

THE INDUSTRIAL EMISSIONS DIRECTIVE

A briefing note from Pöyry Energy Consulting

The Industrial Emissions Directive (IED) is designed to bring several separate pieces of EU legislation on industrial emissions under one directive. The relevance for the GB power sector is through the proposed further tightening of emissions limits, in comparison to the Large Combustion Plant Directive (LCPD¹), for SO₂ and NO_x and particulate limits that the Directive proposes.

1.1 Summary of the proposed directive

The initial draft of the Industrial Emissions Directive was published in December 2007. An agreed text for the directive was issued by the EU Council of environment ministers in June 2009. Following a number of amendments (see below), the text was approved by plenary vote in the European Parliament on 7 July 2010.

Table 1 shows the current Emission Limit Values (ELVs) for GB coal and CCGT plants under the LCPD, as well as the changes to those values under the IED. For NO_x in particular the limits will be significantly tightened.

Table 1 – Current and proposed ELV's for existing GB plants

SO₂ (mg/Nm³)	Current	IED
Coal plant (> 500MW _{th})	400	200
CCGT	35	35

NO_x (mg/Nm³)	Current	IED
Coal plant (> 300MW _{th})	500	200
CCGT (50 - 500MW _{th})	300	50
CCGT (>500MW _{th})	200	50

Particulates (mg/Nm³)	Current	IED
Coal plant (> 300MW _{th})	50	20
CCGT	5	5

Source: EU

The IED also requires use of the Best Available Technology (BAT) for reducing emissions. The BAT will be decided on a UK basis with reference to the EU's BAT

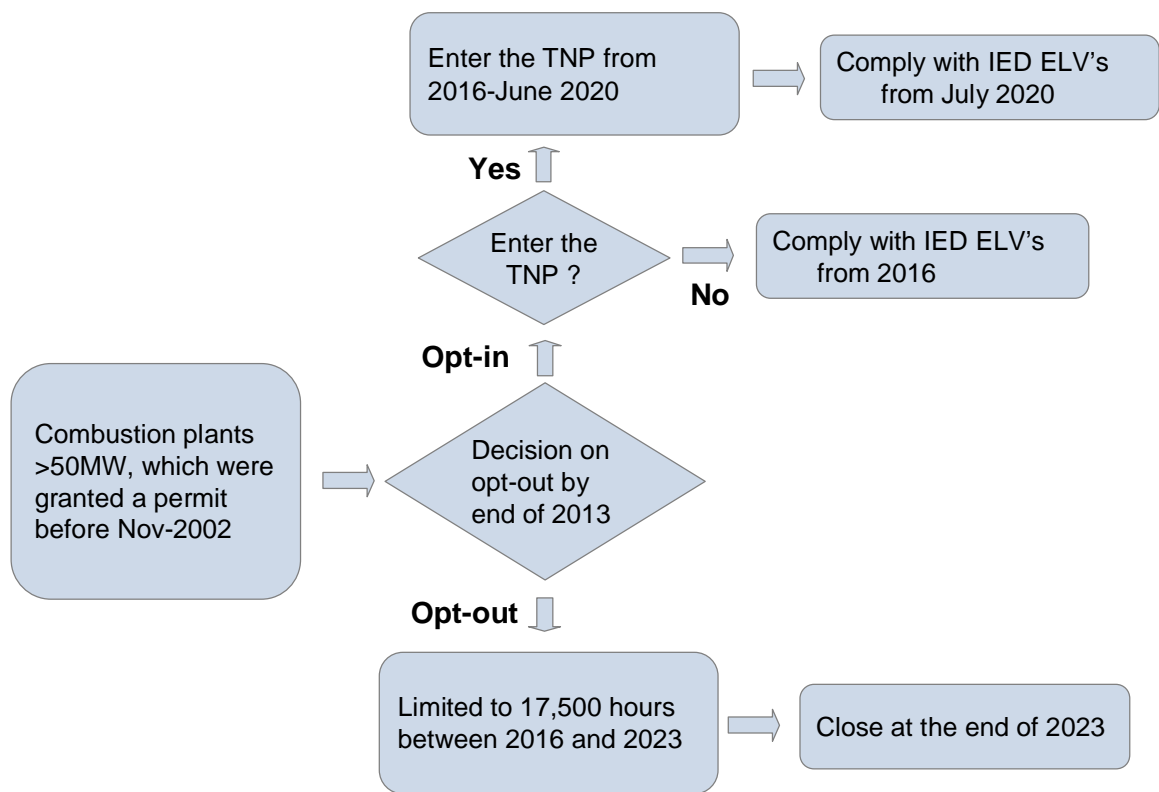
¹ The IED is frequently confused with the LCPD by the media. The LCPD is irrevocable; around 10GW of coal and oil plant in Britain have opted-out of the LCPD and must close by the end of 2015. All coal plant which have opted into the LCPD (and which will therefore remain open from 2016 onwards) have flue gas desulphurisation (FGD) equipment already installed. For this reason, it is the need to comply with the NO_x limits in the IED (from 2016 onwards) which will be the major reason for further expenditure. In recent months, there has been much discussion about the opt-out provisions and transitional arrangements for the IED; this discussion has no bearing on the pre-existing requirements of the LCPD.

reference document (BREF). It is likely that BAT for SO₂ will be Flue Gas Desulphurisation and BAT for NO_x will be Selective Catalytic Reduction or a technology that can achieve similar levels of reduction in NO_x emissions.

Figure 1 provides a high level overview of how the IED will operate. Plants which opt-out of the IED will be allowed to run a limited number (17,500) of hours between 2016 and 2023 without complying with the new ELVs. Although plants which opt-out can exceed the IED ELVs, they will continue to be subject to the ELVs which were part of their generation license prior to 2016. Plants which opt-in to the IED will be required to comply with the new ELVs, however some flexibility in early years is allowed through a Transitional National Plan (TNP), which is described below.

An additional feature of the IED which allows more flexibility is the inclusion of separate, higher, ELVs to apply to peaking plants (defined as those plants which operate for no more than 1500 hours per year as a rolling average over five years).

Figure 1 – Overview of the IED



1.2 The Transitional National Plan

A number of EU members have expressed concerns about the impact that the measures in the initial draft directive could have on the operation of existing plant. In response to these concerns, modifications have been introduced to provide greater flexibility in the implementation of the directive.

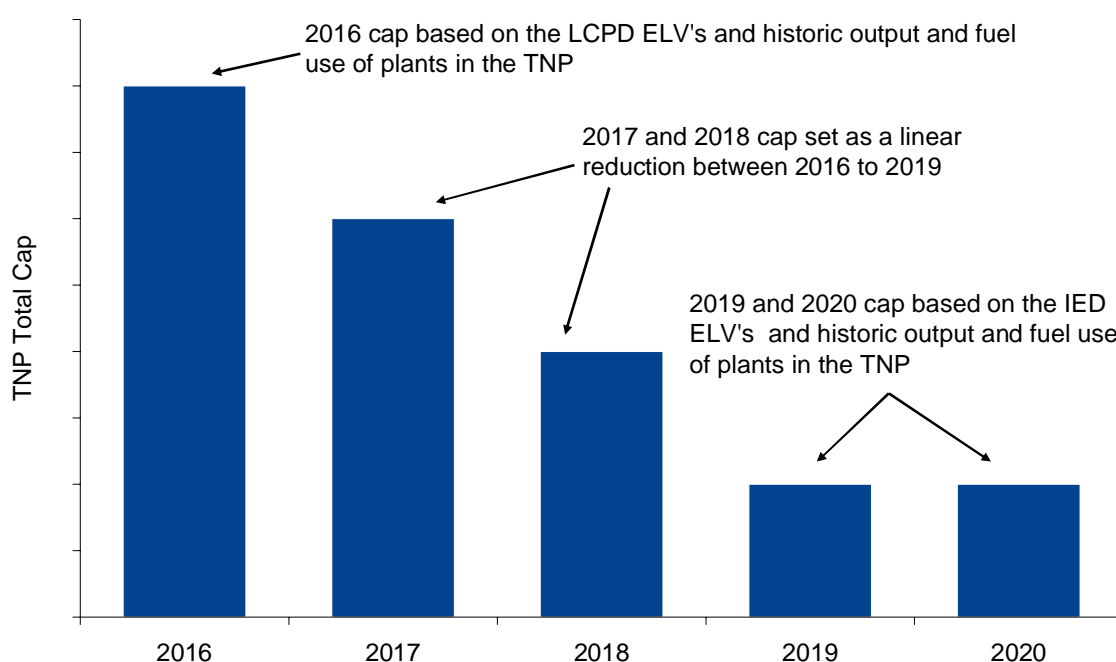
The IED contains a provision for a transitional national plan (TNP), which allows operators who intend to opt-in enough time to comply with the IED's reduced ELVs. It is hoped that this greater flexibility will avoid the problems experienced by Fiddler's Ferry, Ferrybridge

and Rugeley in 2008 when these plants had to curtail severely their running hours due to delays in fitting FGD.

The TNP defines an overall cap on emissions of SO₂, NO_x and particulates in each year from 2016 to June 2020 inclusive. The total cap will be defined in each year as shown in Figure 2. The 2016 cap will be based on existing ELVs specified in the LCPD and will trend downwards with the cap in 2019 and the first half of 2020 being based on the ELVs specified in the IED. The historic average output and fuel use for the 10 years from 2001 to 2010 inclusive will be used to calculate the cap.

Individual participants in the TNP can then exceed the new ELVs as long as emissions as a whole for the year are not exceeded. The TNP will operate in a similar fashion to the current NERP, where each plant is assigned an emissions allowance and trading of allowances between generators being permitted. It should be noted that although plants can exceed the IED ELVs, they will continue to be subject to the ELVs which were part of their generation license on entering the plan. From July 2020, all opted-in plant must comply with the IED ELVs. Member states must communicate their draft TNP to the commission by 31st December 2013.

Figure 2 – Calculation of the cap in the Transitional National Plan



1.3 EU Parliament amendments in June

In early 2010, it became apparent that the EU Parliament intended to propose additional amendments to the text approved by the Council of ministers in June 2009. In June 2010, the EU parliament approved the following amendments (these amendments are included in the above text, but are noteworthy because they explain discrepancies with earlier drafts of the IED):

- a slightly increased Transitional National Plan of 4.5 years instead of 3.5 years (to mid-2020 instead of mid-2019);

- a reduced limited-hours derogation for opted-out plants of 17,500 hours until the end of 2023 (instead of 20,000 hours);
- potential to allow the EU commission to adapt ELVs on the basis of scientific and technical progress; and
- the inclusion of an article allowing countries to include an emissions performance standard for carbon dioxide in IPPC permits.

Final approval of the Directive was reached in early July 2010.

1.4 Who will opt-out?

Generators who do not comply with the IED ELV limits (which would be all of the GB coal plants and some of the older CCGTs) will likely need to invest in SCR or a similar NO_x reducing technology.

When considering a possible investment in SCR, the main factors are the expected plant revenues, remaining plant life and the additional costs of SCR. However these are highly uncertain due to the following reasons:

- Coal plant revenues are very sensitive to relative fuel prices: in particular, the relative positions of coal and gas plant in the GB merit order which, in turn, are driven by coal, gas and carbon prices.
- Growth of renewable generation is likely to have a major impact on the load factors of coal plant, and could require the plant to operate in a mode for which it was not designed and has not been properly tested. Furthermore, the ability of the SCR equipment itself to operate in a flexible mode is unproven.
- The cost of SCR is uncertain. The impact assessment carried out by DEFRA estimated SCR would cost £98/kW to install for a CCGT and £80/kW for a coal plant, however some respondents suggested that the cost could be as high as £136/kW.

In light of these risks, it is not clear if coal generators will be able to justify capital intensive investments such as installing SCR.

The Industrial Emissions Directive is assessed in greater detail in Pöyry's report 'Projections of the Price of Wholesale Electricity in Great Britain'

For further information on this report and other GB market services, please contact:

Andrew Nind	+44 1865 812 264	andrew.nind@poyry.com
Brendan Cronin	+44 1865 812 209	brendan.cronin @poyry.com