

READING BOROUGH COUNCIL, UK

Background

Reading is the regional centre of the Thames Valley in South East England, about 60km west of London. Reading Borough Council serves a population of around 150,000 and co-ordinates public transport operation of 47 bus lines, which carry 16.2m passengers per year. Reading has the 4th highest number of bus journeys per head of population, at 103.1 per year, in the whole of England outside London.

In 2009, the Council adopted an air quality action plan in response to identified areas of the town with high levels of NOx.

As part of its commitment to reduce local congestion and improve quality of life, the Council is also opening a bicycle hire scheme with 200 bikes and 29 docking stations this Spring.

Criteria used

Subject matter of the contract: High profile '8 vehicle' shuttle bus service connecting Reading Station to two business park developments in South Reading; Green Park and Reading International, together with a 'Park and Ride' service from Madejski Stadium and Kennet Island, a developing brown field urban village.

Selection criteria: The tender was open to all bus operators. A pass / fail question on whether the company had a passenger service vehicle (PSV) operator's licence was used along with other standard procurement questions regarding finance and standing.

Technical specifications: It was a minimum technical requirement that the contract vehicles proposed met a minimum Euro 4 emission standard (as second-hand vehicles could be offered as a bid).

Award criteria: Award criteria were weighted 75% quality and 25% price. Quality aspects were broken down into sections, each with a maximum of 7 points then multiplied according to a weighting system.

For the designated emission standard of the vehicles, compliant bids were scored as follows out of a possible 7 points:

Euro 4 = 4 points Euro 5 = 6 points Euro 6/EEV or better = 7 points

Another quality section focused on environmental issues and innovation. Bidders were required to give details of any proposed innovative approach which would be taken to running the services. Potential providers were asked to consider the Council's policy aims when considering issues such as climate change, carbon reduction and other pollution such as noise. Again a maximum of 7 points was used.

According to the weighting system, both of these environmental sections were multiplied by 4 to give a maximum of 28 points each, out of a grand total of 324. They therefore both represented 8.6% of the total quality points awarded.

Results

Three public transport operators bid to provide this service, all three offered new buses with conventional diesel Euro 5 engines. One of the bidders, Reading Transport Ltd, also offered a bid for a service using new compressed natural gas (CNG) powered buses, which were of an Enhanced Environmentally Friendly Vehicle (EEV) emissions standard (between Euro V and Euro VI). This company won the tender due to a higher overall score based on quality and price criteria as set out in the bid documents. (Under the Transport Act 1985 Reading Transport Ltd is a company in its own right, although 100% owned by Reading Borough Council. In tendering procedures,

EEV certified biomethane bus service

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Reading Transport is treated in exactly the same way as competing companies and transparency is ensured throughout the process).

The winning bid provided for the operation of the service using new CNG powered buses with biomethane purchased from UK based agricultural sources. Although this biogas is fed into the mains rather than transported directly to Reading, 100% of the amount that Reading Transport uses is bought from these certified renewable sources. This is a valid method of using biomethane as a source because not only are transportation emissions avoided, but the tailpipe emissions are the same for CNG and compressed biogas (CBG) and it cannot be sold twice as a renewable energy source due to the fact it is certified.

With the green credentials of the contracted buses apparent, a brand name of 'greenwave' was chosen. The buses were launched into public service on 29th April 2013 at Green Park. Branded publicity has been provided which helps tell passengers about the environmental benefits of the buses. The buses carry a branded livery which explains the benefits simply: 'gas power... quieter, cleaner, greener'. The number of passengers using the greenwave services has continued to increase at a rate of 20% per year so 2 additional CNG buses have been added to the greenwave contract and frequencies further improved.

Environmental impacts

CNG is typically produced from fossil-fuel sources, but in this case it is bought as a biogas and is a renewable fuel source produced by the farming industry. The buses use mains gas which is then dried and compressed at the bus depot. The bus company buys the equivalent of the gas it has used from a certified bio gas supplier who feeds 'their' gas back into the mains.

A major advantage of using CNG over the Euro V diesel buses (the comparable traditional technology at the time of purchase) was the reduction of harmful tailpipe emissions including particulates, which are negligible. Estimates from Reading Transport are that NOx emissions of their fleet of biomethane buses are 30%-50% lower than comparable Euro V diesel buses.

As well as low emissions the buses are smoother and quieter than conventional diesel engine buses. This is important on the greenwave service as the first buses are in service at Kennet Island village at 5.30am, as well as being much more pleasant in busy Central Reading.

Lessons learned

Reading Borough Council hopes that the use of biomethane buses and the associated green branding on commuter routes within the town will help increase the popularity of this mode of transport by improving passenger perceptions. Business park stakeholders are also keen to improve the image of their developments and the traffic flow in and out. Staff in the Council's Transport Department realise that in order to exploit the full potential of this service, reduce NOx emissions and congestion to more tolerable levels, other measures must be considered such as an expansion of bus only lanes.

The Council was keen to try and encourage innovative solutions but was concerned about the complexity of requesting and evaluating innovative bids in an objective and reliable manner in the context of the EU public procurement principles. Finally it was decided that an exhaustive list of technology types should be specified, in order to aid comparison; diesel, CNG or (CBG), biodiesel, hybrid, electric or hydrogen models. In order to transfer unforeseen capital equipment costs and other risks, Reading Borough Council required bidders to establish their own fuelling stations/ charging points.

The CNG buses were to be the first in the UK fuelled from the gas mains. The process to install the compression and drying plant at the bus depot took longer than envisaged, but is now in operation. The CNG buses have generally performed well so far, although there have been a few technical teething problems. According to the transport operator, CNG buses are cheaper over the life cycle of the vehicle compared to standard diesel models, even with the additional cost of infrastructure; as the gas fuel prices are lower.

Reading Borough Council commented that the Reading Transport helped to make this a successful tender not only due to their willingness to use alternative fuel and establish the associated infrastructure, but also because they purchased more than the eight buses stipulated and were flexible about their use, meaning the Council could expand the service, which now uses 10 buses.