

# Specified Generator Guidance

## 1. Introduction

This guidance explains how to comply with the Specified Generator Regulations [here](#) required by Schedule 25 B of Statutory Instrument 2018 No. 110 made 29 January 2018. It explains the scope and definitions and details how the regulations apply to different types of generators. It details the different permits that Applicants can apply for and how compliance will be assessed against Permits issued. Where appropriate, it refers to relevant existing guidance.

It should be noted that all generators equal to or more than 1 MWth will also be Medium Combustion Plant (MCP) and must also meet the requirements of the MCP Directive where permit dates may be earlier and ELV compliance may be different. Both regulations Schedule 25 A and B apply.

## 2. Definitions & Scope

### **Scope and Key definitions**

Generators more than or equal to 1MWth and less than 50MWth are in scope unless they are an excluded generator (see below). Generators <1MWth are in scope if:

- they have a capacity agreement or an agreement to provide balancing services; or
- they form part of a specified generator (see below) which in total has a rated thermal input more than or equal to 1MWth and less than 50MWth

**Generator** means any combustion plant generating electricity. This includes certain mobile generators when they generate electricity for the national transmission system or distribution system or are performing a function that a static generator could – see “mobile generator” for further detail. Typical generator technologies include engines, gas turbines and boilers that produce electricity as a Combined Heat & Power (CHP) combustion plant. Direct drive and heat only combustion plant are not generators.

**Specified generator.** The regulations use the term ‘specified generator’ to encompass both individual generators and multiple generators at the same location or site, operated by the same Operator and for the same purpose. The “same purpose” means that having a different function does not stop individual generators being treated as part of a specified generator, e.g. generators with a capacity market agreement or providing a balancing service whether they are under the same contract or not would be classed as operating for the “same purpose” as they generate electricity. Similarly generators with different fuels or technologies are also classed as operating for the “same purpose”.

The specified generator permit will apply to the site, rather than its constituent individual generators. A specified generator may be a single individual generator. However the ‘permitting date’, ‘relevant date’ and the ‘compliance date’ for the standard ELV for each individual generator may vary (see the ‘Permitting’ section 5 below).

**Excluded Generators** are generators that are exempt from Schedule 25B. Excluded generators are not included when determining capacity of the permitted specified generator site. Excluded generators are those that meet any of the following conditions -

1. Are part of an IED installation under Chapter II or III. BAT applies to these installations so air quality is protected. It should be noted that a generator which is a Part B (1.1 or 5.1) or permitted Waste Facility (Small Waste Incineration Plant, SWIP) is not excluded.
2. Have a defined nuclear safety role under a nuclear site licence issued by the Office for Nuclear Regulation.

3. Emergency 'backup generators' (see definition below) that are not tested for more than 50 hours a year.
4. Are operated offshore
5. Generators installed on a gas storage or unloading platform (as defined in Regulation 2 of the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013).

Defra are proposing to amend the regulations to exclude research and development testing activities. Defra are currently consulting on this through the Clean Air Strategy.

**Rated thermal input** or capacity of the generator(s) in the regulation is quoted in units of megawatts thermal input (MWth) not megawatts electrical output (MWe) regardless of fuel and this is determined using the net calorific value (CV) not the gross CV . This value will usually be provided by the manufacturer of the generator but may be calculated – link: <https://www.amps.org.uk/sites/default/files/uploads/Determination%20of%20thermal%20input%20power%20of%20an%20engine%20driven%20generator.pdf>

### **Backup Generators & Testing**

**Backup Generator** means a generator that is operated for the sole purpose of providing power at a site during an onsite emergency from the 1 January 2019. Balancing Services, and Demand Side Response operations, whether procured or not, such as Triad Avoidance or Fast Frequency Response are not on site emergencies and a generator that provides these services is not excluded.

**Emergency Operation:** there is no restriction on the total operating hours in the event of an onsite emergency. However operators should make best endeavours to reduce the period and frequency of emergencies. Similarly there is no restriction on the hours of operation by 'black start' backup generators.

**Testing Backup generators:** operators will want to test their emergency backup generators to ensure they can be relied on – the frequency and duration will be subject to the operators own site specific risk assessment. There is a limit of up to 50 hours testing per individual generator in a year which will be sufficient for all but a few sites. In the event that more than 50 hours testing in a year is required this should be agreed with the regulator in writing.

Operators should maintain records of annual hours of testing for each individual generator to ensure the exclusion criteria can be demonstrated. Operating hours is defined in section 2 MCPD. [here](#)

Any generator which is found to be operating for testing purposes for more than 50 hours per year without a written agreement or participating in Triad Avoidance or other balancing services without the required specified generator permit is in breach of the specified generator regulations and will be subject to appropriate penalties.

**Best Practice in testing Backup generators:** operators should aim to minimise the environmental impact from emissions to air wherever feasible when testing emergency backup generators. The regulators considers the following are best practice:

With multiple backup engines, testing should be staggered.

The period and frequency of testing should be kept to the minimum sufficient to demonstrate the reliability at the appropriate load.

Testing should be scheduled to periods when ambient background NO<sub>x</sub> can be expected to be low i.e. not during peak traffic periods.

It is considered appropriate to utilise the electricity generated during testing for onsite use.

Good practice when installing backup generators include the careful placement away from sensitive receptors, exhaust flues terminating vertically without obstructions to increase dispersion and not below residents windows or venting onto car parks etc.

**Firm Frequency Response for Data Centres:** Data Centres require very stable frequency of electricity supply to maintain the integrity of the IT functions they support. Data Centre operators will periodically proactively operate their onsite emergency backup generation when the transmission system frequency is unstable to prevent damage or disruption to data processing functions. The regulators considers such operation to constitute an onsite emergency and are thus excluded when this activity is not part of a formal agreement or contract. Such periods of operation will be kept to a minimum.

### **Electricity market terminology**

**Capacity agreement** or capacity contracts has the meaning given in regulation 30 of the Electricity Capacity Regulations 2014(a).

**Capacity Auction** is an auction under Part 4 of the Electricity Capacity Regulations 2014.

**Balancing service** means any services procured by the transmission system operator in order to balance demand and supply, and to ensure the security and quality of electricity supply across the national transmission system for Great Britain. For example, generators can be generating for their own use, sometimes known as Demand Side Response, or for export. Services include but are not limited to: Enhanced Frequency Response, Enhanced Reactive Power Service, Fast Reserve, Firm Frequency Response and Short Term Operating Reserve.

**Feed-in Tariff preliminary accreditation application** means an application for preliminary accreditation made under Part 3 of the Feed-in Tariffs Order 2012(b).

**Transmission system** has the meaning given in section 4(4) of the Electricity Act 1989;

**Transmission system operator** means the person operating the national transmission system for Great Britain;

**Triad avoidance** is the method by which the transmission system operator reduces peak demand in the winter. Some operators will reduce demand by shutting down plant whereas other will reduce demand by generating their own electricity with emergency backup generators. Triad operation is not compatible with best practice in testing backup generators and backup generators will be subject to the new regulations if they participate in triad avoidance. Operating under triads automatically or balancing services classifies a facility as a 'specified generator' regardless of the number of hours of operation.

## **3. Mobile Generators**

**Mobile**, in relation to a generator, means it is designed to move or be moved whether on roads or land.

Mobile generators do not fall within the definition of "generator" under the Regulations, with two exceptions – i) if they are connected to an electricity transmission system or distribution system, or ii) if they are connected to other apparatus, equipment or appliances at a site and are performing a function that could be performed by generator that is not mobile

If a mobile generator is not connected to the grid but is connected to other apparatus/ equipment/ appliances on the site, the regulator will consider whether the function the generator is carrying out could be performed by a static generator. If the mobile generator is in place for 6 months or more that it will be considered in scope. Factors taken into account include how long the site will be in place for, how long the generator will remain in a single location for, the nature of the site, i.e. whether it is transient or relatively permanent (considering the nature of the activity undertaken, the appliances used, apparatus and equipment present etc.) and whether the site is finished, or parts of it are still under construction.

Examples of temporary deployment of mobile generators for planned maintenance or emergencies, which the regulator would expect to fall outside the scope of the controls, include:

Water Utility – emergency use and asset replacement such as pumps and electrical infrastructure.

IT & Telecom – Routine maintenance activities, including Data Centres, Telecom Switch sites etc.

General – General building maintenance activities, in particular LV/HV switchgear upgrades and replacements

Running of the electricity transmission and distribution systems – emergency use or in the event of planned maintenance

Notwithstanding the above mobile generators used on construction sites are not in scope of the controls. However if only part of a site is under construction, consideration will need to be given as to whether the function could be carried out by a stationary generator, as set out above.

## 4. Tranche A and Tranche B

Transitional arrangements are provided for generators which were in operation when the controls were announced, and for those which were not yet in operation by this date, but where the operator had already entered an agreement to provide services to the national grid. These generators are designated **Tranche A**. These arrangements allow operators a reasonable time to achieve compliance with the emission controls and to meet existing agreements with only minimum controls required for protecting local air quality.

The cut-off date to qualify for transitional arrangements differs for 1-50MWth and 0-1MWth generators because the controls were announced at different times.

A generator with a rated thermal input equal to or greater than 1MWth and less than 50MWth will be classed as **Tranche A** if:

it came into operation before 1st December 2016, or

it is the subject of a capacity agreement arising from the 2014 or 2015 capacity auctions

(whether or not the generator came into operation before 1<sup>st</sup> December 2016), or

a Feed-in Tariff preliminary accreditation application was received by the Gas and Electricity Markets Authority(a) before 1st December 2016;

A generator with a rated thermal input of less than 1MWth will be classed as **Tranche A** if:

it is the subject of a capacity agreement arising from the 2014, 2015 or 2016 capacity auctions (whether or not the generator came into operation before 1st December 2016), or

a Feed-in Tariff preliminary accreditation application was received by the Gas and Electricity Markets Authority before 1st December 2017; or

it is the subject of an agreement to provide balancing services entered into before 31st October 2017

If a capacity agreement or balancing service contract is made after 31 October 2017 then the generator must cease generating under that contract before 31 December 2018 if it is to remain a Tranche A generator and continue to benefit from transitional arrangements; if it does not cease by this date, the generator will become a **Tranche B**.

Where an aggregator is involved, the date of a capacity agreement is the contract date between the aggregator and the National Transmission System Operator i.e. not the date of the contract between generator operator and aggregator.

Participation in triad avoidance does not affect Tranche A status.

**Tranche B** generators are all those that are not Tranche A.

## 5. Permitting

All specified generators in scope of the regulations will need permitting. The primary purpose of the permitting process is to demonstrate there is no adverse air quality impact from the specified generator site and to address via permit conditions where there is.

When applying for a permit, all in scope generators on a site should be identified and grouped to form the specified generator. The following information will be needed for all these generators:

The rated thermal input of each individual generator in MWth

Details of any capacity agreement(s) or balancing service agreement(s) for each individual generator i.e. if they are Tranche A or Tranche B generators.

The total rated thermal input of all generators on site.

Whether the operating hours for each individual Tranche A generator will be restricted to 50 hour or less per year.

Whether the aggregated operating hours for all Tranche A generators will be restricted to 50 hour or less per year.

Whether the NO<sub>x</sub> emissions any individual Tranche A generator will be greater than 500mg/Nm<sup>3</sup> per year (STP, 15% O<sub>2</sub>).

Generators that are operating at the same site, by the same Operator and for the same purpose will be grouped to form a 'specified generator' (see above definition for further details). Excluded generators will not form part of a specified generator.

If the specified generator consists of more than one generator, each individual generator may have different conditions for compliance.

Three key terms are used in this guidance:

**Permitting date:** The date by which an operator must have a permit to operate a specified generator.

**Relevant date:** A date used to support the determination of the permitting date for sites with multiple generators. For individual generators that are not part of a wider group of generators forming a specified generator, the permitting date and relevant date are the same

**Compliance date:** The date by which a generator on a specified generator site needs to comply with the environmental permit conditions (see Section 6) for the standard ELV of 190 mg/Nm<sup>3</sup> NO<sub>x</sub> at 15% O<sub>2</sub>.

Both the permitting date and relevant date will vary depending on Tranche A/B status, rated thermal input, emissions, and hours of operation.

For **individual generators** that are *not* part of a wider group of generators forming a specified generator, the relevant date (equivalent to the permitting date) and compliance date are as shown in Table 1:

Table 1. Relevant (Permitting) and Compliance Dates for Individual Generators

Generator Information	Relevant Date	Compliance date (ELV compliance)*
<b>Tranche B generators</b>	01/01/2019 or start of operations if later	01/01/2019 or start of operations if later
<b>Tranche A generator which becomes a Tranche B generator</b> by virtue of signing up to a new capacity market or balancing services agreement after <b>31 October 2017</b> (which remains in place after December 2018)	01/01/2019 or the date that the contract is entered into, if later.	01/01/2019 or the date that the contract is entered into
<b>Tranche A 5-50MW generators with emissions above 500mg/Nm<sup>3</sup> which operate for more than 50 hours per annum</b>	01/10/2019**	01/01/2025 However if such a generator was entered into a capacity market agreement before 1 December 2016 and participates in no other contracts, then the compliance date is the date that the capacity market agreement ends, if this is after 1 January 2025.
<b>Tranche A 5-50MW generators: with emissions below 500mg/Nm<sup>3</sup> or which operate for 50 hours or less per annum</b>	01/01/2025	01/01/2025 However if such a generator was entered into a capacity market agreement before 1 December 2016 and participates in no other contracts, then the compliance date is the date that the capacity market agreement ends, if this is after 1 January 2025.
<b>Tranche A 1-5MW generators</b>	01/01/2030	01/01/2030 However if such a generator was entered into a capacity market agreement before 1 December 2016 and participates in no other contracts, then the compliance date is the date that the capacity market agreement ends, if this is after 1 January 2030.
<b>Tranche A sub 1MW generators</b>	01/01/2030	01/01/2030

		However if such a generator was entered into a capacity market agreement before 31 January 2017 and participates in no other contracts, then the compliance date is the date that the capacity market agreement ends, if this is after 1 January 2030.
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\*In all cases, additional controls to the standard ELV may be imposed if necessary to protect air quality (EPR 2018, Schedule 25B, paragraph 5(2))

\*\*The regulator may impose restrictions to protect air quality from this date where required (EPR 2018, Schedule 25B, paragraph 6(3))

**For a specified generator that comprises more than 1 generator:**

The permitting date will be the *earliest* of the 'relevant dates' shown in Table 1 in relation to the generators comprising the specified generator.

The 'relevant date' and 'compliance date's for each individual generator, will be based upon if they are a Tranche B or Tranche A generator and for the latter the *aggregated rated thermal input of all the generators (Tranche A and B) within the specified generator*. For clarity, each specified generator should be treated as if it has a thermal capacity equivalent to the total thermal capacity of all Tranche A and B generators on the site. Excluded generators should not be included in this aggregation

When assessing the 'relevant date' and 'compliance date's for each component generator, the operating hours will be calculated at an aggregated level for all Tranche A generators. Excluded and Tranche B generators should not be included in this aggregation.

When there are both Tranche A & B generators within a specified generator on the same site the permitting and compliance dates are as follows:

**1. When is the site permit date?**

If there are any Tranche Bs on site = 1<sup>st</sup> January 2019

- If • only Tranche As on site and
  - total capacity > 5 MWth and
  - At least one Tranche A ≥500mg/Nm<sup>3</sup> and operating > 50 hours per annum = 1st October 2019

- If • only Tranche As on site and
  - total capacity > 5 MWth and
  - All Tranche As < 500mg/Nm<sup>3</sup> or all Tranche As operating hours ≤ 50 hours per annum = 1st January 2025

- If • only Tranche As on site and
  - total capacity < 5 MWth = 1st January 2030

The permit addresses Air Quality and no dark smoke for all generators – Tranche As and Tranche Bs  
And -

**2. When must I meet the Standard ELV (Compliance date)?**

Individual Tranche Bs on site = 1st January 2019 or the date the contract is entered into if previously Tranche A

Individual Tranche As on site:

Site total > 5 MWth = 1st January 2025

Site total ≤ 5 MW = 1st January 2030

Where capacity market agreements are in place the above dates for individual Tranche As will be modified as set out in Table 1, subject to applying the total site thermal capacity to each Tranche A generator.

The permit will also include the Standard ELV and any abatement requirements.

If the aggregated site capacity of all generators, including excluded generators, exceeds 50MWth (link to RGN2) then an IED permit is required.

It must be noted that the MCPD ELVs and / or permit requirements will also apply to individual generators at the appropriate date i.e. for a new MCP from 20 December 2018, an existing MCP greater than 5 MWth from the 1 January 2025 and for an existing 1 to 5 MWth from the 1 January 2030.

A permitted Specified Generator may be considered to be registered for the purpose of MCPD.

Where a Mobile Generator is used as a temporary replacement for a generator, it must meet the permitted requirements of that generator as it would be performing a function that could be performed by a stationary generator.

### **Worked Example 1**

A specified generator made up of three generators:

<b>Generator name</b>	<b>Generator information</b>	<b>Compliance dates</b> (Total aggregated capacity is the sum of X, Y & Z capacity = 9MWth > 5MWth)
X	2MWth, Tranche A, emissions >500mg/Nm <sup>3</sup> , operating >50hrs per year. Operates under a capacity market agreement.	1 <sup>st</sup> January 2025 (or when capacity market agreement comes to an end if after 2025 and not operating under any other contracts) – must meet standard permit conditions
Y	3MWth, Tranche A, emissions <500mg/Nm <sup>3</sup> , operating >50hrs per year. Operates under a capacity market agreement.	1 <sup>st</sup> January 2025 (or when capacity market agreement comes to an end if after 2025 and not operating under any other contracts) – must meet standard permit conditions
Z	4MWth, Tranche A, emissions <500mg/Nm <sup>3</sup> , operating <50hrs per year. Operates under a capacity market agreement.	1 <sup>st</sup> January 2025 (or when capacity market agreement comes to an end if after 2025 and not operating under any other contracts) – must meet standard permit conditions

The **permitting date** for the specified generator is the 1<sup>st</sup> October 2019 for a high impact Tranche A. This is because, the total aggregated site capacity is 9 MWth and combined Tranche A annual operating hours are > 50; hence the earliest relevant date is for generator X, treated as 9MWth, i.e. is a Tranche A, 5-50MWth, emitting >500mg/Nm<sup>3</sup>, operating >50hrs per year

### **Worked Example 2**

A specified generator made up of three generators:



Generator name	Generator information	Compliance dates (Total aggregated capacity is 3.8MWth, 2MWth tranche B & 1.8 MWth Tranche A)
P	2MWth, Tranche B, emissions <500mg/Nm3, operating >50hrs per year. Operates under a capacity market agreement.	1 <sup>st</sup> January 2019 – must meet standard permit conditions
Q	1.5MWth, Tranche A, emissions >500mg/Nm3, operating >50hrs per year. Operates under a capacity market agreement.	1 <sup>st</sup> January 2030 (or when capacity market agreement comes to an end if after 2030 and not operating under any other contracts) – must meet standard permit conditions. Total on site < 5 MWth
R	0.3MWth, Tranche A, emissions <500mg/Nm3, operating <50hrs per year. Operates under a capacity market agreement.	1 <sup>st</sup> January 2030 (or when capacity market agreement comes to an end if after 2030 and not operating under any other contracts) – must meet standard permit conditions. Total on site < 5 MWth.

The **permitting date** for the specified generator is the earliest relevant date out of P, Q and R. This is 1<sup>st</sup> January 2019 because there is a generator that is a Tranche B.

## 6. Permit Conditions

### Three key permit conditions:

1. The Standard Emissions Limit Value (ELV)
2. A requirement that the specified generator must not cause an air quality standard to be breached
3. There must be no dark smoke emissions
4. Habitats protection requirements

The latter two apply to all specified generator permits and the ELV will apply to all Tranche Bs and to Tranche As at a date depending on the total rated thermal input on site. The ELV is set at a level achievable by most gas fired combustion technology, this will require monitoring to verify, but diesel engines will likely require secondary abatement to achieve it.

1. The required MCPD ELVs and conditions will also apply to individual generators at the appropriate date (see **“Emission Limit Values and exemptions”** in the MCP guidance)
1. **The standard ELV** for nitrogen oxides = 190 mg/Nm<sup>3</sup> at a temperature of 273.15 K, a pressure of 101.3 kPa and after correction for the water vapour content of the waste gases to dry gas and at a standardised O<sub>2</sub> of 15%. This is the equivalent of 500 mg/Nm<sup>3</sup> at 5% O<sub>2</sub>. This Standard ELV is applicable to all generator technologies and fuels.

Where **secondary abatement** is required e.g. using selective catalytic reduction (SCR):-

For a Tranche A, the ELV must be met within 20 minutes of starting operation.

For a Tranche B that was formally a Tranche A the ELV must be met in 20 minutes.

For a Tranche B this must be within 10 minutes of starting operation.

2. **Protecting AQ:** Where compliance with an environmental quality standard requires stricter conditions for the operation of a specified generator, then the permit must include additional controls to the standard ELV. This may be a tighter ELV, better dispersion of emissions or reduced hours of operation. Pollutants to consider include NO<sub>x</sub> and also SO<sub>2</sub> and dust where appropriate. Details of how compliance with the AQ standards may be demonstrated is in ‘Emissions from specified generators Guidance on dispersion modelling for oxides of nitrogen assessment from specified generators’ ([link](#)).
3. **No dark smoke:** there must be no persistent emission of dark smoke, where “dark smoke” has the meaning given in section 3(1) of the Clean Air Act 1993.
4. **Protecting Habitats:** conditions are determined as detailed in Section 7 of the MCPD guide.

### **Types of permits**

There are three types of permits available for specified generators:

1. Standard Rules Permits (SRP)
2. Low risk bespoke permits using the screening tool.
3. Complex bespoke permits.

All types of permit will only contain conditions for emissions to air. There are no permit conditions for water, land, energy efficiency, odour or noise and BAT does not apply. All three types of permit will include certain generic specified generator conditions addressing management systems, ELVs, records, monitoring frequency and methods and reporting. Monitoring methods are referenced in the permit.

SRPs are for low risk Tranche B specified generators that can meet certain generic rules. There are a number of different SRP permits that address different applications and situations from small base load CHPs to peaking abated diesel engines – see Application form A, B1.5 & F. If there is no SRP that is applicable then a bespoke application is required – see form A, B2.5 & F. These SRPs are only available to Specified Generator sites with Tranche B not mixed As and Bs. If there is no SRP that is applicable then a bespoke application is required ([here](#)).

There are two types of bespoke permits: low risk bespoke are for low risk specified generator that do not meet the SRPs, the application will follow the Air Emissions Risk Assessment Guidance ([here](#)) and requires the site emission to screen out as insignificant using the Environment Agency Tranche B Specified Generator Screening Tool. Complex bespoke permits will require a site specific air quality modelling assessment following the guidance ‘Emissions from specified generators. Guidance on dispersion modelling for oxides of nitrogen assessment from specified generators’.

All bespoke permits will have site specific conditions addressing that particular Specified Generator.

Mobile specified generators may have an SRP or bespoke permit depending on its intended deployment.

**Consultation with Local Authorities:** during the determination of an application for a specified generator permit, the regulator will only consult the Local Authority (LA) where a bespoke application has been made for a permit in an Air Quality Management Area. As a minimum the regulator will seek to verify the ambient background NO<sub>2</sub> concentration used in the application. We will not routinely consult on SRP determinations or low risk bespoke applications.

The regulator will notify the LA when a mobile Specified Generator deploys into that Authority and when they have issued a specified generator permit.

**Permit Compliance:** operators are required to comply with all of the conditions in their permits and must maintain records to demonstrate compliance. The regulator will assess compliance by inspecting the monitoring returns and carry out periodic audits of compliance. Compliance audits will be both desk based and by site inspections. For the former the regulator will request compliance evidence to be submitted for inspection.

Where secondary abatement is required to meet an ELV on a number of different generators which are configured to exhaust all their flue gasses through a single combined stack, with no separate flues, the regulator considers a single abatement unit is an appropriate technique for abating all of those generators providing all of the flue gases pass through the abatement and the ELV is met on that stack. This configuration will require a bespoke permit application.

**Monitoring:** operators must demonstrate compliance for each individual generator by carrying out monitoring as specified in the permit to the required method. Monitoring will normally be required for each unit unless conditioned otherwise in a bespoke permit.

Operator must verify they can meet the standard ELV or ELVs in SRPs in advance of making a permit application. The monitoring method used must be that that will be specified in the permit i.e. TGN M5 for low risk SRPs or a low risk simple bespoke application using the Environment Agency Tranche B Specified Generator Screening Tool. Complex bespoke permit application must verify emissions using MCerts monitoring methods.