# Scotland's Air Quality, Low Emission Zones and Retrofit of Emission Control Devices

**Air Quality and Vehicle Emissions**

Undoubtedly, road transport is the principle contributor to poor air quality. Oxides of nitrogen (NOx) and particulate matter (PM) are the air pollutants of greatest concern. Achieving air quality targets mandated has been a local authority responsibility for many years, with protection of public health an absolute priority.

Regular monitoring of Scotland's air quality is carried out under the UK's Network scheme. When exceedences of the EU standards exist or are forecast, the relevant local authority is required to declare an Air Quality Management Area (AQMA). An AQMA can comprise just a few streets or be a much larger area. Once the AQMA is in place, the local authority has to devise a plan to improve air quality in this area. This is termed a Local Air Quality Action Plan (LAQAP). Local authorities in several Scottish cities have defined AQMAs, notably in Glasgow, Edinburgh, Aberdeen, Dundee, East and North Lanarkshire. In every case, ambient air levels of nitrogen dioxide ($NO_2$) have been exceeded or are forecast to do so. Levels of fine particulate matter, called $PM_{10}$, are also of concern and breaches of the standards set are forecast for 2010.

**Low Emission Zones**

When formulating plans to improve air quality in AQMAs, local authorities are assessing a whole raft of measures. Many of these are aimed at limiting emissions, especially of $NO_2$ and $PM_{10}$, from road traffic. Diesel-powered lorries, buses and coaches make significant contributions to these emissions and so are prime targets for control.

Establishing a Low Emission Zone (LEZ) which encompasses the AQMA is an important option. An LEZ is a declared area where vehicle operators have to meet an agreed emission standard otherwise they must either pay a non-compliance charge or face a heavy fine. It is an approach which Transport for London (TfL) has successfully adopted, its scheme commencing in 2008.

In 2007, Glasgow City Council commissioned a study to assess the potential benefits to air quality conferred by an LEZ and balance these against the costs. Mindful of the importance of air quality at the 2014 Commonwealth Games, the city's politicians have already committed themselves to introducing an LEZ before the Games take place. The City of Edinburgh, Aberdeen and Dundee are all considering LEZ schemes along the lines of the one envisaged for Glasgow. But it may not be until mid-2009 that these authorities finally announce their intentions.

If LEZs are introduced into Scotland, it is possible that emissions of NOx and $PM_{10}$ from existing large diesel vehicles will be controlled using retrofit of emissions abatement equipment. Diesel particulate filtration (DPF) and selective catalytic reduction (SCR) for NOx control will be the technologies employed. These are well-proven and have been widely used elsewhere.

In TfL's scheme, all lorries, buses and coaches have to meet Euro III PM emission standards to be compliant, which has meant retrofitting PM filters to vehicles which are more than eight years old. To date, more than 5,000 vehicles have been successfully retrofitted with filters. However, administrative costs for LEZ schemes like London's can be high. Other cities across the UK, including those in Scotland, might find such costs prohibitive.

So, instead, they may well adopt a simpler system, ie similar to that employed in German cities. Here, vehicles must display a disc which can be green, yellow or red - the colours representing low (ie filtered`), medium or high PM emissions respectively. Cities have LEZs which allow vehicles to enter free-of-charge if they have a green disc. Those with red or yellow must pay to enter. In some cases, vehicles with a red disc are totally prohibited. Severe penalties are in place to deter fraudulent disc usage.

**Government's Incentive Scheme for Retrofit**

Scotland's government is playing its part in helping to reduce emissions from older large vehicles operated by local authorities. Here, it is offering subsidies of 30 per cent towards the cost of filter retrofit. To ensure that only effective and reliable filters systems and responsible abatement equipment suppliers operate in this market, Scotland's Energy Saving Trust has implemented an accreditation scheme. Since some of Scotland's cities have a problem with air levels of $NO_2$, filters accredited for this market must not increase the emissions of this gas, as can happen with some proprietary devices. Clean Diesel Technologies is on the Register of approved companies and systems.

Acknowledging the importance of LEZs and the link with retrofit, as illustrated by London's example, the government has increased the subsidy to 70 per cent if a local authority introduces an LEZ. And it was recently announced that the Edinburgh-based Lothian Buses will now be included in the scheme, which is funded annually to the tune of £1 million.

Clearly, the impact on air quality would be greater if the scheme was open to the private sector as well. This might happen in the future. The Netherlands has such a scheme which has received EU Commission approval.

**What happens next?**

Scotland has made a start in offering fiscal incentives for retrofit. Now it is up to the local authorities to take up the financial offer put on the table by the government to improve urban air quality. Glasgow and Edinburgh appear to be moving towards an LEZ with retrofit requirements. Even in a recession, the health of city dwellers and workers should take absolute priority over short-term economic considerations.

**For more information:**
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