

Data Centres and Environmental Permitting Regulations

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Data centres are highly resilient facilities that underpin our digital economy by processing, storing and transacting digital data. Some sites are officially deemed CNI (critical national infrastructure). While they run solely on electricity, most facilities maintain standby generators to provide continuous power in the event of an emergency like grid supply failure¹. Many sites also have dual supplies within the distribution network to minimise the risk from local supply disruption.

The Industrial Emissions Directive (IED) applies to installations with generating capacity of 50MWth and above and includes standby plant. A small number of data centres in the UK have sufficient on-site emergency generating capacity to require IED permits (implemented through the Environmental Permitting Regulations - EPR). **Currently, all UK data centres reaching or exceeding this threshold hold permits or have applications in process and are therefore in compliance with the requirements of EPR and hence, IED.**

Data centres may apply for a permit in advance of becoming operational or, more commonly, during operation. This is because data centre emergency plant tends to be installed incrementally as a site grows². Normal practice, therefore, is that as a site reaches the 50MWth threshold, operators apply to the Environment Agency (EA) for the appropriate permit. The site and its emergency plant may have been operational for years before the installed standby capacity reaches the 50MW threshold.

There are some instances where plant has been operated inadvertently without a permit. In these cases operators, once alerted, cooperated fully with the EA to meet all legislative requirements. As the relevant trade body, techUK has worked very closely with the EA for over two years to ensure full compliance across the sector. Poor air quality poses a significant health risk in the UK and operators take their responsibilities very seriously indeed.

While operators are very concerned that there have been instances of unpermitted activity, the environmental impact has fortunately been minimal. This is because there are material differences between generating plant deployed in data centres and generating plant used for power production and industrial processes (the primary targets of this legislation). These are iterated below:

- Standby generators are for emergency purposes only so do not provide baseload power. They are rarely used. However they need to be tested regularly (usually for less than 30 minutes a month) as part of essential maintenance routines. The vast majority of data centre standby

¹ See: https://www.techuk.org/images/techUK_TechCttee_Briefing_Emergency_Generation_1701.pdf

² Data centres are often built in phases, with new capacity added to meet demand as it grows. Emergency standby capacity is therefore installed in the same way, in stages, so that the emergency supply can always meet the anticipated demand should the grid supply fail.

generators within and around the M25 have never been run in anger due to the very high reliability of the national grid (in the top three globally).³

- During maintenance, only a fraction of the the full fleet of standby generators usually run at the same time, so the air quality impacts of regular running are similar to those of a much smaller installation.
- The emissions associated with emergency back-up generators are minimal compared to those associated with baseload plant – for the simple fact that they rarely run. EA studies in preparation for the Medium Combustion Plant Directive found that generators run under 50 hours a year have no material impact on air quality⁴. Data centre plant typically runs between 6 and 12 hours a year.

Nevertheless the law applies equally to standby plant and over the last two years techUK has been working very closely with the EA to alert operators to the requirements, identify sites that are approaching, or exceed, the threshold and ensure all are compliant. This process has not been easy for the following reasons:

- Terminology: the sector uses MW electrical and the regulation is described in MW thermal (though this is not consistently stated). 1MW electrical (output) is equivalent to around 3MW of thermal (input). So an operator with 17MW standby capacity might consider the site to be well below the threshold when in fact the thermal input is around 50MW. Moreover this is not an exact equivalent and establishing whether a site is below or above the threshold can be extremely challenging⁵.
- Complexity: Legislation covering generator emissions is exceptionally complex and tends to rely on detailed guidance and the development of Best Available Techniques. Bespoke guidance of this type does not yet exist for data centres. techUK is developing reference material with the EA but this will take some time.
- Duplication: operators already comply with planning requirements to minimise environmental impacts. These include staggered (phased) running and scheduling testing at times when ambient pollution levels are unlikely to be problematic.
- Time: Permitting is complex and expensive, especially if done retrospectively. The average turnaround is about two years, taking into account pre-application advice, commissioning air quality modelling and other studies. The cost for a large site is in the region of £100,000 in

³ The majority of operators reported zero emergency running hours. Typical figures from operators in the South East were zero although some reported one or two short (typically half hour) outages during the lifetime of the site. Longer outages were reported by some regional operators where one or two outages of an hour per year were not untypical.

⁴ Environment Agency modelling in preparation for determining appropriate domestic generator controls, quoted by DEFRA in the Consultation document for MCPD and Generator Controls, December 2016

⁵ See: http://www.techuk.org/images/IED_IN_or_OUT_V05.pdf

fees and charges. While the process helps to anticipate, manage and mitigate risk the delivered environmental benefits are marginal.

- **Awareness:** there has been a lack of awareness on both sides: some operators were unaware of some of the obligations placed on standby plant and the regulator was unaware of the sector, which is relatively new. Due diligence audits commissioned by operators purchasing sites did not identify this compliance gap and local authorities had not referred planning applications to the Environment Agency. Operators acted in good faith throughout: once contact was established, they made every possible effort to comply, including but not restricted to:
 - Immediate action to understand obligations
 - Immediate action to identify obliged sites
 - Immediate action to secure permits

At the same time, techUK

- Alerted operators to the legislation
- Produced explanatory material on generator compliance requirements⁶, guidelines on how to establish whether a site was likely to be obliged, and on how to comply⁷, embarked on FAQs and Best Available Techniques guidance with the EA
- Organised workshops and briefing sessions with EA officials

Next steps:

techUK will continue to work closely with the Environment Agency and will continue to support operators of new and growing sites to prepare. Although there have been no adverse environmental impacts, we are very concerned that there have been instances where plant has been operated without the necessary permits and we are committed to ensuring that the sector remains fully compliant with the legislation.

The sector has met its obligations squarely and sought compliance with all possible speed and at considerable expense. It is clear that data centres are not the intended target of this legislation and we have strong reservations about the balance between the costs of compliance and the minimal environmental benefits that can be achieved in this context. This is not new: other legislation fails to accommodate the unusual juxtaposition of high generating capacity and low generating function that typifies this sector. However, that is a different discussion, and one to be held over the longer term. In the meantime our members will continue to obey the law. We welcome the publication of permitting status as this is clear evidence of our intent.

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⁶ See https://www.techuk.org/images/generator_emissions_roadmap_FINAL.pdf

⁷ See: http://www.techuk.org/images/techUK_SLR_Ascending_to_IED_Compliance_v2.pptx