Local Air Quality Management Case Study - Managing Transport Emissions

**The Situation**

Oxford City is a small city with a typical road layout set around a central crossroad. The County and City Councils have responded to the challenges of growth in road traffic in recent decades by a variety of significant schemes. During morning, evening and inter peak hours the main routes through the City are closed to all traffic but buses and taxis. There are several significant park and ride schemes and several city centre streets have been pedestrianised. In addition the city has been planning or implementing a number of regeneration development schemes in recent years. However, the City Council has monitored exceedences of the NO2 annual mean air quality objective every since 2000. They declared the City Centre AQMA in 2004 and identified road transport as the dominant local source of emissions. The Oxford Air Quality Action Plan identified that a Low Emission Zone could be an effective measure and that further assessment of such schemes was a priority. This situation is typical of many AQMAs.

**Detailed analyses and tools leading to policy focus**

Although the City in 2007 already had the resources and expertise to carry out its local air quality management duties there was an awareness that these needed enhancing for the air quality challenge; namely i) the need to correctly assess the air quality impacts of schemes arising as a result of development policy, ii) the need to better characterise the contribution from traffic to air quality impacts and iii) the capability to assess the cost and effects of schemes proposed to improve air quality.

The City provided funding and secured additional funding from the Air Quality Grant and the County Council to develop this capability. The essential tools and data developed were a) a new detailed transport model of the City b) detailed emissions inventories (including greenhouse gases as well as local pollutants) producing dispersion-model-ready outputs and c) a set of costed abatement scenarios.

The emissions inventories are notable in that they are i) disaggregated by road link ii) estimate the contribution from several vehicle types (cars, HGVs, buses) iii) include a detailed set of bus fleet and emission projections based on local information rather than national averages and iv) identify the contribution to emissions from stationary traffic and bus stop layovers.

**Leadership and Stakeholder engagement**

The work was overseen by a steering committee led by elected members with particular responsibility for environment and transport management from the City and County councils. Presenting quantitative information on the challenge and potential solutions to these facilitated their understanding of the issues and led to decisive actions to ignore or pursue further options for managing air quality. The outcome from the work is a clear statement of what actions the councils are committed to implementing to improve air quality.

In addition the key bus fleet operators were consulted throughout to a) engage their help in compiling realistic fleet and emission inventories (which demonstrated the significant investment in recent years in controlling their emissions) and b) to keep them informed of developments in the work to manage air quality and how it might impact on them.

**Action**

The councils aspire to achieving the air quality objectives as soon as possible and recognised the evidence that bus fleet emission reduction is currently the most cost-effective option. In a context of large exceedences of the objective on many roads and the fact that the fleet operators are already investing in Euro V vehicles the councils have decided to adopt a Euro V Low Emission Zone standard for buses by 2015. This conclusion has been included in ongoing negotiations with the operators concerning highly significant proposals to regulate how buses service the city (potentially...
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leading to fewer buses). If the outcome is not satisfactory in terms of achieving the Euro V (or equivalent) then the councils have stated their preparedness to use the provisions of Traffic Regulation Conditions instead.

The Benefits — The assessment tools and data developed provide clear evidence of:

- The importance of managing emissions from all stationary traffic
- The dominance of vehicle types (in this case the bus fleets) as NOx contributors and as the largest PM and CO\textsubscript{2} emitters and the cost-effectiveness of dealing with these emissions before any others.
- The geographically varying positive and negative effects of development schemes

The extent to which transport emissions must be reduced to achieve the air quality objectives. Such evidence was increasingly influential on policy development as it emerged. In particular the evidence on stationary traffic, the dominance of bus emissions and the costs and benefits of realistic abatement options became contributory drivers in wider City and County policy on how the city centre may be developed. In future the technical capability developed by Oxford can be used to quantify the emissions, air quality and damage costs of development proposals (such as changed speed limits, new traffic management schemes or large developments impacting on traffic). Such tools therefore remove many of the remaining technical barriers to effective local air quality management.

Appraisals have estimated a Euro V standard for buses achieved by operators bringing forward planned investments of several £millions may improve annual mean NO\textsubscript{2} concentration by several \(\mu\) g/m\textsuperscript{3} on key roads in the city centre. Most roads in the AQMA would potentially comply or get very close to compliance with the air quality objective from such an impact. Impacts of this scale if achieved would be the single largest improvements due to a local measure so far identified in the UK.

Contacts for further information

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