

To: City Executive Board

Date: 4 July 2012

Report of: Head of Direct Services

Title of Report: **EXTENSION OF ALTERNATIVELY FUELLED VEHICLES TO THE COUNCIL FLEET**

Summary and Recommendations

Purpose of report: To seek approval to add more electric vehicles to the Council's existing fleet

Key decision? No

Executive lead member: Councillor John Tanner

Policy Framework: Cleaner Greener Oxford

Recommendation(s): The City Executive Board is recommended to:-

1. Approve the use of more electrically driven vehicles in the council's vehicle fleet, where viable and cost effective
2. Approve the use of more electrically driven vehicles in the council's vehicle fleet, where viable and cost effective.
3. Recommend to Council for inclusion of the additional budget in the Council's capital programme highlighted in paragraph 9, funded from the savings in running expenses over the life of the asset (as shown in Table 3, Paragraph 22) as part of the spend to save initiative.

Background

1. Oxford City Council has an accomplished history of operating alternative fuelled vehicles for the purpose of reducing both the local and global environmental impact of its vehicle fleet.
2. In 2001, following a successful trial, the use of Liquid Petroleum Gas (LPG) was introduced into the fleet in order to reduce harmful pollutants emitted from the Council's vehicle fleet. Since this introduction, over 180 LPG hybrid cars and light commercial vehicles have been added to the fleet.
3. In 2006/7, the focus of environmental concerns shifted from particulate matter (PM10) to CO₂. LPG vehicles produce reduced amounts of PM10, but similar levels of CO₂ to that of diesel engines. In addition, the control mechanisms for PM10 had considerably improved. Biodiesel was introduced to the Council's fleet as a way of offsetting the production of CO₂ from diesel vehicles. The introduction of a 20% blend of Biodiesel by Oxford City Council was soon superseded by the use of a 30% Biodiesel blend.
4. In addition to these alternative biofuels, Oxford City Council has considerable experience in the operation of electrically powered vehicles. In 1999, 8 electric Peugeot 106 cars and 8 electric Peugeot Partner vans were successfully introduced and operated on the fleet. Although generally reliable, the main downfalls of this technology were
 - Limited range
 - Cost and maintenance of batteries
5. The motor industry seemed to shy away from the production of electric vehicle technology during the early part of the 2000's, but recent major investments in the development of electric vehicles has resulted in the production of many viable options.
6. In 2009/10 we participated in the trialling of 5 electric Minis through BMW's Mini-E trial.
7. The purchase of 2 electric cars as part of the Capital Vehicle Replacement Programme was approved in 2010/11, and there are currently 2 Citroen C-Zero electric cars on order to be introduced into the vehicle fleet.
8. It is the purpose of this report to obtain approval to buy similar vehicles over the next 3-4 years, at an increased initial capital cost but much lower running costs.

Proposal and Implementation

9. The following table shows the number of vehicles highlighted as potential candidates for replacement by electric vehicles over the next four years, based on current mileage and utilisation:

Financial Year	Cars	Small Vans	Estimated Proposed Extra Capital Spend (£)
2012/13	4	5	81,000
2013/14	1	4	45,000
2014/15	2	2	36,000
2015/16	4	2	54,000

Table 1: Potential vehicles for replacement by electric

10. After investigating and trialling a number of electric car models, the following makes have been identified as possible additions to the council fleet:
- Citroen C-Zero
 - Peugeot iOn
 - Mitsubishi i-MiEV
 - Nissan Leaf
11. The Nissan Leaf is marketed as an executive vehicle and as such would not be economically viable as a fleet vehicle. The C-Zero, iOn and i-MiEV are very similar vehicles and all possess the following features:
- 3-4 passenger seats
 - Luggage space
 - Approx 100 mile radius on a full battery charge
 - Regenerative braking
- Vehicle specifications are appended in *Appendix 4*.
12. After evaluating the purchase cost and warranty options, it is clear that currently the best value is offered by Citroen. The actual purchase price is less than the other two, and the vehicle is offered with 4 years full servicing, 8 years battery and motor warranty – both with a delivery/collection service and courtesy vehicle provision.
13. We are currently assessing the viability and cost of electric vans from a number of manufacturers including Citroen, Renault and Ford. A similar assessment will be carried out and the most suitable vehicle for the needs of the fleet will be purchased.
14. All user departments will be fully consulted before replacement to ensure that the needs of the service can be met by an electric vehicle.

15. Our previous experience with electric vehicles has ensured that there are already charging points, including medium/fast speed installed at Council locations around the city.

13 Amp trickle charge points are available at:

- Cowley Marsh Depot x 11
- Horspath Road x 2
- Cutteslowe Park x 2
- Westgate Car Park x 1

Quick charge points are accessible at the Westgate Car Park, and at 10 other public locations around the city. Further charging points can be installed as necessary and when economically viable.

Environmental Impact

16. The introduction of electric vehicles to replace current diesel models will potentially result in a significant positive impact on the local environment. Fully electrified vehicles boast zero local emissions, with no harmful CO₂, Nitrogen Oxides (NO_x) or particulate matter (PM10) emitted from the tailpipe of the vehicle.

17. While it is possible to calculate the current emissions of the Council's car fleet to a relatively high degree of accuracy, figures for the emissions of vans and light commercial vehicles are yet to be published, making an emissions calculation difficult.

18. For the purpose of this report, the example below shows the potential annual reduction in tailpipe emissions if 6 current diesel cars (identified as potential candidates for replacement) are replaced with electric vehicles.

This table shows an average production of 1.3 tonnes of CO₂ per car each year. Generally the CO₂ emissions of a van/light commercial vehicle will be greater than that of a car, so the potential reduction in emissions is far greater.

	Annual distance travelled (km)	CO ₂ emissions factor (g/km)	CO ₂ emissions (tonnes)	NO _x emissions (kg)	PM10 emissions (kg)
Diesel Car 1	2712	150	0.41	0.74	0.004
Diesel Car 2	22363	140	3.13	6.12	0.37
Diesel Car 3	2993	150	0.46	0.82	0.05
Diesel Car 4	10882	150	1.63	2.98	0.18
Diesel Car 5	11893	150	1.78	3.25	0.20
Diesel Car 6	2929	143	0.42	0.80	0.05
Total			7.82	14.71	0.85

Table 2: Potential reductions in annual tailpipe emissions

Equalities Impact

19. There are no adverse impacts on equalities.

Risk Implications

20. A risk assessment has been undertaken and the risk register is available as a background paper. There is potential financial risk that vehicle manufacturers may not honour warranties or support their products after year four.

Financial Implications

21. To assess the financial implications of switching to an electric vehicle, a comparison with a current conventional model has been undertaken., The example below compares a Citroen C-Zero electric vehicle with a Citroen Berlingo Multispace (already on fleet: the Multispace is one of our most common cars, and the most likely candidate for replacement).

N.B. All figures in Table 3 are based on current averages across the fleet.

	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Whole Life Cost
Multispace										
Capital Cost	10,000							11,500		
DRF Charge		1,667	1,667	1,667	1,667	1,667	1,667	1,917	1,917	13,833
Maintenance Costs		550	550	550	550	550	550	550	550	4,400
Fuel Costs		625	625	625	625	625	625	625	625	5,002
Vehicle License		130	130	130	130	130	130	130	130	1,040
Total		2,972	2,972	2,972	2,972	2,972	2,972	3,222	3,222	24,275
C-Zero										
Capital Cost	19,000									
DRF Charge		2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	19,000
Maintenance Costs		0	0	0	0	300	300	300	300	1,200
Fuel Costs		76	76	76	76	76	76	76	76	611
Vehicle License		0	0	0	0	0	0	0	0	0
Total		2,451	2,451	2,451	2,451	2,751	2,751	2,751	2,751	20,811
Saving pa incl Capital Cost		521	521	521	521	221	221	471	471	3,464
Saving pa excl Capital Cost		1,229	1,229	1,229	1,229	929	929	929	929	8,631

Table 3: Whole Life Costs

Notes

- In Year 5, the maintenance cost of the C-Zero is added, as the 4 year servicing warranty will expire
- In Year 7, it is assumed that the Multispace will be replaced, and a 15% increase in the purchase price is included
- Financial factors such as non fair wear and tear, insurance premiums and overheads including fleet management charges are excluded from these calculations as they are deemed to be fixed regardless of the vehicle make/type

Capital Cost

- 22.** The current purchase price of a diesel Berlingo Multispace is circa £10,000 (delivered and registered). The equivalent price of a electric C-Zero is about £24,000. However, the Office for Low Emissions Vehicles (OLEV) currently offers a grant of £5,000 off the price of a new electric vehicle, making the actual C-Zero purchase price about £19,000.
- 23.** Although the initial purchase price is higher, various warranty and service deals on the C-Zero mean that the vehicle will be purchased with a view to run it over an 8 year life. The Multispace is currently run over a 6 year life. Therefore, the capital cost per year on a C-Zero is £2,375, compared to £1,667 for the Multispace.
- 24.** The increased capital cost of the vehicle would be funded through Direct Revenue Funding (DRF) and therefore the revenue savings identified below would be vired into the DRF Budget to ensure the capital programme continues to be funded at the correct level.

Maintenance Cost

- 25.** The current estimated cost for maintaining a Multispace is £550 per annum. This covers servicing, annual testing and general fair wear and tear. Non fair wear and tear is excluded from this cost and is recharged to the user department on a “pay as you go” basis.
- 26.** Current quotes on a C-Zero include a 4 year servicing and maintenance warranty. This includes all servicing and fair wear and tear maintenance. Therefore the “maintenance only” cost for years 1 – 4 is £0. All subsequent years are covered by a manufacturer’s warranty restricted to all motor and battery components, so the estimated maintenance cost of years 4-8 is £300 per annum. Again, this excludes non fair wear and tear.
- 27.** Based on an average annual mileage of 4773 miles per annum, and today’s diesel price of £1.161 per litre (excluding VAT), a diesel Multispace costs £0.131 per mile to run. This equates to an average annual cost of £625.
- 28.** Citroen estimate that the cost of the electricity used to charge the C-Zero to full capacity will cost £0.016 per mile¹. Based on the same mileage calculations as the Multispace, this would cost £76 per annum to run.

¹ Based on average standard tariff electricity prices. Some providers offer “green” electricity charged at a premium

Vehicle Excise Duty (VED) Cost

29. VED (car tax) is currently set by HMRC and is calculated based on Fuel Type and CO₂ emissions. A diesel Multispace falls into Tax Band F and costs £130 per annum. As the C-Zero emits 0 CO₂ emissions; the cost per year is £0.

Legal Implications

30. The purchase of electric vehicles will be carried out through the Government Procurement Service (GPS). The use of framework agreements for the purchase of cars light commercial vehicles (RM859/L1 & /L2) will ensure that our procurement methods stay within the boundaries of the Council's Constitution (Part 19) and EU procurement rules.

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List of background papers:

- Initial Equality Impact Assessment
- Risk Register
- Government Procurement Service framework agreement for vehicle purchase

Available upon request from the author

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