



## **POLICY GUIDELINES**

*by the Energy Community Secretariat*

### **on the Preparation of National Emission Reduction Plans**

PG 03/2014 / 19 Dec 2014



## 1. Purpose and scope

The Ministerial Council of the Energy Community, on 24 October 2013, adopted two decisions containing rules for the design and operation of large combustion plants. In its Decision D/2013/05/MC-EnC, the Ministerial Council adapted Directive 2001/80 EC relating to the limitation of emission into the air from large combustion plants<sup>1</sup>, for the specific needs of the Energy Community while Decision D/2013/06/MC-EnC incorporated Chapter III and Annex V of Directive 2010/75/EU on industrial emissions<sup>2</sup> in the Energy Community *acquis communautaire* and set an implementation deadline of 1 January 2018 for new combustion plants.

Further to Article 4(3) of Directive 2001/80/EC read in conjunction with point 3 of Annex II of the Energy Community Treaty as well as Article 3 of the Decision D/2013/05/MC-EnC of the Ministerial Council, Contracting Parties are required to achieve significant emission reductions from existing combustion plants<sup>3</sup> from 1 January 2018 onwards at the latest.

In its Decision D/2013/05/MC-EnC, the Ministerial Council provided the possibility for Contracting Parties to use, until 31 December 2027, a national emission reduction plan (NERP) as an alternative to setting the emission limit values of Directive 2001/80/EC for each combustion plant individually.

Further to point d) of the fifth subparagraph of Article 4(6) of Directive 2001/80/EC as adapted by Article 7 of Decision D/2013/05/MC-EnC, the Secretariat is requested to develop guidance to assist Contracting Parties that choose the option to develop a national emission reduction plan. The purpose of this document is to provide such assistance to the Contracting Parties. The purpose of this document is to provide such guidance for Contracting Parties envisaging to make use of the option to apply a NERP and to establish the principles by which compliance with the NERPs will be verified in the Energy Community.

## 2. Options to achieve compliance with Directive 2001/80/EC as adapted by Decision D/2013/05/MC-EnC

The options for existing combustion plants to achieve compliance with the requirements of Directive 2001/80/EC as adapted by Decision D/2013/05/MC-EnC are set out in Articles 4(3), 4(4) and 4(6) of Directive 2001/80/EC:

### *Option 1: Compliance with the emission limit values (ELVs) (Article 4(3)(a))*

Under this approach, emissions of all existing combustion plants have to be within the emission limit values (ELVs) stated in Part A of Annexes III to VII in respect of SO<sub>2</sub>, NO<sub>x</sub> and dust, and, where appropriate, applying Articles 5(1) (derogations), 7 (malfunction or breakdown of abatement equipment) and 8 (multi-fuel firing combustion plants) of Directive 2001/80/EC.

### *Option 2: Implementation of a national emission reduction plan (NERP) (Article 4(3)(b) and Article 4(6))*

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<sup>1</sup> OJ L 309, 27.11.2001, p.1

<sup>2</sup> OJ L 334, 17.12.2010, p.17

<sup>3</sup> According to Article 1 of Decision D/2013/05/MC-EnC, 'existing plant' means any combustion plant for which the original construction licence or, in the absence of such a procedure, the original operating licence was granted before 1 July 1992.

When choosing this option, Contracting Parties shall draw up and implement a NERP as referred to in Article 4(6) of Directive 2001/80/EC as adapted by Article 5 of Decision D/2013/05/MC-EnC for the specific needs of the Energy Community. This adaptation implies a gradual reduction of the emissions of the combustion plants covered by the NERP towards an emission ceiling based on the emission limit values set out in Directive 2010/75/EU on industrial emissions for existing combustion plants.

According to Decision D/2013/05/MC-EnC, a NERP may be applied between 1 January 2018 and 31 December 2027 only.

A NERP shall ensure that the total annual emissions of nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>) and dust from the combustion plants covered by plan shall not exceed the levels that would have been achieved by applying the emission limit values referred to in Directive 2001/80/EC or Directive 2010/75/EU (see below for details) to existing combustion plants in operation in the year 2012 (including those existing combustion plants undergoing a rehabilitation plan in 2012, approved by the competent authority, to meet emission reductions required by national legislation) on the basis of each combustion plant's actual annual operating time, fuel used and thermal input, averaged over the last five years of operation up to and including 2012.

The emission limit values to be used in the calculation will differ over time, as follows:

The ceilings for the year 2018 shall be calculated on the basis of the applicable emission limit values at the time of submission of the plan (i.e. on 31 December 2015 at the latest) as set out in Part A to Annexes III to VII to Directive 2001/80/EC or, where applicable for SO<sub>2</sub>, on the basis of the rates of desulphurisation set out in Annex III to Directive 2001/80/EC.

The ceilings for the year 2023 shall be calculated on the basis of the applicable emission limit values in that year set out in Part A to Annexes III to VII to Directive 2001/80/EC or, where applicable for SO<sub>2</sub>, on the basis of the rates of desulphurisation set out in Annex III to Directive 2001/80/EC. This means, in practice, that the ELVs used for calculating the 2023 ceilings should be the same as those used for the 2018 ceilings, except for the NO<sub>x</sub> emission limit values for solid fuel fired combustion plants with a rated thermal input exceeding 500 MW, where a limit value of 200 mg/Nm<sup>3</sup> will have to be used for 2023 instead of 500 mg/Nm<sup>3</sup>.

The ceilings for the year 2026 and 2027 shall be calculated on the basis of the relevant emission limit values set out in Part 1 of Annex V to Directive 2010/75/EU or, where applicable for SO<sub>2</sub>, the relevant minimum rates of desulphurisation set out in Part 5 of Annex V to Directive 2010/75/EU.

For the intermediate years, the ceilings shall be derived from the 2018, 2023 and 2026 ceilings, as follows:

The ceilings for the years 2019 to 2022 shall be set providing a linear trend between the ceilings of 2018 and 2023. In practice, this means that the ceilings will not change between 2018 and 2023 except for NO<sub>x</sub> (in case the NERP would include solid fuel fired combustion combustion plants with a rated thermal input of more than 500 MW).

The ceilings for the years 2024 and 2025 shall be set providing a linear decrease of the ceilings between 2023 and 2026.

### *Option 3: Limited lifetime derogation (Article 4(4))*

Existing combustion plants may be exempted from the ELVs specified in Directive 2001/80/EC or from the inclusion in a NERP if the operator opts for the limited lifetime derogation according to Article 4(4) of Directive 2001/80/EC as adapted by Article 4 of Decision D/2013/05/MC-EnC. This derogation may apply if

- the operator of an existing combustion plant undertakes, in a written declaration submitted by 31 December 2015 at the latest to the competent authority, not to operate the combustion plant for more than 20,000 operational hours starting from 1 January 2018 and ending no later than 31 December 2023;
- the Ministerial Council, in the form of a decision and following a verification by the Secretariat that the above conditions (i.e. for each combustion plant planning to use this derogation, there is a valid written declaration made within the deadline by the operator to the competent authority) are met, authorizes this exemption in the form of a decision approved by the majority of its members including a vote in favour by the European Union.

### **3. Data to be included in the NERP**

A Contracting Party that chooses to prepare a national emission reduction plan should compile a list of the combustion plants to be included in the NERP along with the following data.

- name, location and operator of the combustion plant;
- date on which the first permit for the combustion plant was requested/issued and/or date on which the combustion plant has been put into operation for the first time;
- capacity (total rated thermal input) of the combustion plant on 31 December 2012;
- annual amount of fuel used (TJ/year) averaged over the period 2008-2012, split over 6 types of fuel: hard coal, lignite, biomass, other solid fuels, liquid fuels, gaseous fuels;
- annual average waste gas flow rate from 2008 to 2012;
- latest available annual emissions of SO<sub>2</sub>, NO<sub>x</sub> and dust (2014 or, if data is not yet available by the time of preparation of the plan, 2013 data);

The following information is to be provided where use is made of specific provisions for calculating ceiling contributions:

- where low operating time derogations according to Article 5(1) of the Directive are applied: annual number of operational hours starting from 1 January 2018 onwards accompanied with a written declaration that the combustion plant will not be operated more than 1,500 operational hours per year;
- where the desulphurisation rate approach is used to calculate contribution to the SO<sub>2</sub> emission ceiling: quantity of sulphur input from 2008 to 2012.

This data should be presented as shown in Table A.1 for each combustion plant covered by the NERP.

The NERP should also contain a separate list of all other combustion plants not covered by it (i.e. those that will be applying the ELVs or the limited life time derogation) containing information on the main fuel type, capacity and current annual emissions of the combustion plant.



#### 4. Aggregation rules

Where the waste gases of two or more separate combustion plants are discharged through a common stack, the combination formed by such plants shall be considered as a single combustion plant and their capacities added for the purpose of calculating the total rated thermal input. For the purpose of calculating the total rated thermal input of a combination of combustion plants, individual combustion plants with a rated thermal input below 15 MW shall not be considered.

#### 5. Determination of ceilings

The NERP will define total emission ceilings for SO<sub>2</sub>, NO<sub>x</sub> and dust for each of the years from 2018 until 2027. The emissions from all combustion plants as a whole that are included within the plan in those years will have to be below these ceilings.

The NERP emission ceilings shall be calculated at national level, based on the contributions from each individual combustion plant as explained below.

#### 6. Determination of individual contributions to total emission ceilings for combustion plants

##### 6.1. General case

In accordance with the requirements of Article 4(6) of Directive 2001/80/CE, each combustion plant's contribution to the SO<sub>2</sub>, NO<sub>x</sub> and dust emission ceilings shall be calculated using the following equation:

$$\text{Contribution to ceiling (tpa)} = \text{Waste gas flow rate (Nm}^3\text{pa)} \times \text{ELV (mg/Nm}^3\text{)} \times 10^{-9}$$

Where:

— “waste gas flow rate” is the volumetric flow rate of waste gases in cubic metres per year, averaged over the last five years of operation up to and including 2012.<sup>4</sup> It is expressed at standard temperature (273 K) and pressure (101,3 kPa), at the relevant reference oxygen content (i.e. same oxygen content as the one applied for the corresponding ELV) and after correction for the water vapour content;

— “ELV” is the relevant emission limit value expressed in mg/Nm<sup>3</sup>, assuming an oxygen content by volume in the waste gas of 3 % in the case of liquid and gaseous fuels and 6 % in the case of solid fuels;

— “tpa” is tonnes per year.

##### 6.2. Special case for combustion plants using the desulphurisation rate option

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<sup>4</sup> If the plant was temporarily out of operation for at least 60 consecutive days due to investment activities in any of the years during the five-year period up to and including 2012 to an extent that could distort the calculation of the emission ceiling contributions, the last five years of operation should be taken into account, extending the reference period beyond 2008 corresponding to the time spent out of operation. Alternatively, for days spent out of operation due to investment activities, average daily fuel consumption data averaged over the five-year period up to and including 2012 (excluding those periods) may be used. Maintenance periods shall not be considered as the plant being temporarily out of operation.

The equation under Section 6.1 will not apply where the desulphurisation rate approach for SO<sub>2</sub> is used (Nota Bene of Part A of Annex III of Directive 2001/80/EC and, for the years 2026 and 2027, Article 31 of Directive 2010/75/EU<sup>5</sup>). In such cases, a combustion plant's contribution to the SO<sub>2</sub> emission target can be calculated using the following equation:

$$\text{Contribution to SO}_2 \text{ ceiling (tpa)} = \text{Sulphur input (S) (tpa)} \times (1 - (\text{MDR}/100)) \times 2$$

Where:

— “Sulphur input” is the annual quantity of sulphur (S) contained in the fuel which was used in the combustion plant, expressed in tonnes per year and averaged over the period 2008-2012

— “MDR” is the minimum rate of desulphurisation as defined in Article 2(4) of Directive 2001/80/EC or Article 3(28) of Directive 2010/75/EU.

### 6.3. Special case for combustion plants firing multiple fuel types

The equation referred to in Section 6.1 needs to be adapted for combustion plants that fired multiple fuel types in the period 2008-2012 (simultaneously or not).

Those combustion plants require the application of different emission limit values and/or reference conditions for each of the fuels separately for calculating their contribution to the emission ceilings. Hence, the following method shall be used.

$$\text{Contribution to ceiling (tpa)} = \Sigma [\text{Waste gas flow rate (Nm}^3\text{pa)} \times \text{ELV (mg/Nm}^3\text{)} \times 10^{-9}]$$

This equation implies that, for each of the fuel types used in the period 2008-2012, the average annual waste gas volume (Nm<sup>3</sup> per year) associated with that fuel type is multiplied by the relevant emission limit value for that fuel type (corresponding with the total rated thermal input of the entire combustion plant<sup>6</sup>). The products of these multiplications are then added for all of the fuel types used.

It must be ensured that, for each fuel type, the waste gas volume and the emission limit value multiplied are expressed at the same reference oxygen content.

## 7. Calculating the emission ceiling contributions for 2018, 2023 and 2026

### 7.1. General principles

The contributions referred in Section 6 of the present Guidance should be calculated individually for each combustion plant under the scope of the NERP.

<sup>5</sup> While Directive 2001/80/EC allows all plants firing solid fuel to use the desulphurisation rate option where the SO<sub>2</sub> emission limit values cannot be met due to the characteristics of the fuel, Directive 2010/75/EU only grants this possibility for plants firing indigenous solid fuel. Therefore, for the calculation of the ceilings for the years 2026 and 2027, this option can only be used for plants firing indigenous solid fuel.

<sup>6</sup> This means in practice that for each fuel type, the total rated thermal input of the plant shall be used as a reference. E.g., if a 400 MW plant fires solid and liquid fuel at a rate of 95:5, for both the solid and liquid fuel the emission limit values corresponding to 400 MW shall be used. For determining the final contribution to the ceiling, they shall be taken into account with a weight corresponding to their respective contributions (95:5).

This exercise should be carried out for each combustion plant either for the years 2018, 2023 and 2026 and 2027 based on the references as described below in points 7.2 to 7.4.

### *7.2. Calculating the 2018 emission ceilings*

According to subparagraph 2 of Article 5(4) of the Decision, the ceilings for the year 2018 should be calculated on the basis of the applicable emission limit values at the time of submission of the plan (i.e. 31 December 2015) as set out in Part A to Annexes III to VII to the Directive or, where applicable, on the basis of the rates of desulphurisation set out in Annex III to the Directive.

The template for calculating the 2018 emission ceilings is presented in Table B.1 of Appendix B and the reference emission limit values and desulphurisation rates in Tables C.1 and C.2 of Appendix C.

### *7.3. Calculating the 2023 emission ceilings*

According to subparagraph 3 of Article 5(4) of the Decision, the ceilings for the year 2023 shall be calculated on the basis of the applicable emission limit values in that year set out in Part A to Annexes III to VII to Directive 2001/80/EC or, where applicable, on the basis of the rates of desulphurisation set out in Annex III to the Directive. As explained in Option 2 of Section 2 of the present Guidance, this means in practice that the ELVs used for calculating the 2023 ceilings should be the same as those used for the 2018 ceilings, except for the NO<sub>x</sub> emission limit values for solid fuel fired combustion plants with a rated thermal input exceeding 500 MW, where a limit value of 200 mg/Nm<sup>3</sup> will have to be used for 2023 instead of 500 mg/Nm<sup>3</sup>.

The template for calculating the 2023 emission ceilings is presented in Table B.2 of Appendix B and the reference emission limit values in Tables D.1 and D.2 of Appendix D.

### *7.4. Calculating the 2026 and 2027 emission ceilings*

According to subparagraph 4 of Article 5(4) of the Decision, the ceilings for the year 2026 and 2027 shall be calculated on the basis of the relevant emission limit values set out in Part 1 of Annex V to Directive 2010/75/EU or, where applicable, the relevant rates of desulphurisation set out in Part 5 of Annex V to Directive 2010/75/EU.

The template for calculating the 2026 and 2027 emission ceilings is presented in Table B.3 of Appendix B and the reference emission limit values in Tables E.1 and E.2 of Appendix E.

### *7.5. Calculating the 2019, 2020, 2021, 2022 ceilings*

The ceilings for the years 2019 to 2022 shall be set providing a linear trend between the ceilings of 2018 and 2023.

### *7.6. Calculating 2024 and 2025 ceilings*

The ceilings for the years 2024 and 2025 shall be set providing a linear trend between 2023 and 2026.

## 8. Total emission ceilings

The total emission targets for SO<sub>2</sub>, NO<sub>x</sub> and dust can be determined per year by adding up the individual contributions to the respective emission targets:

*Contracting Party emission ceiling (tpa) =  $\Sigma$  (individual contribution of combustion plants to ceiling)*

An example for the presentation of such total emission ceilings is provided in Table B.4 of Appendix B.

## 9. Subsequent changes to the NERP

Contracting Parties shall inform the Secretariat at least on the following:

— combustion plants which make use of the limited lifetime derogation (opt-out) possibility;

*Note:* Until 31 December 2015, operators have to notify the competent authority and the Secretariat if they seek to be exempt from inclusion within the plan by opting for the limited operating lifetime derogation (Article 4(4)). Since this deadline is identical to the one referring to the submission of the national emission reduction plan, and the use of the limited lifetime derogation is subject to the approval of the Ministerial Council, Contracting Parties should consider the inclusion of such combustion plants in their NERPs which could be later removed if the limited lifetime derogation is granted.

— the closure of the combustion plant (i.e. combustion plants that have definitively stopped operating) or the reduction of its total rated thermal input below 50 MW;

— combustion plants starting to co-incinerate waste (see below).

In such cases, the combustion plant should be removed from the NERP, the contributions to the applicable emissions ceiling(s) should be deducted from the total emission ceiling(s) and the Contracting Party should submit the necessary amendment of the plan to the Secretariat.

Contracting Parties do not have the obligation to communicate to the Secretariat the following information since the subsequent changes they refer to should not affect the applicable emission ceiling(s):

— a reduction or an increase of the total rated thermal input after 1 January 2016 (other than a reduction to less than 50 MW);

— a reduction or an increase of the number of annual operating hours after 2016 (other than an increase to more than 1,500 hours for combustion plants making use of the low number of operating hours derogation in Article 5(1) – if such a combustion plant will be operated more than 1,500 hours, it should be notified and the ceilings adjusted);

— a change in fuel use (type, quantity) occurring after 2016 (other than a switch to burning waste, which would qualify the combustion plant as a waste co-incineration plant causing its exclusion from the NERP).



Changes affecting the name of the combustion plant (e.g. due to a change of operator) shall be reported via the emission inventories to be provided by the Contracting Parties in accordance with Section 12 of the present Guidelines.

## 10. Measures to comply with objectives

Contracting Parties shall describe the measures envisaged to deliver the necessary emission reductions to comply with the NERP.

Firstly, Contracting Parties shall give an indication, on a plant-by-plant basis, on the envisaged measures and on the means by which they will achieve compliance with the ceilings over time as presented in Tables B.1 to B.3 of Appendix B.

Secondly, given long implementation timeframe of the NERPs, there is a possibility that these measures will change in certain cases and therefore it is recommended that Contracting Parties provide an update to the envisaged measures to the plans included in the NERP in the framework of their reporting referred to in points 11 and 12 of the present Guidance.

## 11. Timetable

The timetable for Contracting Parties choosing to pursue the NERP option with key dates is presented in the below table.

Key milestone	Action
By 31 December 2015	Contracting Party to communicate national emission reduction plan to the Secretariat
Within nine months of communication referred above	The Secretariat shall evaluate whether or not the plan meets the requirements of Article 4(6) of the Directive as adapted by the Decision. If the Secretariat considers that this is not the case, it shall inform the Contracting Party and within the subsequent three months the Contracting Party shall communicate any measure it has taken in order to ensure that the requirements are met.
1 January 2018	Start of NERP implementation
31 December 2027	End date of NERP

## 12. Monitoring mechanism

Commencing on 1 January 2018, a number of monitoring and reporting measures should be implemented, in particular:

— in connection with the emission inventories to be established under Annex VIII.B of Directive 2001/80/EC, operators will be required to estimate total annual emissions of SO<sub>2</sub>, NO<sub>x</sub> and dust to the satisfaction of the competent authority; confirm applicability of the low operating time derogation for NO<sub>x</sub> and report time used/unused for combustion plants excluded under the limited lifetime derogation;

— Contracting Parties shall ensure that emissions of SO<sub>2</sub>, NO<sub>x</sub> and dust from the combustion plants falling under the NERP are limited to a degree which allows compliance with the emission ceilings. Where there is a risk that emission ceilings are not complied with, Contracting Parties

shall take the necessary measures to prevent any emissions exceeding those ceilings;

— the competent authorities shall monitor the emissions of SO<sub>2</sub>, NO<sub>x</sub> and dust of each combustion plant falling under the NERP by verifying the monitoring or calculation data of the operators of the combustion plants and

— Contracting Parties shall also ensure that there are mechanisms in place to approve any changes to the measures that were originally envisaged to comply with the emission reductions in the NERP.

### **13. Reporting to the Secretariat**

Obligations for reporting from a Contracting Party to the Secretariat are set out in Section B of Annex VIII of the Directive, as adapted by the Decision.

From 1 January 2019 onwards, Contracting Parties implementing a NERP shall report to the Secretariat every year within 12 months the plant-by-plant data for all combustion plants included in the plan.

With the aim of demonstrating progress in implementation, this report shall also include emission projections for scenarios taking into account ongoing investments for which financing is secured and a well-defined implementation timeline is drawn up. A project can be considered as ongoing investment if adequate proof of availability of financial resources for the realization of the project is provided accompanied with a timetable for implementation. In that case the emission concentrations achieved after the investment (i.e. the signing of the financing agreement) should be presented together with the expected fuel consumption used for the calculation of the emissions for all years after which financing is secured.

Based on this report, compliance with the NERP ceilings will be verified.

Vienna, 19 December 2014

A handwritten signature in blue ink, appearing to read "Janez Kopač".

Janez Kopač  
Director

**Appendix A**

**Table A.1**

**Template for the list of combustion plants to be included in the national emission reduction plan**

A	B	C	D			E	F
Number	Plant name (operator)	Plant location (address)	Date on which the application for the first permit for the plant has been submitted	OR Date on which the first permit for the plant has been granted	Date on which the plant has been put into operation for the first time	Total rated thermal input on 31 December 2012 (MW)	Annual number of operating hours (only if Article 5(1) is applied)

A	G						H	I	J		
Number	Annual amount of fuel used (average 2008-2012) (TJ/year)						Average annual waste gas flow rate <sup>7</sup> (average 2008-2012) (Nm <sup>3</sup> /year)	Annual quantity of sulphur input (average 2008-2012) (tonnes of S per year, expressed as S)  (only if desulphurisation rate is applied)	Latest available emissions data (2014 or, if data is not yet available by the time of preparation of the plan, 2013 data)		
									SO <sub>2</sub>	NO <sub>x</sub>	dust
	hard coal	lignite	biomass	other solid fuels	liquid fuels	gaseous fuels					

<sup>7</sup> If the waste gas flow rate is calculated based on the fuel input, the following conversion factors are suggested to be used when making the relevant calculations: 0.358 for solid fuels (6% O<sub>2</sub> content), 0.285 for liquid fuels (3% O<sub>2</sub> content) and 0.280 for gaseous fuels (3% O<sub>2</sub> content). For biomass, a typical conversion factor at 6% O<sub>2</sub> content would be 0.344. For further information, please refer to: Graham D P, Salway G, Ray P, Stack Gas Flow Rate Calculation for Emissions Reporting – A Guide to Current Best Practice for the Operators of Coal Fired Boilers, PT/07/LC422/R, May 2007; Graham D., Hamevie H., van Beek R. and Blank F., Validated methods for flue gas flow rate calculation with reference to EN 12952-15 ([http://www.vgb.org/vgbmultimedia/rp338\\_flue\\_gas.pdf](http://www.vgb.org/vgbmultimedia/rp338_flue_gas.pdf))

**Appendix B**

**Table B.1**

**Template for calculating the 2018 emission ceilings**

A	B	C	D	E	F	G	H	I	J	K
Number	Name	Reference oxygen content (%)	Relevant ELV for SO <sub>2</sub> (mg/Nm <sup>3</sup> )	Relevant desulphurisation rate (where applicable)	Plant's contribution to the 2018 SO <sub>2</sub> ceiling (tpa)	Relevant ELV for NO <sub>x</sub> (mg/Nm <sup>3</sup> )	Plant's contribution to the 2018 NO <sub>x</sub> ceiling (tpa)	Relevant ELV for dust (mg/Nm <sup>3</sup> )	Plant's contribution to the 2018 dust ceiling (tpa)	Measures to comply with objectives/ Comments
(individual plant data – one line for each fuel type used <sup>8</sup> )										
SUM					TOTAL SO <sub>2</sub> CEILING		TOTAL NO <sub>x</sub> CEILING		TOTAL dust CEILING	

**Table B.2**

**Template for calculating the 2023 emission ceilings**

A	B	C	D	E	F	G	H	I	J	K
Number	Name	Reference oxygen content (%)	Relevant ELV for SO <sub>2</sub> (mg/Nm <sup>3</sup> )	Relevant desulphurisation rate (where applicable)	Plant's contribution to the 2023 SO <sub>2</sub> ceiling (tpa)	Relevant ELV for NO <sub>x</sub> (mg/Nm <sup>3</sup> )	Plant's contribution to the 2023 NO <sub>x</sub> ceiling (tpa)	Relevant ELV for dust (mg/Nm <sup>3</sup> )	Plant's contribution to the 2023 dust ceiling (tpa)	Measures to comply with objectives/ Comments
(individual plant data)										
SUM					TOTAL SO <sub>2</sub> CEILING		TOTAL NO <sub>x</sub> CEILING		TOTAL dust CEILING	

<sup>8</sup> For plants firing multiple fuels, each row needs to be filled per fuel (multiple rows per plant).





### Appendix C

**Table C.1**

**Emission limit values relevant for the calculation of the individual contributions to the 2018 emission ceilings for combustion plants**

Pollutant	Fuel type	ELV (mg/Nm <sup>3</sup> )			
		50-100 MW	> 100-300 MW	> 300-500 MW	> 500 MW
SO <sub>2</sub>	Solid	2,000	2,000 to 400 (linear decrease) (Note 1)		400
	Liquid	1,700		1,700 to 400 (linear decrease)	400
	Gaseous	35 in general 5 for liquefied gas 800 for coke oven gas and blast furnace gas			
NO <sub>x</sub>	Solid	600			500 (Note 2)
	Liquid	450			400
	Gaseous	300			200
Dust	Solid	100			50 (Note 3)
	Liquid	50 (Note 4)			
	Gaseous	5 in general 10 for blast furnace gas 50 for steel industry gases that can be used elsewhere			

Notes:

- 1) 800 mg/Nm<sup>3</sup> for combustion plants with a rated thermal input equal to or greater than 400 MW, which do not operate more than 1,500 hours per year.
- 2) 600 mg/Nm<sup>3</sup> for combustion plants which do not operate more than 1,500 hours per year.
- 3) 100 mg/Nm<sup>3</sup> for combustion plants for which the original construction licence or, in the absence of such a procedure, the original operating licence was granted before 1 July 1992 and which are burning solid fuel with a heat content of less than 5 800 kJ/kg, a moisture content > 45 % by weight, a combined moisture and ash content > 60 % by weight and a calcium oxide content > 10 %.
- 4) 100 mg/Nm<sup>3</sup> for combustion plants with a rated thermal input below 500 MW and burning liquid fuel with an ash content > 0,06 %.

**Table C.2**

**Minimum rates of desulphurisation relevant for the calculation of the individual contributions to the 2018 emission ceiling for SO<sub>2</sub>**

Total rated thermal input	Minimum rate of desulphurisation
50-100 MW	60%
> 100-300 MW	75%
> 300-500 MW	90%
> 500 MW	94 %

**Appendix D**

**Table D.1**

**Emission limit values relevant for the calculation of the individual contributions to the 2023 emission ceilings for combustion plants**

Pollutant	Fuel type	ELV (mg/Nm <sup>3</sup> )			
		50-100 MW	> 100-300 MW	> 300-500 MW	> 500 MW
SO <sub>2</sub>	Solid	2,000	2,000 to 400 (linear decrease) (Note 1)		400
	Liquid	1,700		1,700 to 400 (linear decrease)	400
	Gaseous	35 in general 5 for liquefied gas 800 for coke oven gas and blast furnace gas			
NO <sub>x</sub>	Solid	600			200 (Note 2)
	Liquid	450			400
	Gaseous	300			200
Dust	Solid	100			50 (Note 3)
	Liquid	50 (Note 4)			
	Gaseous	5 in general 10 for blast furnace gas 50 for steel industry gases that can be used elsewhere			

Notes:

- 1) 800 mg/Nm<sup>3</sup> for combustion plants with a rated thermal input equal to or greater than 400 MW, which do not operate more than 1,500 hours per year.
- 2) 450 mg/Nm<sup>3</sup> for combustion plants which do not operate more than 1,500 hours per year.
- 3) 100 mg/Nm<sup>3</sup> for combustion plants for which the original construction licence or, in the absence of such a procedure, the original operating licence was granted before 1 July 1992 and which are burning solid fuel with a heat content of less than 5 800 kJ/kg, a moisture content > 45 % by weight, a combined moisture and ash content > 60 % by weight and a calcium oxide content > 10 %.
- 4) 100 mg/Nm<sup>3</sup> for combustion plants with a rated thermal input below 500 MW and burning liquid fuel with an ash content > 0,06 %.

**Table D.2**

***Minimum rates of desulphurisation relevant for the calculation of the individual contributions to the 2023 emission ceiling for SO<sub>2</sub>***

Total rated thermal input	Minimum rate of desulphurisation
50-100 MW	60%
> 100-300 MW	75%
> 300-500 MW	90%
> 500 MW	94 %

## Appendix E

Table E.1

**Emission limit values relevant for the calculation of the individual contributions to the 2026 and 2027 emission ceilings for combustion plants**

Pollutant	Fuel type	ELV (mg/Nm <sup>3</sup> )			
		50-100 MW	> 100-300 MW	> 300-500 MW	> 500 MW
SO <sub>2</sub>	Coal, lignite and other solid fuels (Note 1)	400	250	200	
	Biomass (Note 1)	200			
	Peat (Note 1)	300		200	
	Liquid	350 (Note 2)		250 (Note 2)	200 (Note 2)
	Gaseous	35 in general 5 for liquefied gas 400 for low calorific gases from coke oven 200 for low calorific gases from blast furnace			
NO <sub>x</sub>	Coal, lignite and other solid fuels	300 (Notes 4 and 5)	200 (Note 5)	200 (Note 5)	
	Biomass and peat	300 (Note 5)	250 (Note 5)	200 (Note 5)	200 (Note 5)
	Liquid	450	200 (Note 5)	150 (Note 5)	150 (Note 3)
	Natural gas	100			
	Other gases	300			200
Dust	Coal, lignite and other solid fuels	30	25	20	
	Biomass and peat	30	20		
	Liquid	30	25	20	
	Gaseous	5 in general 10 for blast furnace gas 30 for gases produced by the steel industry which can be used elsewhere			

The reference oxygen content is 6 % for solid fuels and 3 % for liquid and gaseous fuels.

Notes:

1. 800 mg/Nm<sup>3</sup> for combustion plants which do not operate more than 1,500 operating hours per year.
2. 850 mg/Nm<sup>3</sup> for combustion plants which do not operate more than 1,500 operating hours per year.
3. 400 mg/Nm<sup>3</sup> for combustion plants which do not operate more than 1,500 operating hours per year.

- 4. 450 mg/Nm<sup>3</sup> in case of pulverised lignite combustion.
- 5. 450 mg/Nm<sup>3</sup> for combustion plants which were granted a permit before 1 July 1992 and which do not operate more than 1,500 operating hours per year.

**Table E.2**

***Minimum rates of desulphurisation relevant for the calculation of the individual contributions to the 2026 and 2027 emission ceiling for SO<sub>2</sub> in case of combustion plants firing indigenous solid fuels which cannot comply with the emission limit values for SO<sub>2</sub> referred to in Article 30(2) and (3) of Directive 2010/75/EU due to the characteristics of this fuel***

Total rated thermal input	Minimum rate of desulphurisation
50-100 MW	80%
> 100-300 MW	90%
> 300-500 MW	96% in general 95% for combustion plants firing oil shale