

## 9. Carbon Reduction

### **Objective 6 - Reduce carbon emissions from transport**

Our core objective for carbon dioxide reduction is principally focused on encouraging trips to either not be made, or to be made by less carbon intensive transport modes. Our policies to reduce congestion (outlined in Chapter 5) and promoting public transport, walking and cycling (Chapters 11 and 12) will also have an impact on meeting this objective.

### **Policies**

<b>Policy CBR1</b>	<b>Oxfordshire County Council will work with local communities and employers to promote sustainable travel for journeys to work, education, health and other facilities.</b>
<b>Policy CBR2</b>	<b>Oxfordshire County Council will promote the use of low carbon forms of transport and associated infrastructure.</b>
<b>Policy CBR3</b>	<b>Oxfordshire County Council will work to reduce the carbon footprint of its operation of the transport network.</b>

### **Carbon Reduction Strategy**

9.1 Our strategy for carbon reduction includes:

- \* promotion of modal switch by encouraging low and non-carbon travel;
- \* the continued promotion and development of travel planning and actions to influence travel choice;
- \* providing for low and zero carbon vehicles.

In addition to this there are some actions which can reduce the overall amount of travel but which are not transport activities. These include the use of the planning system to reduce the need to travel or to promote the substituting of trips by "virtual journeys"

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such as on-line shopping or e-commuting.

- 9.2 The UK Climate Impacts Programme's prediction is that Oxfordshire's temperature increase by 2050 is unlikely to be less than one to two degrees. One of the main conclusions of the Stern Report on the economic impacts of climate change is that the benefits of strong, early action on climate change considerably outweigh the costs. It proposes that one percent of the annual Gross Domestic Product (GDP) needs to be invested in order to avoid the worst effects of climate change, and that failure to do so could risk global GDP being up to 20 percent lower than it otherwise might be. The major actions on reducing carbon emissions are likely to be taken at the national and international level. This chapter considers the smaller contribution that can be achieved through local actions.

### Encouraging alternative modes

- 9.3 An effective policy on the street environment and public realm (as set out in Chapter 10) can make a contribution to combating climate change by reducing traffic and favouring smarter choice options such as walking, cycling and public transport.
- 9.4 Most vehicles emit carbon dioxide. The amount emitted depends on the type of vehicle used and how that vehicle is driven. In a French study, the average emissions per person kilometre of different vehicle types were shown to be:

CO <sub>2</sub> emissions (g/km per person)	Mode
0	Walking/cycles
20	Train/tram
65	Moped
80	Bus
85	125cc motorcycles
115	Car (unleaded fuel)*
115	400cc motorcycle
133	Car (diesel fuel)*
160	Large displacement motorcycle
205	Sports Utility Vehicles (4x4)
230	Small truck (less than 3.5 tonnes) diesel

(\* there is considerable current debate at the moment about the relative value of petrol versus diesel in carbon dioxide terms. The high relative value of diesel in this table is probably due to diesel cars being larger on average than petrol driven ones)

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- 9.5 Walking and cycling are virtually carbon-free forms of transport and encouraging and trips made by these modes rather than by private vehicles will contribute to reducing the carbon emissions from transport in Oxfordshire. Our strategy for promoting these modes is set out in Chapter 12 and will have a major role to play in local carbon reduction.
- 9.6 Public transport is usually less carbon intensive than private travel, particularly when dealing with large flows along particular corridors. The policies in Chapter 11 on promoting public transport will therefore also play a part in carbon reduction.
- 9.7 Powered two wheeled vehicles have a mixed carbon impact. Smaller mopeds produce fewer emissions than that for buses per passenger whilst larger ones give emissions equivalent to a car or, in the case of the largest motorcycles, a 4x4. While their impact is very different, these powered two wheelers are all in the same class for traffic regulation. It is not therefore considered appropriate to favour powered two wheelers in carbon reduction terms.
- 9.8 Traffic management can help to reduce carbon emissions by promoting smoother traffic flow and reducing excessive speeds which use more carbon. We will investigate means to promote ecological driving techniques.
- 9.9 The planning system can play a major role in the encouragement of walking and cycling in new developments by encouraging developers to use designs where the most common journeys are shorter than might otherwise be the case and by providing convenient routes for pedestrians and cyclists between origins and destinations of trips.
- 9.10 Apart from traditional transport schemes, there are a number of other initiatives which can be used to reduce carbon emissions from travel:
- \* telecommuting, where people work at home or at local "hubs" instead of commuting, can reduce overall mileage although there is some evidence that longer peak time commuting trips may be replaced in part by shorter local trips during the day;
  - \* car clubs - these reduce the need for individuals to own their own car and have been claimed to reduce members' annual mileage, although other studies have shown an
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increase in demand for larger cars; and

- \* car sharing - schemes to encourage car sharing can reduce trips, particularly for commuting (Oxfordshire County Council launched a website to match potential car sharers in August 2010).

9.8 It is likely that over the course of the Plan there will be increasing opportunities to substitute travel with other ways of conducting business. The internet can replace shopping trips with internet shopping and deliveries, commuting trips with working at home and journeys made at work with teleconferencing.

## Travel Planning

9.9 Travel planning is a process where, by a combination of education, promotion, physical measures and incentives, people are encouraged to change their travel habits to ones which cause fewer environmental problems. Usually travel planning involves the production of a travel plan; it is generating changes in travel behaviour that is important, however, not the production of a plan.

9.10 Travel planning has been a component of Oxfordshire County Council's transport planning approach for many years. In addition to meeting the statutory requirement for travel plans to be prepared for new housing and commercial developments, the focus over the first two Local Transport Plans has been in developing school travel plans in response to the national Travel to School Initiative. Our future focus will also include working with businesses to reduce car commuting and promote more efficient car use for journeys related to work.

## School Travel Planning

9.11 A school travel plan is a document produced and adopted by a school which includes measures and initiatives to increase levels of walking, cycling and coach/bus travel as appropriate, in order to bring about improved health and greater independence and helping toward the wider goal of reducing peak time congestion. Plans identify barriers to safe and sustainable travel together with potential areas where investment or supporting measures, such as educating pupils about road safety skills, can help deliver the desired outcomes.

9.12 Oxfordshire's level of car use on school journeys is one of the

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lowest in the South East and below that of most comparable shire authorities nationally. The results of school travel planning have varied widely; the most successful schools are those with a clear and enthusiastic commitment to reducing car use.

- 9.13 Distance to school is a key factor affecting how pupils travel. The extension of parental choice, moves towards centralised childcare and larger schools will all tend to increase the distances travelled to school sites. It is therefore important that new housing, wherever possible, is located within walking or cycling distance of schools sites and that safe routes are provided.
- 9.14 We will work with schools to follow up on the review of their Travel Plans with actions which will have a real impact on encouraging sustainable travel. Priority will be given to schools around congested parts of the network where there is the best chance to make significant improvements.

### **Workplace Travel Planning**

- 9.15 Workplaces are second only to schools as an established focus for travel planning, although school travel plans have received most of the time, attention and resources to date in the UK and elsewhere.
- 9.16 Measures for workplace travel planning include:
- \* working with organisations and businesses particularly in areas identified as important to Oxfordshire's economic prosperity; and
  - \* providing advice to organisations and businesses on reducing car trips and on travel plan production, implementation and management, when appropriate.
- 9.17 A workplace travel plan needs to take account of the particular circumstances of the location, workforce and nature of business to develop a realistic and reasonable programme for trip reduction. Some workplace travel plans use sophisticated and extensive surveys of travel patterns or motivations and address both travel at work and travel to work. Typical outcomes could be:
- \* new public bus or rail services linking to the site;
  - \* dedicated 'work buses' shuttling between the site and the town centre;

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- \* giving all staff public transport information;
  - \* offering personalised journey plans to staff;
  - \* interest-free season ticket loans;
  - \* special deals to reduce the cost of bus and rail travel for employees;
  - \* flexible working hours and conditions;
  - \* secure cycle parking;
  - \* changing facilities, showers and lockers;
  - \* business cycle mileage allowance;
  - \* car share, lift share and car club schemes;
  - \* preferential car parking for sharers;
  - \* parking 'cash out' (paying employees a small sum on days they do not drive);
  - \* car parking availability reduced or restricted;
  - \* parking charges;
  - \* services on site to reduce the need to travel;
  - \* encouraging teleworking; and
  - \* variations on the five-day week e.g. compressed working hours.

9.18 The most recent comprehensive data about how people travel to work in Oxfordshire come from the 2001 census:

Mode (% of people in employment)	Cherwell	Oxford	South Oxon	VOWH	West Oxon	Oxon Total
Walk	10.6	14.7	8.8	8.3	8.5	<b>10.2</b>
Cycle	3.9	14.9	3.8	6.7	4.9	<b>6.7</b>
Bus	4.9	16.3	2.7	5.1	4.6	<b>6.7</b>
Train	1.7	1.8	4.3	1.8	1.5	<b>2.3</b>
Car (as driver)	60.9	37.7	61.9	60.2	61.7	<b>56.6</b>
Car (as passenger)	6.6	4.2	4.9	5.4	5.7	<b>5.4</b>
Motorcycle	1.0	1.1	1.1	1.3	0.9	<b>1.1</b>
Work at home	9.7	8.4	11.8	10.4	11.5	<b>10.3</b>
Other	0.7	0.9	0.7	0.8	0.7	<b>0.7</b>

9.19 These data suggest that, except in Oxford, car use on the journey to work is high and offers potential to work with employers to reduce it; levels of cycling and walking to work are already high compared with other parts of the UK, although mostly as a result of the levels found in Oxford. It is considered likely that approaches targeted towards larger businesses located in the major towns will offer the best balance between effort and return.

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## **Residential Travel Planning**

- 9.20 Residential travel planning is a package of measures designed to reduce car use originating from housing areas by supporting alternative forms of transport and reducing the need to travel in the first place.
- 9.21 Residential travel planning begins with the siting of new housing as well as the design of the built environment. It is therefore a mixture of personal travel planning, developer guidance, conditions on planning permissions and land use strategy. Distance is the fundamental factor determining choice of travel mode: if housing is further from workplaces, schools, shopping or public transport then more car journeys will be more likely. Improved infrastructure, services and travel planning co-ordination can reduce the likelihood that journeys will be made by car but will not totally compensate for longer journey distances. The design of the built environment can facilitate or hinder direct access by walking cycling and public transport. No amount of promotion of active modes will be likely to overcome serious flaws in the built environment.
- 9.22 Aspects of residential travel planning could include:
- \* influencing the design and location of major new residential developments, to maximise walking, cycling and bus use and minimising the need to travel by car;
  - \* influencing travel plans written by developers to help them deliver low carbon/low car outcomes;
  - \* developing and implementing personalised travel planning approaches;
  - \* developing and introducing more sophisticated measurement techniques to capture changes in journey patterns, including travel diaries, trip counts and destination surveys; and
  - \* promoting low carbon travel.

## **Personal travel planning**

- 9.23 Personal travel planning is a targeted marketing technique, providing travel advice and information to people based on an understanding of their personal trip patterns and needs. The techniques can be targeted at specific areas and are likely to be most effective where alternatives to car travel are already good,



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or immediately following major improvements.

## **Providing for low and zero carbon vehicles**

**9.24** The UK does not perform well in terms of the average carbon emissions of cars purchased here, currently ranked 16<sup>th</sup> in Europe. Although modern engines are more fuel efficient, this has been partly offset by the choice of larger and more powerful cars that now weigh on average 30% more than in 1970. The UK does have a graduated vehicle excise duty which provides some incentive to choose more efficient vehicles and the European Union has targets for reducing average car carbon emissions. The composition of the local vehicle fleet is more easily influenced by national and European measures than by local transport policy.

**9.25** Some local authorities have sought to encourage cars with lower carbon emissions through differential car parking charges that favour more fuel efficient vehicles and penalise those with high carbon emissions but these attempts have proved controversial and are in any case less effective than Vehicle Excise Duty which applies to all UK vehicles regardless of where they are parked. It is likely that electric and/or hybrid vehicles will play a wider role in transport through the period of the LTP.

**9.26** One option which could be pursued would be to provide a network of refuelling points for vehicles using alternative fuels (such as lpg or bio-fuel) or recharging points for electric vehicles. However, there are concerns about how sustainable bio-fuels are, particularly those imported from developing countries where the plantations displace food crops or forest causing major social and environmental problems. Unless it becomes clear that any new bio-fuel was likely to be widely used and durable then it would be questionable to invest public funds in its distribution.

**9.27** For electric vehicles the impact on carbon emissions depends on the mix of power stations generating the electricity and the amount of use of the vehicles. Given the carbon intensity of producing the battery, it is not until an electric vehicle has been driven around 50,000 miles that a carbon benefit is gained overall (based on a medium-sized petrol vehicle versus an equivalent sized electric vehicle in 2011). Given this, it will be important to encourage considerable use of electric vehicles, rather than only being used for short trips. For this reason, if providing infrastructure, it will be important to work in partnership with other organisations to provide joined-up infrastructure around the county, supporting use on longer trips.



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- 9.28 To further improve the carbon benefit of electric vehicles, we will encourage the use of renewable resources in charging, and when providing charging infrastructure as a local authority, we will use renewable charging wherever practicable.
- 9.29 Electric vehicles are effectively zero emission at point of use, meaning they also bring local air quality benefits. Electric vehicles do, however, have the potential for negative impact on congestion levels; it is also important that new electric vehicle trips are replacing regular car journeys rather than other modes of transport. Incentives and proposals need to be sensitive to these impacts; Oxfordshire County Council are unlikely to support policy changes that will increase congestion and/or reduce incentives to use more sustainable travel modes. There will also need to be a considered approach to charging installations, to ensure increasing electric vehicle usage doesn't lead to more congestion. We will therefore produce a framework policy document to help assess when and where electric vehicles and infrastructure are appropriate.
- 9.30 Oxfordshire County Council will continue to work with bus operators and hauliers to encourage them to reduce the carbon emissions from their vehicles by the use of newer, more fuel efficient and lower carbon emitting vehicles and forms of operation and may consider introducing forms of regulation for less efficient vehicles if sufficient progress is not forthcoming. While the principal aim of low emission zones is to remove emission of other pollutants such as nitrogen dioxide there would be likely to be benefits in terms of promoting more efficient and lower carbon emission vehicles.

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