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Guidance Document

Making conservative estimates for emissions in accordance with Article 70

MRR Guidance document, Version of 16 December 2013

Status of this document:

This document is part of a series of documents provided by the Commission services for supporting the implementation of Commission Regulation (EU) No. 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council¹.

The guidance represents the views of the Commission services at the time of publication. It is not legally binding.

This document takes into account the discussions within meetings of the informal Technical Working Group on the Monitoring and Reporting Regulation under WGIII of the Climate Change Committee (CCC), as well as written comments received from stakeholders and experts from Member States.

All guidance documents and templates can be downloaded from the Commission's website at the following address: http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm.

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:181:0030:0104:EN:PDF>

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1 INTRODUCTION

1.1 About this document

This document is intended to help in the making of conservative estimates in accordance with Article 70 of the M&R Regulation. The scope of this document is to provide guidance on how to identify and approach cases where conservative estimates are required. Further technical details are covered in the paper on data gaps and non-conformities provided by the M&R Task Force of the EU ETS Compliance Forum. Please note that in contrast to the specific reference of Article 70 to CA determinations, this document and the scope of the Task Force's paper are not limited to CAs. Both also support operators and verifiers in making conservative estimates. To make for easier reading, some sections in this current document are taken from the Task Force paper.

1.2 Where to find further information

All guidance documents and templates provided by the Commission on the basis of the M&R Regulation and the A&V Regulation can be downloaded from the Commission's website at the following address:

http://ec.europa.eu/clima/policies/ets/monitoring/index_en.htm

The following documents may provide helpful guidance for making conservative estimates:

- The Task Force's paper on data gaps and non-conformities. It is the main basis for this current document. All technical details for making conservative estimates are considered to be covered there.
- M&R Guidance document No. 6: "Data flow activities and control system". This document discusses possibilities to describe data flow activities for monitoring in the EU ETS, the risk assessment as part of the control system, and examples of control activities.
- A&V Key Guidance Note (KGN) II.2: "Risk analysis". This document discusses aspects for a risk assessment from a verifier's point of view.
- A&V KGN II.3: "Process analysis". This document discusses several checks and tests a verifier carries out to gather sufficient evidence to be able to come to an appropriate verification opinion statement.
- A&V KGN II.5: "Site visits". This document provides guidance for verifiers for site visits. In particular the CA can use criteria for a verifier to assess whether a site visit can be waived as a basis for deciding on the necessity of site visits.

2 MRR REQUIREMENTS

[To make for easier reading of this document this chapter is taken from the Task Force's paper on data gaps and non-conformities]

To some extent data gaps or the need of corrective actions of measured data seem to be inevitable, as nobody can exclude the occurrence of events that may impact the measurement system or data quality. The MRR already addresses such situations requesting corrections or surrogate data delivered by estimation both in a conservative manner to ensure that no underestimation of emissions occurs. Provisions are made in the following articles and paragraphs:

Art. 23 MRR: Temporary changes to the monitoring methodology

Where it is for technical reasons temporarily not feasible to apply the tier in the monitoring plan for the activity data or each calculation factor of a fuel or material stream as approved by the competent authority, the operator concerned shall apply the highest achievable tier until the conditions for application of the tier approved in the monitoring plan have been restored.

Art. 63 MRR: Corrections and corrective actions

Where any part of the data flow activities referred to in Article 57 MRR or control activities referred to in Article 58 MRR is found not to function effectively, or to function outside boundaries that are set in documentation of procedures for those data flow activities and control activities, the operator or aircraft operator shall make appropriate corrections and correct rejected data whilst avoiding underestimation of emissions.

Art. 65 MRR: Treatment of data gaps

Where data relevant for the determination of the emissions of an installation are missing, the operator shall use an appropriate estimation method for determining conservative surrogate data for the respective time period and missing parameter. Where the operator has not laid down the estimation method in a written procedure, it shall establish such written procedure and submit to the competent authority an appropriate modification of the monitoring plan in accordance with Article 15 MRR for approval.

Art. 70 MRR: Determination of emissions by the competent authority

1. *The competent authority shall make a conservative estimate of the emissions of an installation or aircraft operator in any of the following situations:*
 - a) *no verified annual emission report has been submitted by the operator or aircraft operator by the deadline required pursuant to Article 67(1);*
 - b) *the verified annual emission report referred to in Article 67(1) is not in compliance with this Regulation;*
 - c) *the emission report of an operator or aircraft operator has not been verified in accordance with Regulation (EU) No 600/2012.*
2. *Where a verifier has stated, in the verification report pursuant to Regulation (EU) No 600/2012, the existence of non-material misstatements which have not been corrected by the operator or aircraft operator before issuing the verification statement, the competent authority shall assess those misstatements, and make a conservative estimate of the emissions of the installation or aircraft operator where appropriate. The competent authority shall inform the operator or aircraft operator whether and which corrections are required to the emissions report. The operator or aircraft operator shall make that information available to the verifier*

When submitting an emissions report for verification and later to the competent authority the following requirements regarding data gaps are applicable.

Annex X MRR, Minimum Content of the Annual Emissions Report, paragraph 11

Where data gaps have occurred and have been closed by surrogate data in accordance with Article 65 (1) MRR:

- a) the source stream or emission source to which each data gap applies;*
- b) the reasons for each data gap;*
- c) the starting and ending date and time of each data gap;*
- d) the emissions calculated based on surrogate data;*
- e) where the estimation method for surrogate data has not yet been included in the monitoring plan, a detailed description of the estimation method including evidence that the methodology used does not lead to an underestimation of emissions for the respective time period;*

Please note that those requirements in Annex X may not have particular relevance for a CA having to make conservative estimates but is mentioned here for completeness reasons. However, the requirement in clause e), regarding the operator's obligation to follow-up with preparing an appropriate procedure for any future cases of data gaps, may have to be considered.

The term "conservative" is defined in Article 3(19) as "*conservative means that a set of assumptions is defined in order to ensure that no under-estimation of annual emissions [...] occurs.*" Since this definition is open to interpretation it may be more appropriate to make estimations with a high level of assurance that annual emissions are not under-estimated. In the light of the spirit of the MRR this can be interpreted as to strive at making estimations which are equal or higher than the unknown exact amount of annual emission 95% of the time.

The technical aspects of how to make conservative estimates for different situations are covered by the Task Force's paper on Data Gaps and Conservative Estimates [*Reference to TF Paper once it is finalised and published*].

In this document approaches and procedures from a competent authority's view are discussed in the following chapters. Some aspects of how to approach such a case are similar to a verifier who has to verify the installation or aircraft operator, e.g. what kind of information or data needs to be gathered and how, how to address any associated risk,... Therefore relevant sections and aspects in the AVR Guidance Documents will be referenced here, to the extent possible. Furthermore, in many cases conservative estimates will only have to be made for part of the installation instead of for the whole installation, e.g. non-compliance will most often only relate to one source stream or even just one parameter such as a calculation factor.

3 CASES REQUIRING CONSERVATIVE ESTIMATES

Based on the legal framework described in chapter 2 (and notwithstanding the responsibilities of operators and aircraft operators) the following cases requiring the CA to consider conservative estimates can be identified:

1. No verified AER submitted
 - Monitoring data available (the common case):
The most common reason for not submitting a verified AER will be that the operator simply forgot to send the report in time or that verification was not finished by the deadline. Since no data gap occurred in this case, the CA can use the available data and does not have to make any conservative addition.
 - Monitoring data available (report not verified):
Another common reason may be cases where operators have legal or economic problems (e.g. bankruptcy). When an AER is not submitted due to such a reason it will also, in general, not have been verified. In these types of circumstances, the installation or aircraft operator may have operated only part of the reporting year, at very low activity levels, or not at all.
 - Monitoring data not available:
Such a case may occur if e.g. an installation was not included in the ETS before but should have been. However, having no monitoring plan in place does not necessarily mean that data are not available.
Another situation where no data are available is in cases of force majeure, although this rarely happens.
2. AER has been verified negatively
 - Some elements of the monitoring methodology have been found to be not in compliance with the MRR and/or the latest approved MP:
e.g. the operator applies a mass balance approach for a certain process which is not allowed by the MRR;
 - The verifier has found material misstatements, which the operator or aircraft operator has not corrected:
e.g. the main gas meter has not been maintained and calibrated appropriately
 - The verifier has found that the operator has provided insufficient data (Article 28(a) AVR) to obtain enough evidence to allow issue of a verification opinion with reasonable assurance that the report is free from material misstatements (Article 27(1)(c) AVR)
3. Not corrected non-material misstatements in VR
 - CA has to assess those misstatements and make conservative estimates, where appropriate
4. The submitted verified AER is not in compliance with the MRR
 - Such a case may occur if e.g. the CA detects during the review of AER and verification reports that data for calculating emissions or a source stream are missing.

4 TOOLBOX FOR MAKING CONSERVATIVE ESTIMATES

4.1 Toolbox provided in the Task Force's paper

The Task Force provides in its paper on data gaps and non-conformities a toolbox for making conservative estimates for emissions, where needed. This toolbox consists of a hierarchy with different tracks for filling data gaps appropriately. The hierarchy of the tracks is, to the extent possible, in line with the hierarchy of tiers in the MRR. Note that as a consequence, the Task Force's paper's approach follows the requirement of Article 23 that in cases of temporal change of the monitoring methodology the operator "shall apply the highest achievable tier". Where different tracks do not relate to different tiers, the hierarchy aims at using the "best available data".

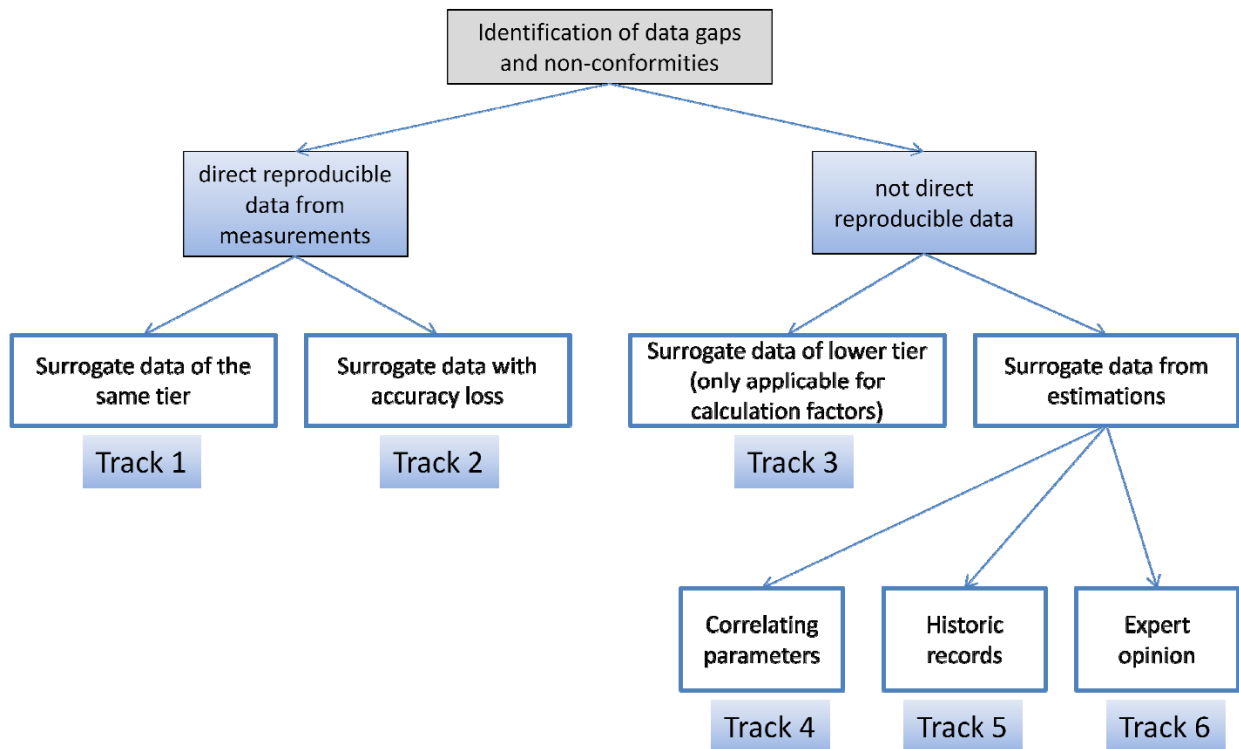


Figure 1 Overview of the track-based toolbox of chapter 5 of the Task Force's paper on data gaps and non-conformities

Table 1 Track-based toolbox of chapter 5 of the Task Force's paper on data gaps and non-conformities

<p>Track 1 Data can be reproduced at the same tier</p>	$D_r = S$
<p>Track 2 Data can only be reproduced with quality loss</p>	<p>Case 2-1: Surrogate data with accuracy loss quantified for activity data $D_r = S + S * (U_s - U_t)$</p>
	<p>Case 2-2: Surrogate data with accuracy loss quantified for calculation factors $D_r = S + S * (U_s - U_p)$</p>
	<p>Case 2-3: Surrogate data with accuracy loss not quantifiable $D_r = S + S * x\%$</p>
<p><i>D_r</i> = data to be used in emissions reporting <i>S</i> = surrogate data at lower quality <i>U_s</i> = quantified uncertainty of the secondary system including corrective measures <i>U_t</i> = uncertainty of the approved tier <i>U_p</i> = quantified uncertainty of the undisturbed primary system <i>x%</i> = individually demonstrated safety margin by the operator</p>	
<p>Track 3 not reproducible, substitution by lower tier approach</p>	<p>Case 3-1a: Surrogate data given by regulation or literature $D_r = S + U_L$ or $D_r = S_U$</p>
	<p>Case 3-1b: Surrogate data given by regulation/literature but information on uncertainty missing $D_r = S + S * x\%$</p>
<p><i>D_r</i> = data to be used in emissions reporting <i>S</i> = default value taken from regulation / guideline / literature <i>U_L</i> = uncertainty as indicated by the same data source <i>S_U</i> = default value taken from regulation / guideline / literature in case uncertainty is already Included <i>x%</i> = individually demonstrated safety margin by the operator</p>	
<p>Track 4 not reproducible, substitution by estimation based on correlated parameters</p>	<p>Case 4-1: Installation-specific surrogate data based on correlating parameters $D_r = S + 2 * \sigma$</p>
	<p>Case 4-2: Installation-specific surrogate data based on proven correlation without records $D_r = S + x\% * S$</p>
<p><i>D_r</i> = data to be used in emissions reporting <i>S</i> = surrogate data delivered by correlation parameter/function σ = standard deviation of historic simultaneous monitoring <i>x%</i>=individually demonstrated safety margin by the operator</p>	

Track 5 not reproducible, substitution by estimation based on historic records	Case 5-1a: Surrogate data derived from statistical behaviour	$D_r = S + 2 * \sigma$
	Case 5-1b: Installation-specific surrogate data based on historic records with limited data set (only valid for calculation factors)	$D_r = S$ (S = max. value of historic data set; less than 20 records)
	Case 5-2: Surrogate data where a standard deviation cannot be reasonably determined	$D_r = S + x\% * S$
<i>D_r</i> = data to be used in emissions reporting <i>S</i> = surrogate data derived from statistical behaviour of historic records <i>σ</i> = standard deviation of historic records <i>x%</i> = individually demonstrated safety margin by the operator		
Track 6 not reproducible, substitution by estimation based on a combination of methods including an expert opinion	In the case that none of the tracks presented above are applicable, estimates shall be made by using a combination of methods including an expert opinion. Track 6 should be used in the case of varying and/or unpredictable data, e.g. flaring, or when the analysis result from a batch is missing and there are no representative historical data or values existing from literature or regulation. These data gaps should be evaluated on a case-by-case basis and the safety margin will have to be found in each individual case. The expert opinion has to justify why no higher emissions can be expected than the delivered result.	

4.2 The “safety margin”

Where uncertainty data or standard deviations are not applicable or not available, safety margins have to be used based on individually demonstrated values. From a CA perspective the simplest approach would be the use of predefined default safety margins (e.g. 5%) where the operator could not demonstrate more appropriate values. However, such default safety margins are neither available from legislation nor can a single default safety margin be considered conservative for all cases.

It can be seen from the examples in Figure 2 that a default safety margin e.g. of 2% may be excessive for case (a) but it may be just about right or even not conservative enough in case (b).

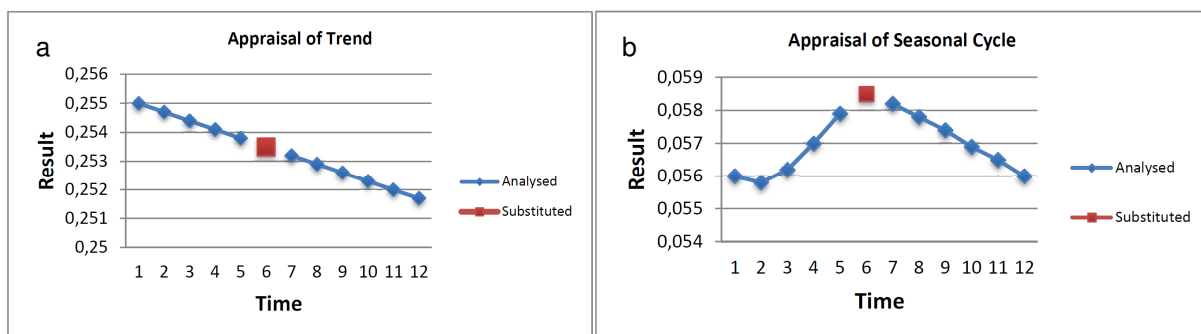


Figure 2. Example data gaps of (a) appraisal of a trend and (b) appraisal of a seasonal cycle (source: Task Force's paper on data gaps and non-conformities)

Example approach (recommendation):

*One appropriate way to find an agreement with all involved parties may be to agree on a lowest reasonable maximum value and/or highest reasonable minimum value. This is often achieved easier than directly discussing a percentage value. E.g. In case (b) of Figure 2 the CA agrees with the operator (and probably also the verifier) that the expected value for the data gap is 0.0585 and is considered extremely unlikely that it is higher than 0.0595. The term "extremely unlikely" may be interpreted as corresponding to the 99% confidence interval. This means that there is a 99% chance that the "true" value is within the range 0.0585 ± 0.001 . To convert this range into a 95% confidence interval 0.001 needs to be divided by 2.58 (99%) and multiplied by 1.96 (95%)². As a result, a conservative estimate of $0.0585 + 0.001 * 1.96 / 2.58 = 0.05926$ may be used as surrogate data that is taking into account an appropriate safety margin.*

² In many cases, also the Task Force in its paper, 2 is used instead of 1.96.

5 RECOMMENDED APPROACH (STEP-BY-STEP)

The following step-wise approach is recommended for the CA to make conservative estimates. However, other approaches may also be used, if considered more appropriate:

1. **Identify the size of the data gap** (i.e. limit the scope for making conservative estimates to just the source streams/emission sources affected).
The starting point for the CA for this identification should be the latest approved MP and the data flow activities. Based on the information provided by the operator in the AER or the verifier in the VR it should be possible to see which part of the data flow is affected.
For those cases where no monitoring plan exists (e.g. if an installation is not included in ETS before but should be) the whole data flow is a data gap. The A&V Guidance KGN II.3 on process analysis (including section 4.2 on data gaps) may also provide helpful information here.
2. **Request information from the (aircraft) operator**
Depending on the outcome of point 1, additional information should be requested from the operator, e.g. measurements from substitute meters, where the primary meter has failed; information about the availability of retained samples (probably also the whole sampling plan), where a single analytical value is missing for one calculation factor.
3. **Risk assessment by the CA**
In order to close any data gaps in a cost-effective way, carrying out a risk assessment may be helpful. The operator's own risk assessment attached to the latest approved MP will be basis for this assessment. Furthermore, a risk assessment focussing on the data gap may already be available from the verifier's risk analysis. If this is not the case the M&R Guidance Document No. 6 on data flow activities and control system as well as the A&V Guidance KGN II.2 on risk analysis may provide helpful information.
4. **Decide on site visit**
Sometimes data can only be obtained and checked on site. Therefore, the CA may consider the need to carry out site visits. The basis for deciding whether site visits are necessary will depend on the quality and completeness of data provided by the operator under point 2 as well as the outcome of the risk assessment under point 3 with the aim of finding a reasonable level of assurance by making the intended conservative estimates.
The A&V Guidance KGN II.5 on site visits provides helpful information. Guidance for verifiers on circumstances under which a site visit can be waived may be a suitable starting point here.
5. **Select an appropriate method for filling the data gap & safety margin**
See the Task Force's paper on data gaps and conservative estimates (also see chapter 4)