

AIRS and graces

Concerned about residents' health, local councils around the UK may soon start to impose penalties on some types of commercial vehicles to raise air quality standards. Steve Banner explains

What exactly are clean air zones (CAZ), and why are they being introduced? They are areas where targeted action is being taken to improve air quality, and are being rolled out because the atmosphere in many of Britain's towns and cities needs to be made healthier and more breathable. So says Francis Robson, technical specialist at Cenex, the UK's Centre of Excellence for Low Carbon and Fuel Cell technologies.

Nitrogen dioxide (NO₂) levels, in particular, need to be brought down, he says, and it is not something that local authorities can afford to be relaxed about. Taking action is a legal requirement under the 2010 Air Quality Standards regulations. They enshrine the World Health Organisation's 2005 Air Quality Guidelines – the first full set of such global guidelines ever published and due to be updated in 2020 – into UK law.

Councils are not being allowed to drag their feet when it comes to meeting their obligations. They are under constant pressure from bodies such as activist ClientEarth – led by activist lawyers committed to securing a healthy planet – banging on their doors, says Robson. Central government is pushing them to take steps, too.

"Twenty-eight local authorities are having to introduce plans to tackle roadside nitrogen dioxide concentrations, and they're being followed by a further 33," he says. In some cases, those plans may lead to the introduction of CAZs, but they

are not the only measures being implemented to clean up the air we breathe.

"There are 655 Air Quality Management Areas," says Robson. Dotted around the country, these are areas designated by a local authority as being at risk of not achieving the UK's national air quality objectives, and that need to be managed accordingly. That designation takes into account a wide variety of pollutants, including particulates.

"The World Health Organisation has stated that no threshold has been identified below which no damage to human health by particulates is observed," he remarks; in other words, even inhaling a small amount from time to time is likely to be bad for you.

TAKING ACTION

The government is proposing tough new goals in terms of the reduction of public exposure to particulates as part of its Clean Air Strategy. Then there are low emission zones (LEZ), a type of CAZ that applies solely to the most polluting vehicle types, as determined by the individual local authority.

"In Greater London, it's heavy-duty diesel vehicles, while in Norwich, Nottingham, Oxford and Brighton, it's buses," says Robson.

To these can be added the ultra low emission zone (ULEZ), another form of LEZ which will apply to vehicles of all sizes and fuel types entering central London from 8 April 2019. The intention is to eventually expand the ULEZ out to the M25.



A congestion charging zone is already in place in the middle of the capital, and vehicles entering it are subject to a T-charge; a 'toxicity surcharge' will be levied until the ULEZ comes into force.

The approaches taken by the first five cities required to produce CAZ plans by the government – Birmingham, Leeds, Nottingham, Derby and Southampton – illustrate the degree of variation between them. "Derby's plans, for example, are

FACT

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Francis Robson

still under consultation, but its preferred option is no CAZ and a traffic redirection scheme instead," says Robson. The idea is to route vehicles around areas of poor air quality in a bid to clean them up.

"Southampton's plans are still under consultation, too, and what is known as CAZ B is its preferred option," he says. That would mean buses, coaches, taxis, private hire vehicles and trucks would all be affected.

Nottingham, however, has won an exemption from any requirement to introduce a CAZ, because its air is now deemed to be clean enough. That is in part due to reduced emissions from buses in the city. (Nottingham City Transport's line-up includes 53 ADL-bodied Scania Enviro400CBG double-deckers that can run on biogas, the largest fleet of its type in the world.)

The first CAZs are set to come into force in 2020. And they will not remain static, says Robson; the requirements they impose will be updated periodically. However, it is likely that current standards will remain in place until at least 2025; businesses and others need sufficient certainty in order to plan and make the most economic decisions, states the government's clean air zone framework. "A full process and timetable for the long-term updating and tightening of the standards will be consulted on and in place by the end of 2018," the framework states.

Robson describes CAZs as the thin end of a zero-emission vehicle wedge, and believes that

zero emission zones (ZEZs) are likely to become more common as cities take action to implement them unilaterally. "London and Oxford are already considering them, along with European cities such as Amsterdam, Copenhagen, Stockholm, Bergen and Madrid," he observes. The first ZEZs could be in place in London in 2020.

"CAZs are the starter, and things are going to get a lot tighter," he remarks. More widely, the target for CO₂ emissions from light vehicles will be driven steadily downwards, from 95g/km in 2020 to 80g/km in 2025 and 70g/km in 2030. Euro VII could be implemented in 2020/1.

Come 2040 there will be a ban on petrol- and diesel-only vehicle sales in the UK, Robson points out. The government's ambition is for all UK vehicle sales to be zero-emission come 2050. Both these measures are set out in the government's new Road to Zero strategy. Part of the strategy is for ULEVs – ultra low emission vehicles – to account for 70% of car sales and 40% of van sales by 2030.

Robson doubts that electric trucks will be adopted widely, but says that battery-powered light commercials could have a key role to play in urban delivery work. He suggests they could form part of a hub-and-spoke distribution model, with trucks arriving at the edge of cities and transferring cargo to zero-emission light vehicles.

Connected vehicles can have a role to play in terms of making urban atmospheres more breathable. Here, Robson is thinking about Project ACCRA (Autonomous and Connected vehicles for CleaneR Air), which has been the subject of a recent trial. Traffic and air quality data is collected from a city and areas of poor air quality are geo-fenced. Approaching hybrid vehicles with sufficient battery capacity are then requested to switch to zero-emission mode while in the geo-fenced zone. The concept has been demonstrated using an extended-range Tevva 7.5-tonner, says Robson.

"External pressures from sources such as the UN Paris Agreement and the World Health Organisation will continue to make CAZs stricter, ultimately leading to ZEZs," Robson says. "And while cars and vans have a clear pathway towards their role in a zero-emission future, the role of trucks needs more development and attention. There is no clear view of how trucks will fit into a zero-emission world." ■

AIR POLLUTION AND TIGHTENING STANDARDS

2010 - AQ Standards regulations - 40 µg/m³ NO₂/year

2018 - Third NO₂ plan, +33 authorities

2015 - First NO₂ plan - 5 cities

2017 - Second NO₂ plan - 28 authorities

2019 - Clean Air Strategy released

2020 - WHO AQ guidelines updated; CAZs come into effect; first zero emission zones (ZEZ) in London

2021 - London ULEZ expands to outer ring roads

2025 - CAZ vehicle emissions standards due to be updated

2010 **2015** **2020** **2025**

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