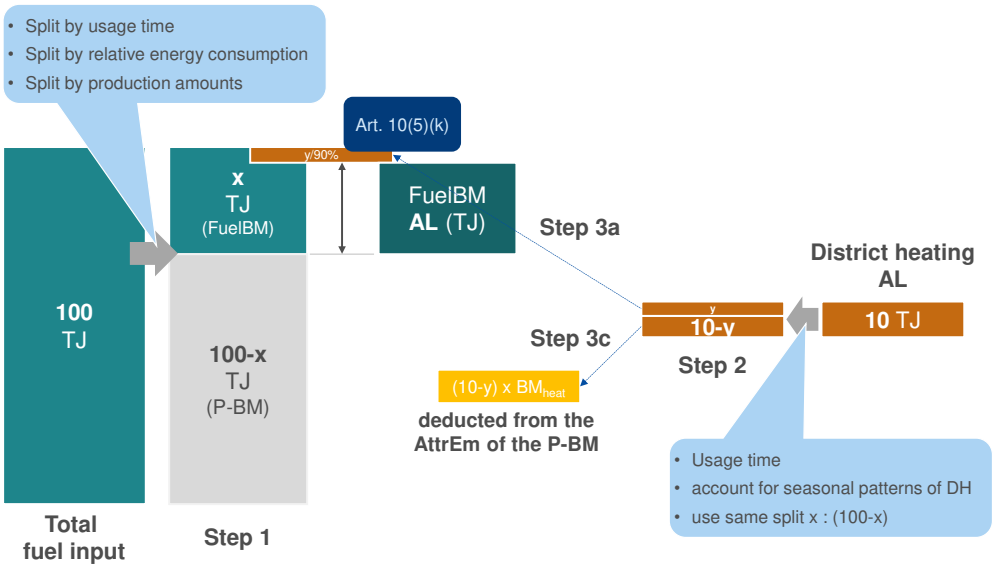
- What methods can be used and which ones should be preferred?
- What data source should be selected in the MMP?
  - 4.4a
  - 4.4e
  - 4.4f

Model answer to Q2.1:

Indirect methods (4.4e) are likely the most relevant here.

QUESTION 2.2) How would you determine the fuel BM and district heating sub-installations' activity levels and attributed emissions to them and to the product BM?

Model answer to Q2.2:



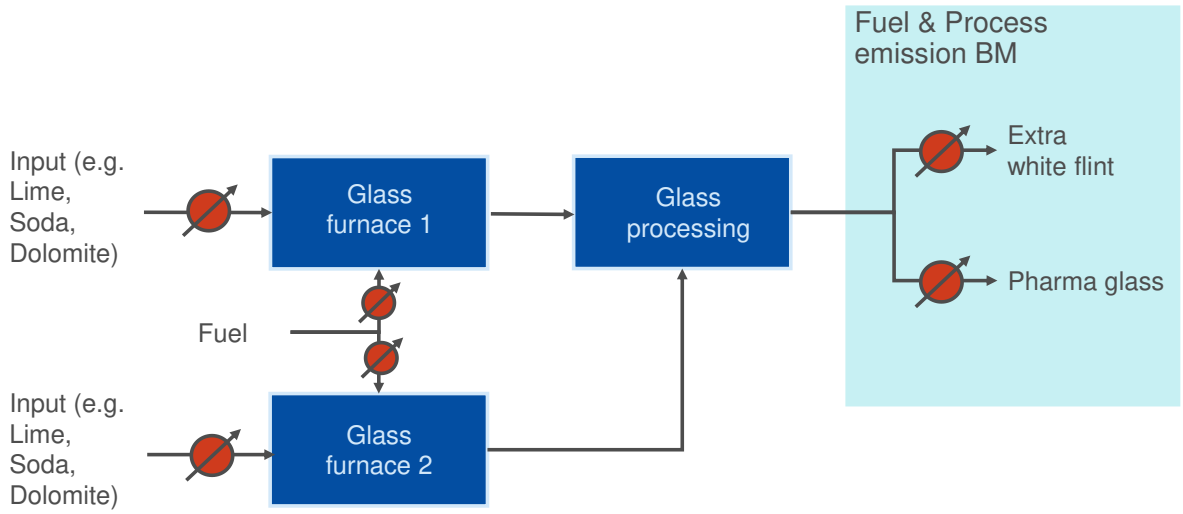
- **Step 1**: Split in Q2.1 will lead to a split of fuel input of x TJ to the fuelBM and (100-x) TJ to the product BM
- **Step 2**: Split DH activity level into 'during productBM production' and 'during fuelBM production', obtaining an y : (10-y) split using any of the following methods, in order of preference:
  - PCS records allow attributing DH production to production times of each product
  - Use split from above but account for seasonal patterns of DH
  - Use same split as above x : (100-x)
- **Step 3a**: fuel BMs activity level is corrected for x – y/90% TJ
- **Step 3b**: no impact on DH activity level = 10TJ
- **Step 3c**: attributed emissions for productBM, deduct exported heat of (10-y) multiplied with heatBM.

QUESTION 2.3) Glass furnace is replaced with a new one which consumes 17% less energy while all other inputs and production levels remain the same. How would this impact the allocation and/or attribution of emissions?

Model answer to Q2.3:

Sub-installation	Allocation (EUA)	Attributed emissions (t CO_2)	GHG intensity (t CO_2 / activity level)
Product BM	---	↓	
Fuel BM	↓ (unless EnEff)	↓	---
District heating	---	---	---
Process emissions	---	n.a.	n.a.

Case study 2.2:



QUESTION 2.4) The old furnace 1 is replaced with a new one which leads an AL decrease of than 15%. The operator wants to demonstrate that this decline was due to this energy efficiency measure and therefore needs to attribute the fuel consumption to the two products.

- What methods can be used and which ones should be preferred?
- Which further evidence should the CA request to approve an energy efficiency exception?
  - Only ALC template, no further evidence
  - Detailed description of the changes
  - Detailed description of the methodology to attribute fuel input to products

Model answer to Q2.4:

Detailed description (at least of the methodology to attribute fuel input to products) should be provided in the MMP, seeking approval by the CA. Once approved, the information/data in the ALC template might be sufficient for the CA to take a decision pursuant to Articles 6(1) or (2) of the ALC-R.

QUESTION 2.5) The production levels split leads to the following results as in the table below.

- In which years should the CA reject adjustment of activity levels?
- What should be the role of the verifier?

	HAL	2019	2020	2021	2022	2023
P1 (t)	40 000	38 000	38 000	33 000	33 000	26 000
P2 (t)	25 000	27 000	27 000	23 000	23 000	18 000
P1 (TJ)	250					
P2 (TJ)	250					
Total (TJ)	500	410	410	375	350	300

Model answer to Q2.5:

The information above would lead to the following results in the ALC template:

	Product name or service type	Unit	NIMs value	2019	2020	2021	2022	2023	2024	2025
1	extra white fint	t	40 000,00	38 000,00	38 000,00	33 000,00	33 000,00	26 000,00		
2	pharma glass	t	25 000,00	27 000,00	27 000,00	23 000,00	23 000,00	18 000,00		

(b.1) Energy consumption by product to determine energy efficiency changes

	Product name or service type	Unit	NIMs value	2019	2020	2021	2022	2023	2024	2025
1	extra white fint	TJ	250,00	190,00	190,00	180,00	165,00	140,00		
2	pharma glass	TJ	250,00	220,00	220,00	195,00	185,00	160,00		

	Adjustments: Efficiency improvements	Unit	Base value	2021	2022	2023	2024	2025
ii.	Average annual efficiency	TJ / t	0,008	[illegible]	[illegible]	[illegible]	[illegible]	
iii.	Efficiency improvement compared to base value			19,2%	16,6%	16,9%	16,1%	

(b.3) Adjustments: Absolute threshold

	Absolute threshold	2021	2022	2023	2024	2025
	>=100 EUA criterion satisfied?	WAHR	WAHR	WAHR	WAHR	FALSCH

(b.4) Determination of the actual activity level adjustments including any efficiency changes

	Actual adjustment (basis for subsequent years)	2021	2022	2023	2024	2025
i.	Competent Authority approval relevant?	WAHR	WAHR	WAHR	WAHR	FALSCH
ii.	Competent Authority rejects adjustment?					[illegible]

(b.5) Determination of the actual activity level adjustments including any efficiency changes

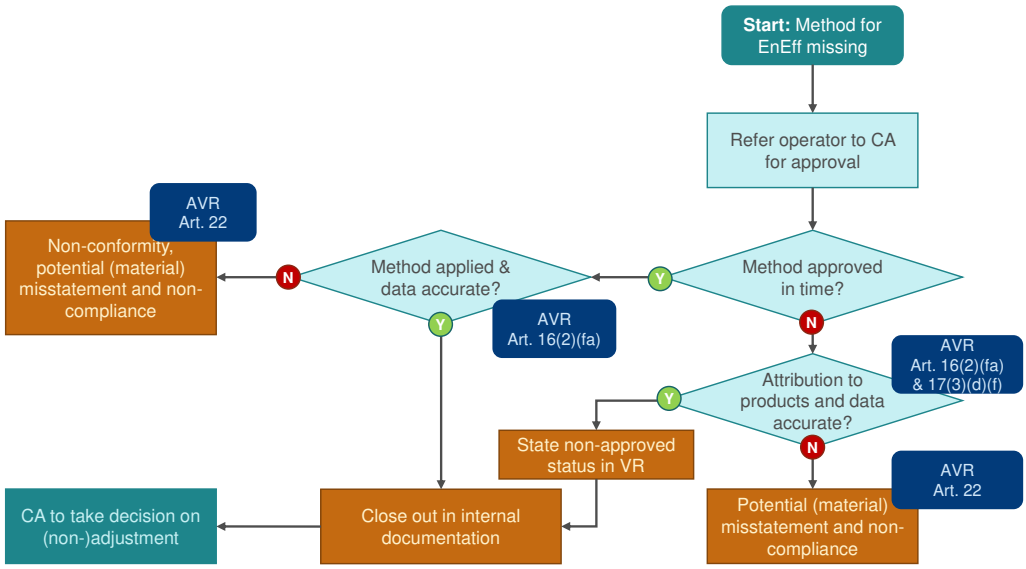
	Actual adjustment (if all thresholds exceeded)			-18,0%	-21,5%	-27,5%	-35,0%	-35,0%
	Actual activity level	TJ	500,00	[illegible]	[illegible]	[illegible]	[illegible]	325,00

Obviously, in 2021 and arguably also in 2022 (21.5% AL decrease, 16.6% efficiency increase), the CA would have good arguments to reject a downward adjustment of the allocation. The allocation may remain unchanged in those years. However, in 2023 and in 2024 the activity level further decreases while energy efficiency remains the same. Here the energy efficiency measure seems no longer to be the underlying driver of the reduced energy consumption, rather the production decline plays at least an equally relevant role. In the absence of any strong evidence for the energy efficiency measure being the relevant driver, the CA may rather not intervene here and the allocation should be adjusted as per result in section b.5.

QUESTION 2.6) At the time of verification, the MMP does not describe the method for attributing fuel input to products.

- How should the verifier proceed?
- What should be the role of the operator and the CA?

Model answer to Q2.6:



Case study 2.3:

(b) Method for the determination of annual production (=activity) levels

i. Information on the methodology applied

For the specific purpose of the NIMs data collection, this section should cover all data provided in section F.(a) in the "baseline data collection" template.

Please select below:

- *the data source used for the quantities pursuant to section 4.4 of Annex VII of the FAR.*

  As more than one of the data sources might be involved, the template provides for up to three sources. If even further sources are involved, please select the three main sources and describe further details in the description of the methodology below.
- *the method used for the determination of annual quantities pursuant to section 5 of Annex VII of the FAR.*

	Data source	Other data source (if applicable)	Other data source (if applicable)
1. Quantities of products	4.4.(c) Readings of measuring		
2. Annual quantities of products	5. (b) based on aggregation of metering of quantities separately delivered or produced taking		
3. Special reporting requirements:			

Some product benchmarks require special information to be reported (e.g. CWT values). If relevant, an automatically generated message will appear here.

4. Description of the methodology applied

Please consider the definition and system boundaries as set out in Annex I of the FAR and the relevant section in Guidance Document 9.

If the installation did not operate in all years, please provide evidence, as appropriate, and describe how the start of normal operation was determined, if relevant.

The amount produced is calculated by measuring the average weight of one bottle, times the number of bottles per pallet, times the number of pallets leaving the installation. All needed data is recorded by an internal information system.

Reference to external files, if relevant

ii. The hierarchical order has been followed? FALSCH If not, why? Unreasonable costs

Selecting "TRUE" here means that the data source with the highest rank within the hierarchy set out in section 4 of Annex VII of the FAR has been used above. If this is not the case, please select "FALSE" and select the reason for that from the drop-down list and describe further details below. Reasons for deviation can be the following:

- *Uncertainty assessment: other data sources lead to lower uncertainty according to the simplified uncertainty assessment pursuant to Article 7(2) of the FAR.*
- *Technical infeasibility: the use of better data sources is technical infeasible.*
- *Unreasonable costs: the use of better data sources would incur unreasonable costs.*

Further details on any deviation from the hierarchy

Weighing every produced container would incur unreasonable costs. Using the 1% improvement factor, a new weighing system would have to cost less than 10 000 €, which is not realistic.

QUESTION 2.7) The operator submitted the following MMP draft describing the determination of the production levels of bottles of glass.

- Would the draft be acceptable to you?
- If no, which data source would correctly describe the used approach?
- Would the justification of unreasonable cost be sufficient?
- How would FAR Article 10(5)(j) impact your decision?

Model answer to Q2.7:

The CA should not approve the MMP in the current form. The following aspects should be considered:

- As the production levels are not directly measured by a meter, data source 4.4(e) (indirect methods) should be selected.
- The operator is correct that not applying direct metering (e.g. 4.4b) requires the demonstration of e.g. unreasonable costs. However, the operator fails to demonstrate why costs of 10 000€ per year would be unreasonable. The operator should therefore provide further details e.g. on the types of costs assumed for installing measurement equipment, maintenance, etc. To this end, the unreasonable cost tool (link) could be used.
- The MMP does not describe how the average weight of a bottle, the number of bottles per pallet, or the number of pallets leaving the installation are determined. It is likely that there is a clear procedure for sampling and for quality assurance in place, as the customers would require this. It would therefore be easy for the operator to refer to exactly those to avoid any ambiguity, in particular for verification of the data.
- Article 10(5)(j) states that *"for avoiding any double counting, products of a production process returned into the same production process are deducted from annual activity levels, as appropriate in line with product definitions laid down in Annex I [of the FAR]"*. This provision therefore needs to be seen in combination with the product boundaries and definitions in Annex I. For bottles of glass the production definition is "tonnes of packed product". Therefore,

it is likely the case, that thee quantification method used by the operator only takes into account packed products. Nevertheless, a clear description (e.g. on a site map) where and how each parameter is determined would clarify.