

Briefing Note for Data Centres: MCPD & SGC

Medium Combustion Plant Directive & Specified Generator Controls

November 2018

Briefing Note for Data Centres: Medium Combustion Plant Directiveⁱ & Specified Generator Controlsⁱⁱ

Introduction

Operators have been asking a lot of questions about MCPD. Guidance has been issued by the Environment Agency following transposition of the legislation by DEFRAⁱⁱⁱ. The EA guidance, which you can find via the links at the end of this document, should be your first port of call. It is clear and handles MCPD and SGC separately. However, the guidance is still draft, so we may issue an update. In the meantime, this is our understanding.

NB: These notes reflect our interpretation of a very complex set of regulatory requirements that are subject to change. They only provide general rules of thumb and are not intended to be, or used as a substitute for, legal or professional advice.

Summary

This Directive requires medium sized combustion plant to be registered and comply with maximum thresholds for pollutants. By December 2018 all new^{iv} diesel generators (and other combustion plant) will need to have permits. Additional domestic measures in the UK will also apply and include smaller units. Existing^v (pre-installed and operational) plant will have to toe the line by 2024 or 2029, depending on size. The objective is to improve air quality by limiting the levels of oxides of nitrogen and sulphur, carbon monoxide and particulates that are emitted as the by-products of combustion.

The legislation has implications for data centre operators. For IED^{vi} sites already holding EPR^{vii} permits the impact should be minimal as the existing permit can be varied to accommodate the new legislation. Operators with no diesel generators or other standby combustion plant are unaffected. However, sites with standby generation above about 300kW^{viii} are captured by MCPD (individual units^x) and by domestic controls (aggregated units^x). The MCP Directive allows standby (emergency backup) plant running fewer than 500 hours a year to be exempted from meeting the emission level values.

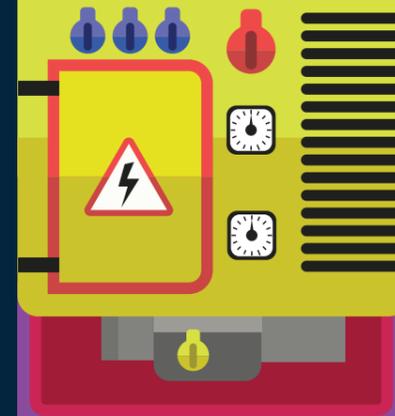
Additional domestic measures (Specified Generator Controls or SGC) apply to diesel plant used for balancing services. Exemptions apply to standby plant provided it is not used for any form of demand side response (DSR) and operated for testing and maintenance less than 50 hours a year. These extra

measures are specifically designed to prevent diesel generators from providing balancing services or supplying power to the grid and will preclude most data centres from DSR (or triad avoidance) in future. Implementation of MCPD varies significantly by nation state.

These notes summarise the legislation, explain how the exemptions are applied, outline what operators need to do and when and clarify a few grey areas. For most operators there is no need to panic. The first compliance deadline only concerns new plant installed after 20 December 2018. However, within the next ten years all plant over 1MWth will need a permit.

1. Decision Tree
2. Policy Context: scope, timing, objectives, relevance
3. Are you in scope? (almost certainly!)
4. Exemptions
5. The Demand Side Response Dilemma
6. Miscellaneous points
7. What operators need to do next
8. FAQs and sample scenarios
9. Further information and links

MCPD and SGC Decision Tree for Data Centres



Terminology

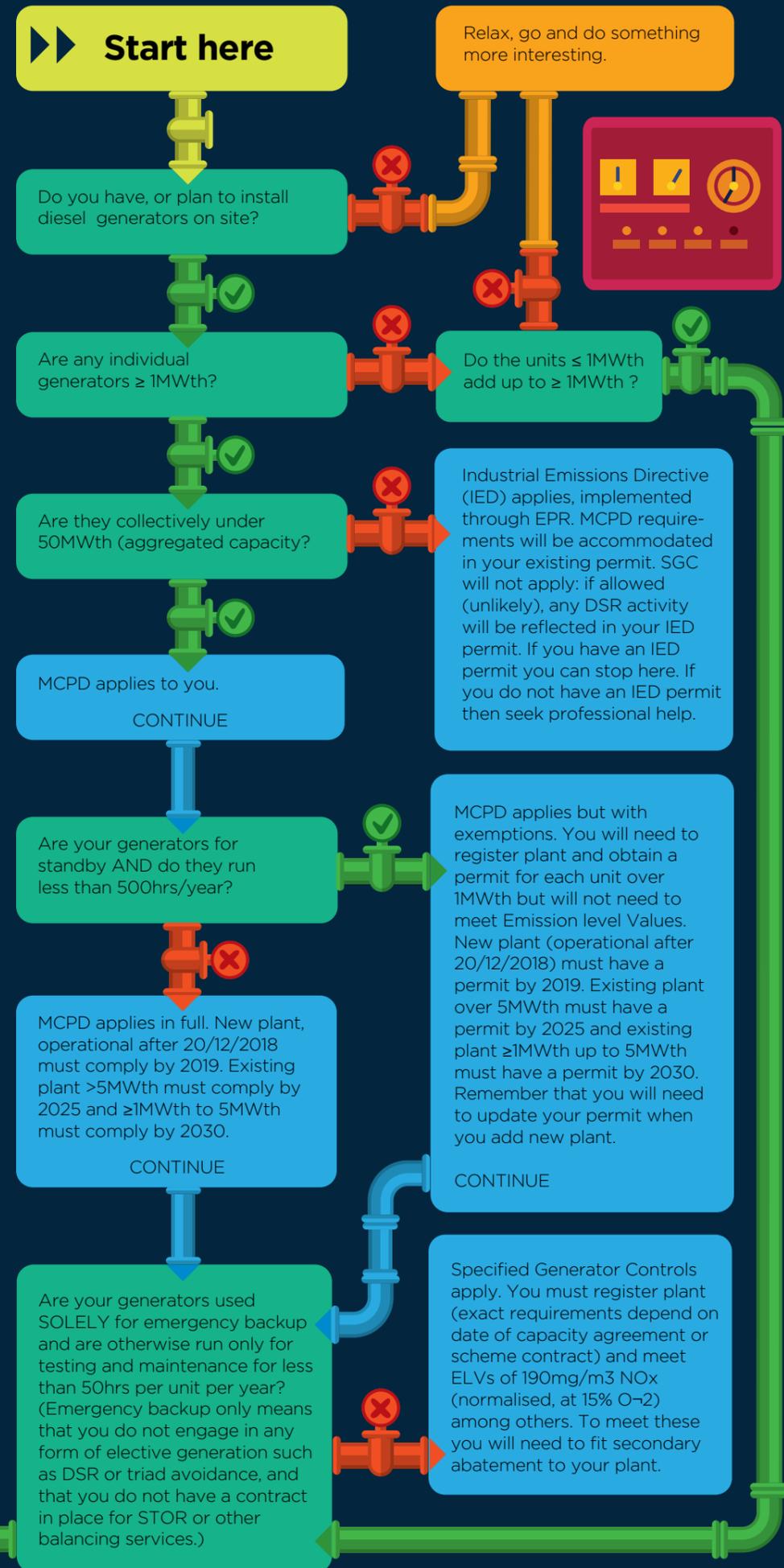
- MCPD: Medium Combustion Plant Directive
- SGC: Specified Generator Controls (additional domestic requirements for England & Wales)
- ELV: Emission Level Values (maximum thresholds)
- IED: Industrial Emissions Directive
- EPR: Environmental Permitting Regulations, the implementing measure for MCPD and IED
- DSR: Demand Side Response

Critical Factors

- Date of installation of plant
- Individual plant capacity
- Aggregated plant capacity
- Run hours
- DSR activity
- Date of DSR contract

Rules of Thumb

- 1 All your generators will need a permit sooner or later
- 2 If you do DSR you will need to fit abatement, sooner or later.



2 Policy Context

Policy objective: To improve air quality by setting maximum emission level values (ELVs) for a range of pollutants, including oxides of nitrogen (NOx) Sulphur (SOx), carbon monoxide (CO) and particulate matter (PM) including dust and black smoke. The regulatory scope is medium sized combustion plant thereby closing a gap in legislation between large plants covered by IED (Industrial Emissions Directive) and small units covered by EcoDesign. Nitrous oxides (NOx) are particularly problematic: the UK is close to breaching its national NOx limits and many areas of the UK regularly breach local NOx thresholds. NOx are harmful to humans and shorten lives. Moreover the issue is politically sensitive because urban NOx levels are largely the result of policy failure regarding diesel vehicles.

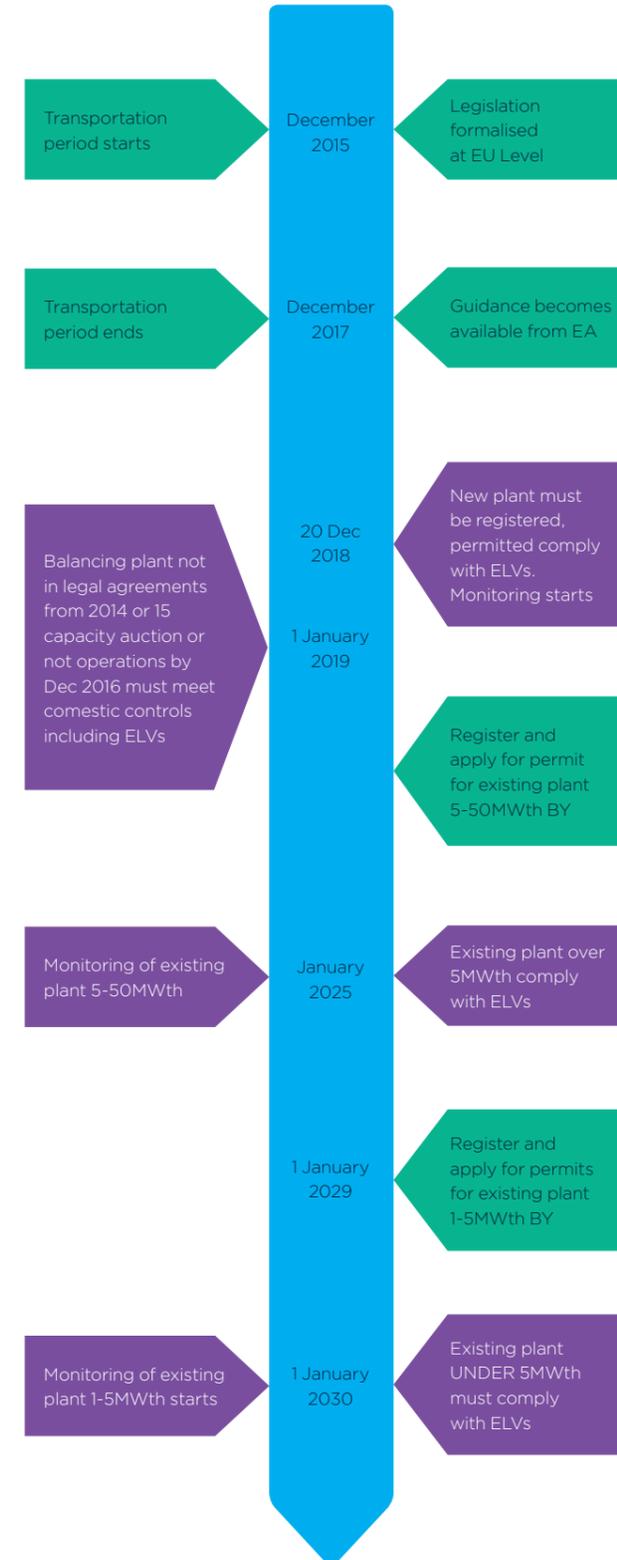
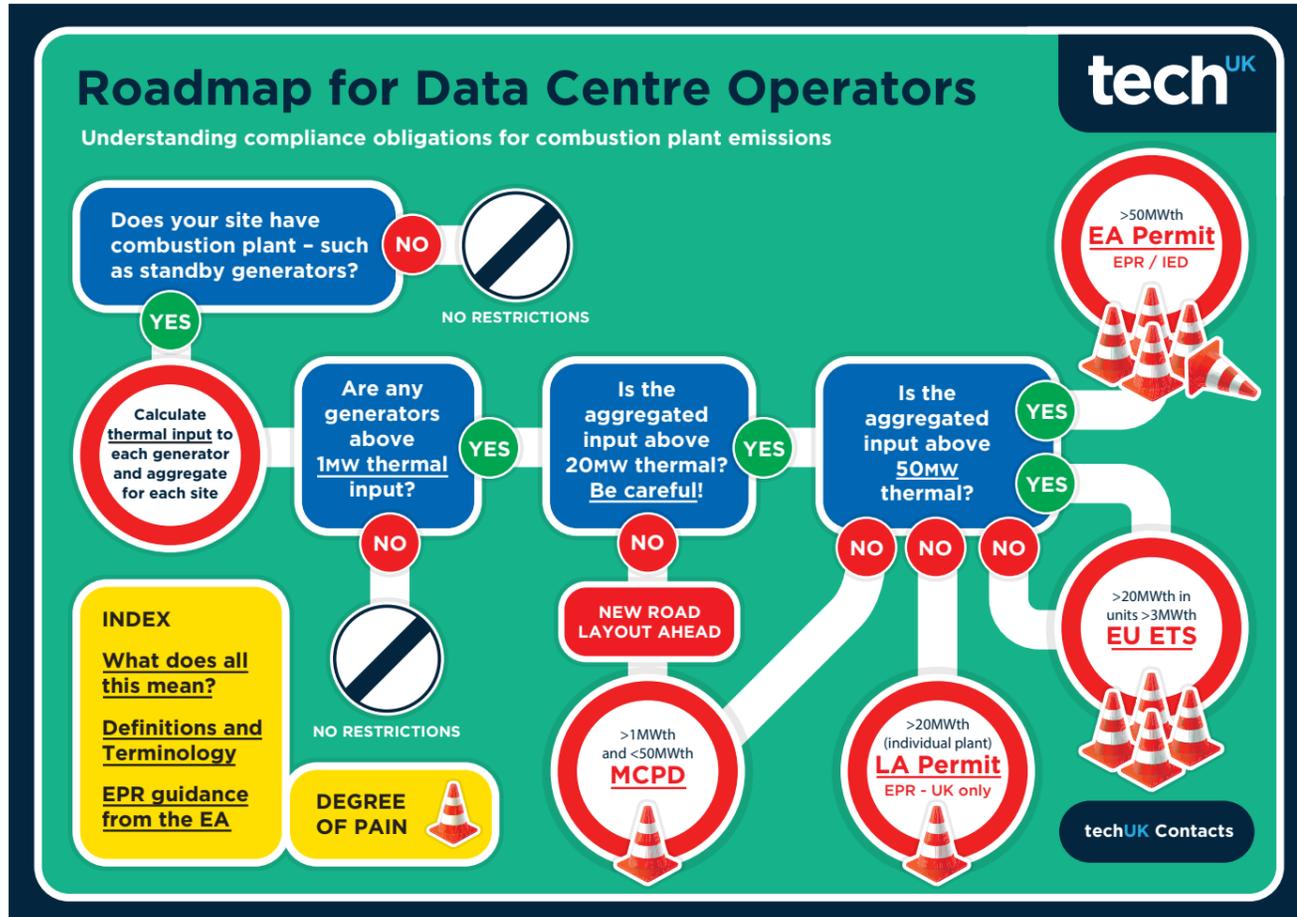
Legislative context: Two pieces of legislation have been introduced: MCPD (Environmental Permitting Regulation 2018 Implementing MCPD) and extra, domestic controls to address some regulatory loopholes: SGC or Specified Generator Controls. These now form part of the UK's existing EPR (Environmental

Permitting Regulations), which cover large individual combustion plant and large multiple plant installations (see Cones of Pain – cover sheet reproduced below - for a guide to other requirements).

Related legislation includes:

- IED (Industrial Emissions Directive): also transposed under EPR, which applies to sites with more than about 17MW of aggregated generating capacity (50MWth).
- Domestic EPR legislation: implemented via local authorities, relates only to large individual plant, unlikely to apply to data centres.
- Clean Air Act: Sites under the Clean Air Act will be issued permits under MCPD because almost all the provisions overlap. One provision of that Act not covered by MCPD (relating to persistent emissions of dark smoke) has been added to the new requirements.

Cones of Pain NB This does not cover SGC which were not being considered at the time.



Timeline: MCPD legislation was published on 30th January 2018. Organisations in scope should register new plant by 20th December 2018 which must comply with ELVs. New plant means plant not in operation by that date. Existing plant 5MWth and above must be registered by 01 January 2024 and must comply with ELVs by 01 January 2025. Existing plant under 5MWth must be registered by 01 January 2029 and comply with ELVs by 01 January 2030.

SGC are intended to speed up the application and extend the scope of MCPD to a new cohort of diesel generators that have been introduced under the capacity market auctions, are significant NOx emitters, are largely unregulated and therefore can compete unfairly. Simplistically, load balancing plant that does not have an agreement under the 2014 or 2015 capacity auction or was not in operation before December 2016 must register and meet Specified Generator ELVs by Jan 2019. This should not apply to data centres as they do not generally bid in CM auctions. However if you have any STOR or other DSR agreement in place or benefit financially from running your generators electively, eg for triad avoidance, then SGC will apply to your plant and you will need to fit abatement.

Regulation and enforcement: DEFRA is the responsible department for transposition and legislative instruments. The Environment Agency (EA) is the regulator in England and Wales. The EA will administer and enforce and will recover their costs through permitting fees, permit variations and subsistence charges.

3 Are you in scope?

MCPD: Almost certainly. MCPD applies to all combustion plant between 1 and 50 MWth (equivalent to generators with output from 300KW to 20MW electrical). So if you have any generators with an electrical output above about 300KW, then you are in scope.

If you are a large installation where the aggregated generating capacity is over 50MWth (approx. 17 MW electrical – see links at the end of this document for our IED In or Out guide) then you are covered by IED. You will not need to apply for separate MCPD permits (DEFRA has committed to avoid double regulation) but your existing EPR will be modified to accommodate any additional MCPD requirements.

4 Exemptions

In principle, there are exemptions from ELVs (Emission Level Values) for standby plant because it is impractical to monitor and the regulator does NOT want to see plant run purely to monitor emissions.

MCPD: This is a Directive so nation states have some flexibility in how they implement the legislation. There is scope for state regulators to exempt certain types of generator from some of the requirements, though they may not choose to do so. After a long dialogue, UK government agreed to apply the exemptions that matter most to data centre operators, but did not apply them fully. The Directive states that standby (emergency backup) generators used for less than 500 hours a year on average may be exempt from meeting ELVs. In the UK operators of standby plant running for under 500 hours are indeed exempt from MCPD ELVs although they must still register and obtain permits (registration date depends on capacity of plant and time of installation).

SGC: Emergency standby generators are exempt provided they are tested for no more than 50 hours a year and not used electively (i.e. for grid balancing, triad avoidance or export). There is no restriction on emergency running. There is no need to register or obtain permits for SGC exempt plant. Operators in doubt regarding the definition of grid balancing or export should consider that they are undertaking such activity if they are making a financial gain. The EA guidance is crystal clear on this. See links at end.

Counting Run Hours, MCPD: The 500 run hours will be based on a rolling average over 5 years for existing plant and over 3 years for new plant. You will NOT be

Specified Generator Controls (SGC): These domestic controls are designed to scoop up any plant missed by MCPD that can have an impact on air quality. They target diesel plant being used for demand side response or load balancing. They act as a stop-gap for existing plant not yet obliged under MCPD and smaller plant that individually is below the MCPD threshold but when aggregated with other plant on site or adjacent, exceeds it. SGC ONLY apply to diesel generators. MCPD applies to all combustion plant.

allowed to run the generators for 2500 / 1500 hours in the first year and then shut them down. Plant may not run more than 2,500 hours in a five year period or 1,500 hours in a three year period. Operators can “borrow” up to 50% of the next year’s allowance (so can run 750 hours before eyebrows will be raised) but this will have to reduce to meet the average. Operators must maintain records for six years for plant.

For the purpose of establishing exemption, you must be able to account for run hours. According to the guidance, anything running counts against the 500 hour total, whether all plant or a single unit. Operating hours exclude start up and shut down, (which must be minimised): “A MCP with multiple flues has started operating when the first unit to operate passes its start-up threshold and stops when the last operational unit falls below its shut-down threshold”. Hours are calculated to the nearest minute from 00.00 on 1st January. We are uncomfortable with this and may challenge although the sites most likely to be affected will be covered under IED.

Counting Run Hours for SGC: For SGC, an indicative 50 hour limit for testing and maintenance is being applied per unit. Emergency running is not restricted. The 50 hours is not generally aggregated which allows units to be operated separately or testing to be staggered, as is sometimes required by planning. However there are some cases where run hours may be aggregated by stack/flue or windshield (see below).

5 The Demand Side Response (DSR) Dilemma

Generators used for demand side response such as STORSM will be required to meet the strict ELVs specified in the domestic regulations. This will not be possible without secondary abatement because no generator models currently on the market can meet these levels. Secondary abatement is costly and operators must examine the economic case for DSR in future. The only sites where some flexibility may be applied are those with IED permits because these are bespoke. If, after careful consideration, the permitting authority (the EA) deems it permissible, then the DSR activity will be accommodated within the IED permit.

In general, all activity that involves additional generator running, or running plant at times when air quality is

likely to be poor, is likely to be firmly discouraged. The EA considers this to be out of line with Best Available Techniques (BAT).

This restriction is designed to limit NOx pollution from large generator farms that have so far avoided regulation by ensuring that individual plant is just below 1MWth and that aggregated capacity is below 50MWth. Destined for the capacity market, such sites make a significant contribution to air pollution. This has resulted in divergence from other policy initiatives to improve security of supply and flexibility in the market to facilitate more renewable generation. See links at the end of this document for our Council communication on policy conflicts.

6 Miscellaneous points

Disclosure of site location: Operators will be required to disclose the location of generators (see information list required under the Directive) but there will be some scope for withholding location information for instance in the interests of national security.

Monitoring: Plant that is exempt from ELVs still has to be monitored and the guidance requires monitoring within 4 months of the permit issue date. There may be site visits but these will be infrequent. For exempt plant there is no need to monitor for NOx, SOx or particulates (on the basis that generators run sporadically cannot be monitored satisfactorily) but you are required to monitor CO. This is something that the European Parliament requested and although most people think it is a bit pointless, a high CO would indicate very inefficient running. Checking CO as part of regular maintenance should be sufficient.

Aggregation: Most legislation like ETS and IED

aggregates generator capacity to establish whether sites reach the threshold for inclusion. For MCPD aggregation only applies to new plant (where more than one unit shares a flue or windshield, or in some cases is deemed to be capable of sharing, then the units are considered to be a single MCP). There is no aggregation for existing plant under MCPD. For Specified Generator Controls the aggregation threshold is 1MW if plant is used for balancing services.

Permitting: In this context permitting means obtaining a permit. Operators need to download an application form from the EA’s MCPD website or use this link: https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/supporting_documents/MCPApp_releaseV01_2.xlsm There is a sliding scale of charges depending on number of plant on site (see extract).

There are two types of application, a Standard Rules Permit (SRP) for low risk MCPs and bespoke permits for

		Number Medium Combustion Plant on Site		
New Medium Combustion Plant, low risk, stationary 1 < 20MW (in operation after 20/12/2018)	SR2018 No 7	£446	1	£194
		£520	2-3	£256
		£620	4-5	£342
		£720	6-8	£394
		£779	9-10	£520
		£813	11-15	£620

more complex scenarios, for instance where plant is in an Air Quality Management Area (AQMA). As far as we can see, operators complete the SRP and as they fill in the details there is a point at which these are validated and if a bespoke permit is needed then that process will be initiated. See extract below for the kind of information required.

For permitting, a site specific risk assessment has

to be done which describes the operating envelope, (type of activity, generator number and model etc.), whether it is in an AQMA, characterises the emissions, predicts impacts and potential breaches and routes to mitigation such as restriction of operating hours, tuning, calibration and fuel type. NB: We are still seeking clarification on how much of this applies to sites that are exempt from ELVs.

IED/EPR sites: Sites that are already regulated may have more flexibility in terms of meeting air quality outcomes rather than sticking to the very prescriptive requirements of MCPD or SGC. For instance there may be scope to allow operation for more than 50 hours a year, or to provide some limited forms of DSR providing operators can demonstrate that they are minimising impacts and managing them appropriately. Any such activities will be specified in the IED permit.

AQMAs (Air Quality Management Areas): In AQMAs tighter ELVs can be set under MCPD but that has to happen through the local area plan and is therefore under the control of the local authority to review point sources and risks and then work with the EA and the operator on mitigation and ELVs.

Double permitting: Plant already covered under EPR/ IED will be issued with a variation of their existing permit to ensure compliance with MCPD and generator regulations. There will be no double permitting. There are circumstances where sites also have to comply with pre-existing planning conditions and these need to be resolved on a case by case basis.

Mobile plant: will come under scope of the Directive, with a few caveats. Mobile plant on site either to support a construction phase or to support stationary plant must be registered and permitted by the owner or lessor but should not need to meet ELVs provided the exemption criteria are met.

7 What do I need to do now?

If you are installing new generators after 20/12/2018 then you need to apply for your MCPD permit. Plant installed after this date must be registered / permitted before it is operational. However, a permit application may take around three months so you need to allow for that.

Application forms are on the EA website: <https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/> (scroll down to related documents).

Or direct: https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/supporting_documents/MCPApp_releaseV01_2.xlsm

For Specified Generator Controls, exempt plant does not have to be permitted so if your plant is exempt then there is no further action. If you do DSR that is

not covered under an IED permit, and/or you do not have a pre-existing contract then you need to consider your options, which are either to get a permit and fit abatement or cease DSR related activity.

Bear in mind these three key facts:

- All new plant must be registered and permitted before it can be used.
- All existing plant will need to be registered and permitted by 2025 or 2030 depending on size.
- DSR activity, and triad avoidance will require secondary abatement, with very few exceptions.

8 FAQs

Q: what is the difference between backup and standby generators?

A: From a data centre perspective they are the same and mean plant used to supply power to businesses when grid power fails. Outside our sector, standby has wider application and may form part of the generating mix. Hence Government prefers the term emergency backup.

Q: We have 12 generators and we test them all separately. Each generator has its own stack. How do we account for run hours for MCPD/SGC?

A: For MCPD each time the generator is tested counts from the 500 hour limit. If that is one hour a month for each generator then the total will be 12 x 12 = 144 hours per year.

A: For SGC each generator has its own 50 hour allocation, so the run hours are counted by unit.

Q: Our site has 30 generators that share 6 stacks, 5 to a stack. We test in groups of 5, by stack, for an hour. How many run hours will each test account for?

A1: For MCPD each test will account for 6 run hours from your total of 500. If you test once a month the total run hours for the year will be 6 x 12 = 72. For MCPD run hours reflect when plant is running, irrespective of the number of units.

A2: For SGC each generator will have used 1 hour of its 50 hour testing allocation.

Q: My site is already covered by EU ETS so presumably I am exempt?

A: No, EU ETS relates to carbon emissions. This legislation is about air quality. They cover different things. If you are obliged under EU ETS you still have to comply with MCPD. It's a separate process.

Q: Our consultants say that we can continue our triad avoidance activity as it is not a balancing service and there is no contract.

A: You cannot continue triad avoidance activity UNLESS you can meet SGC ELVs which means you must fit abatement. This may seem harsh but triad periods are likely to coincide with times of day when air quality is poor.

Q: What is the aggregation threshold for MCPD?

A: There is no aggregation threshold for obligation under MCPD. It is therefore different from IED (EPR) and from EU ETS. It applies to all individual plant above 1MWth.

9 Further information, links and contacts

- Environment Agency Guidance for MCPD and SGC:

<https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/>

- Email address for completed application forms for MCPD and SGC:

mcpd-application@environment-agency.gov.uk

- Standard Rules for Environmental Permitting: MCPD and SGC

<https://www.gov.uk/government/collections/standard-rules-environmental-permitting#medium-combustion-plant-and-specified-generators>

- UK Legislation, 30 Jan 2018:

<http://www.legislation.gov.uk/ukxi/2018/110/contents/made>

- EU Directive (MCPD):

<http://ec.europa.eu/environment/industry/stationary/mcp.htm>

- 2016 consultation - Annexe B is a very useful source for ELVs, obligations, etc.

https://consult.defra.gov.uk/airquality/medium-combustion-plant-and-controls-on-generators/supporting_documents/161221%20Amended%20Condoc%20%20published.pdf

- techUK MCPD response, February 2017:

<http://www.techuk.org/insights/news/item/10224-techuk-s-submission-to-defra>

Other relevant techUK publications

- Cones of Pain: generator emissions compliance roadmap:

https://www.techuk.org/images/generator_emissions_roadmap_FINAL.pdf

- In or Out: Are you obliged under IED?

https://www.techuk.org/images/IED_IN_or_OUT_V05.pdf

- Policy conflicts:

http://www.techuk.org/images/techUK_DCC_Com_1606_policy_conflicts.pdf

- Briefing note on emergency generation in data centres:

http://www.techuk.org/images/techUK_TechCttee_Briefing_Emergency_Generation_1701.pdf

- 6th May 2016 round table:

<https://www.techuk.org/events/workshop/item/8343-permitting-requirements-for-standby-generators>

- techUK Data Centres Group pages

<http://www.techuk.org/focus/programmes/data-centres>

techUK contacts



Emma Fryer

Associate Director, techUK

Tel: 01609 772 137

Mob: 07595 410 653

emma.fryer@techuk.org



Lucas Banach

Programme Assistant

Tel: 020 7331 2006

Lucas.banach@techuk.org

About techUK

techUK represents the companies and technologies that are defining today the world that we will live in tomorrow. The tech industry is creating jobs and growth across the UK. In 2015 the internet economy contributed 10% of the UK's GDP. 950 companies are members of techUK. Collectively they employ more than 800,000 people, about half of all tech sector jobs in the UK. These companies range from leading FTSE 100 companies to new innovative start-ups. The majority of our members are small and medium sized businesses. www.techuk.org

ⁱ Formal title: Environmental Permitting Regulation 2018 Implementing MCPD, referred herein as "MCPD"

ⁱⁱ Formal title: England/Wales Additional Specified Generator Controls

ⁱⁱⁱ MCPD has been transposed as: Environmental Permitting Regulation 2018 Implementing MCPD and the domestic Controls are described as England/Wales additional "Specified Generator Controls"

^{iv} "new" means put into operation on or after 20/12/2018. Existing plant can become new if it is substantially refurbished (where costs exceed 50% of the cost of investing in comparable new plant).

^v Existing means plant that has been put into operation (fired with its design fuel up to full load) before 20/12/2018.

^{vi} Industrial Emissions Directive applies to sites over 50MWth capacity

^{vii} Environmental Permitting Regulations, through which IED is implemented

^{viii} The actual threshold is 1MW Thermal input, which equates to around 300-400 KW electrical output

^{ix} MCPD applies to all individual units between 1MWth #300kw Electrical up to 50MWth.

^x Specified Generator Controls apply to units below 300Kw/1MWth that add up to more than 1MWth or 300kW electrical

^{xi} Short Term Operating Reserve

About techUK

techUK represents the companies and technologies that are defining today the world that we will live in tomorrow. The tech industry is creating jobs and growth across the UK. 950 companies are members of techUK. Collectively they employ more than 700,000 people. These companies range from leading FTSE 100 companies to new innovative start-ups. The majority of our members are small and medium sized businesses.
www.techuk.org

techUK has a clear, simple mission – to make the UK good for tech, make tech good for the UK and make tech good for people.