Department for Transport

The DfT LOCAL AUTHORITY BASIC CARBON TOOL

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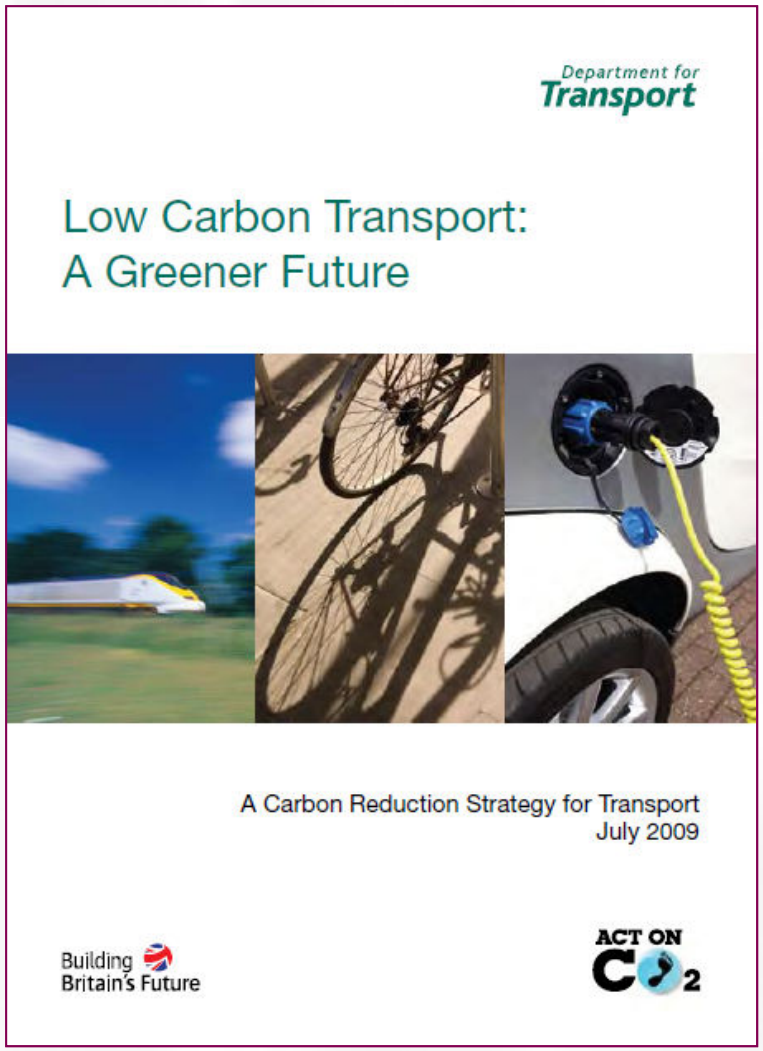
http://www.dft.gov.uk/publications/local-authority-basic-carbon-tool

Department for Transport

Climate Change Act 2008

UK Low Carbon Transition Plan

Carbon Reduction Strategy



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ATKINS STUDY OBJECTIVES

"To deliver clear guidance to the DfT on additional action the Department could take to support local authorities in delivering low carbon transport policies".

- Identify existing climate change goals and public commitments which local and regional partners have signed up to, and how they perceive transport as contributing to these goals.
- Identify policies and initiatives which local and regional partners have delivered to reduce carbon emissions and adapt to climate change.
- Identify the drivers, challenges and barriers that local authorities are facing in tackling carbon emissions from transport.
- Identify which tools, guidance and methodologies are currently being used to monitor progress at the local level and assess the carbon impact of transport policies
- Provide expert opinion upon the coverage, advantages, disadvantages of the monitoring and evaluation methodologies identified.

ATKINS

DfT Local and Regional Climate Change Research

Final Report

26/05/10

Notice

This document and its contents have been prepared and are intended solely for *DfT's* information and use in relation to *Local and Regional Climate Change Research*.

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Document History

JOB NUMBER: 5091622			DOCUMENT REF: Local and Regional Climate Change Research - Final Report.docx			
		Signed: Glen Moon Senior Transport Planner	Signed: Steven Fraser Project Manager	Signed: Steven Fraser Project Manager	Signed: Andy Southern Project Director	
C	Final	GM / HV	SF	AS	AS	26/05/10
B	Second draft	GM / HV	SF	AS	AS	30/04/10
A	First draft	GM /HV	HV	SF	AS	31/03/10
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

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LOCAL AUTHORITIES WANTED

- Advice on monitoring, target setting and the ability to monitor local interventions and appraise their impact on emissions;
- Advice on the best way to prioritise interventions
- Guidance on the type of interventions to be promoted in emerging sectors such as low carbon vehicles
- The ability to demonstrate the value for money of carbon reduction schemes.

KEY RECOMMENDATIONS

- Make best use of existing information;
- Improve data sources
- Consider the creation of a DfT Carbon Tool

Range of uses

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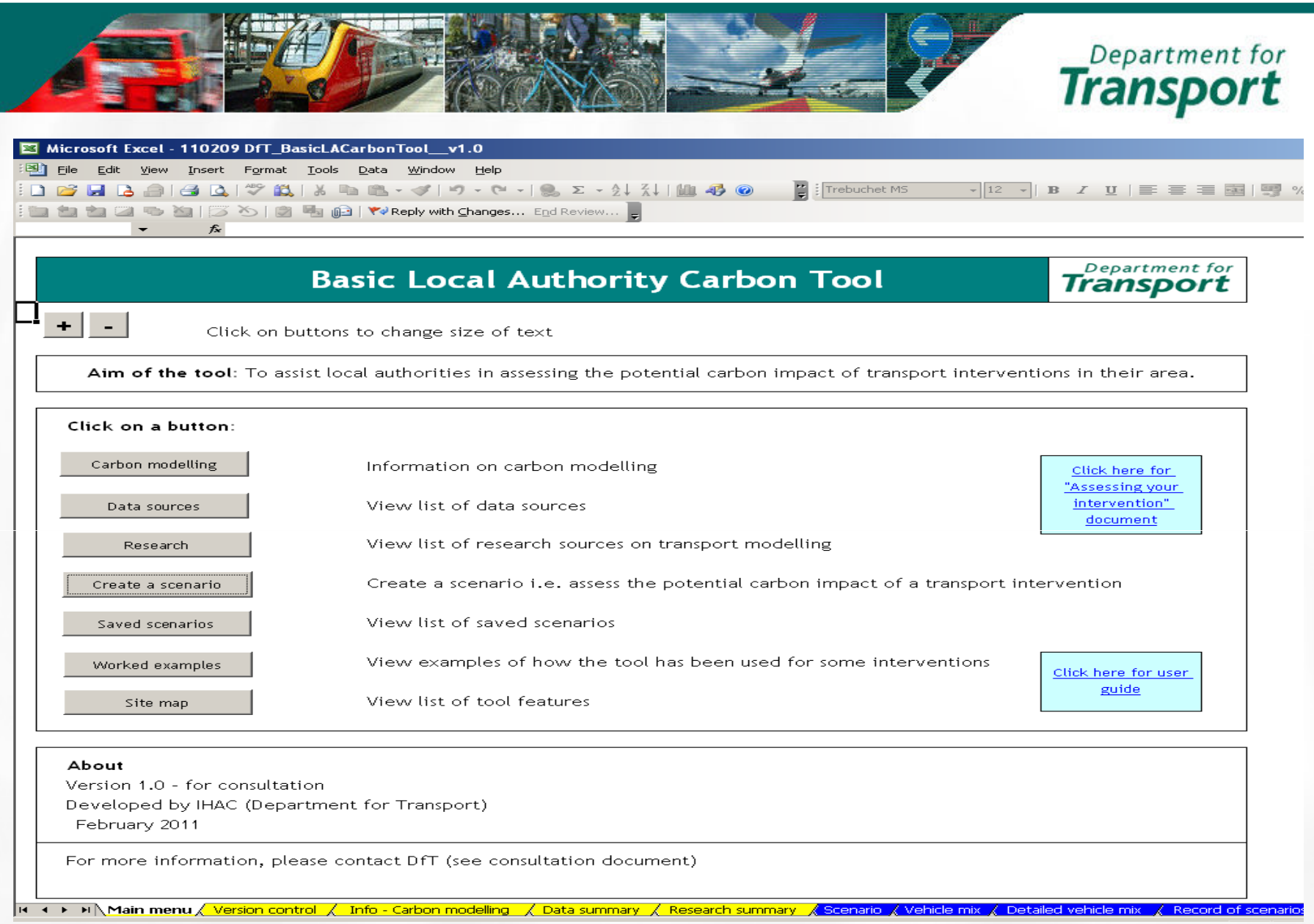
- Assess the potential effects of small-scale transport interventions on carbon emissions
- Simplifies carbon webTAG guidance
- Provides easy access to national data which impacts on emissions
- Brings together all central research on local transport and climate change



http://www.dft.gov.uk/publications/local-authority-basic-carbon-tool

Transport and Carbon Information

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The tool educates users about central transport and carbon emissions Data and Research.

Users can access this information straight from the Main Menu.

Transport and Carbon Information

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Data sources

On sources including Transport mode,

Mode

#	Dataset	Description	Responsible owner	How it can be used?	Can data be c authority leve
1	Road Traffic Statistics	The latest estimates of road traffic in Great Britain. This web page provides provisional quarterly road traffic estimates and more detailed annual estimates.	DfT (Traffic Statistics)	As a reference for local authorities who may wish to know traffic flow, and the total number of vehicle km driven by different vehicle types either in their region or, at a higher level of detail, in their local authority.	Annual traffic est local authority le breakdown of tra available beyond
2	National Travel Survey	Information on personal travel in Great Britain from the National Travel Survey. This web page provides personal travel based data from the National Travel Survey. This is a continuous survey designed to monitor long-term trends in personal travel in Great Britain.	DfT (National Travel Survey)	The survey collects information on where, how, why and when people travel as well as factors which affect personal travel such as car availability, driving licence holding and access to key services. Understanding travel behaviour may help when considering what impact a local transport intervention might have.	No: national and but there are not split up by local a
3	Vehicle registration and licensing statistics	These releases contain details of vehicle stock and estimated levels of vehicle excise duty evasion.	DfT Stats (Vehicle Registration Statistics)	As different vehicle types have different emission factors, it might be useful to consider the number of each vehicle type registered in the local authority. It should be noted, however, that licensing figures do not directly translate into distance driven.	*Yes, we should b dataset which gi category breakdo DEVELOPMENT.*
4	Annual Average Daily Traffic Flows	This site enables the user to view and download estimated traffic flows on every link of the 'A' road and motorway network in Great Britain (excludes minor roads).	DfT (Traffic Statistics)	If a proposed intervention affects a specific 'A' road, information can be obtained on the estimated traffic flows on that road.	Yes, but for majo
5	National Origin-Destination Transport	The DfT has established a databank of roadside interview, public transport and home interview survey sites. The database provides a list of site locations for existing transport datasets held by UK public	DfT	Assist user in the identification, selection and use of appropriate origin-destination transport data.	Yes

Transport and Carbon Information

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Data sources

On sources including Transport mode, Emissions and Speed

Mode

#	Dataset	Description	Responsible owner	How it can be used?	Can data be obtained at local authority level?
1	Road Traffic Statistics	The latest estimates of road traffic in Great Britain. This web page provides provisional quarterly road traffic estimates and more detailed annual estimates.	DfT (Traffic Statistics)	As a reference for local authorities who may wish to know traffic flow, and the total number of vehicle km driven by different vehicle types either in their region or, at a higher level of detail, in their local authority.	Annual traffic est local authority le breakdown of tra available beyond
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5	National Origin-	The DfT has established a databank of roadside interview, public transport and home interview survey sites. The database	DfT	Assist user in the identification, selection and use of appropriate origin-destination transport data.	Yes

Emissions

#	Dataset	Description	Responsible owner	How it can be used?	Can data be obtained at local authority level?
1	Vehicle emission factors	Contains UK average emission factors for different modes of transport.	DEFRA (produced by AEA)	Useful reference information only.	No: national averages
2	DEFRA EXEMPT Model	A model allowing a user to calculate emissions generated due to cold starts	DEFRA (produced by AEA)	If the user is interested in calculating the CO2 generated by vehicles with cold exhausts, this model will give help and guidance.	N/A
3	VCA Fuel Data / Emissions	CO_2 emission factors of all new cars from 2001	VCA	As a reference for local authorities considering impact of newer cars. Database only includes information on NEW and USED cars that were first registered on or after 1 March 2001.	N/A

Speed

#	Dataset	Description	Responsible owner	How it can be used?	Can data be obtained at local authority level?
1	DfT Congestion Statistics:	This web page provides data about congestion on the inter-urban road network managed by the Highways Agency and on other 'A' roads managed by local authorities.	DfT	A comprehensive reference of traffic flow speeds (not free flow vehicle speeds), to give an idea of the speeds on the roads where interventions may be planned.	Yes, average speeds ar managed 'A' roads. The of individual roads with times and speeds.

Transport and Carbon Information

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Research

On topics including Cycling, Smarter Choices and Behaviour Change and Attitudes

Cycling Research

#	Study	Brief description and relevant findings
1	Evaluation of Cycling City and Towns (CCTs) Programme	Monitoring and evaluation of the programme of investment into The evaluation will measure the extent to which the anticipatec impacts. It will also provide an understanding of why changes ha programme and which members of the target population have be range of data sources including monitoring changes in behaviour programme areas (with children aged 5-15 and adults aged 16 an households, as far as possible, after the implementation of the p levels throughout the programme. For more information please baseline survey findings in early 2011.

Smarter Choices Research

#	Study	Brief description and relevant findings
1	2004: Smarter Choices Changing the way we travel	Comprehensive review of evidence published in the UK and oversea authority staff relating to 24 specific initiatives, and assessed two c identifies the potential from a significant expansion of activity and local and national activity on soft measures.
2	Evaluation of the Travelling to school initiative (TTSI)	Published 24th January 2011. Initial evaluation aimed to determine journeys to school and allowing more children to take regular exer survey), qualitative research with local authorities, school travel ac which may be translated to carbon impact, although has limitations

Behavioural Change and Attitudes

#	Study	Brief description and relevant findings
1	2006: Evidence base review of public attitudes to climate change and travel choices	A comprehensive evidence review exploring public attitudes to climate change, and the
2	Exploring public attitudes to climate change and travel choices: deliberative research	Involved qualitative, deliberative research to understand public engagement with climat behavioural change. A wide range of behaviours were explored, including an extensive

Snapshot of how the tool works

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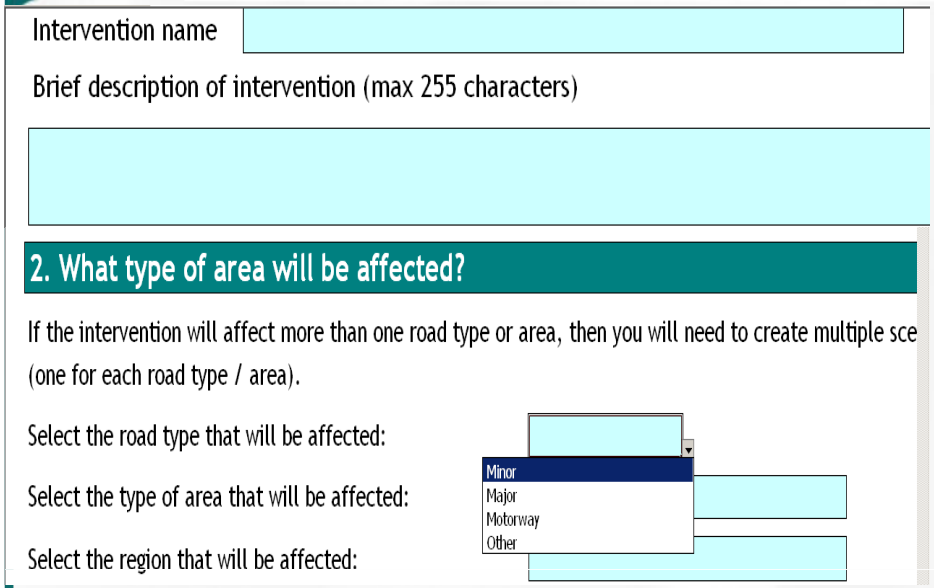
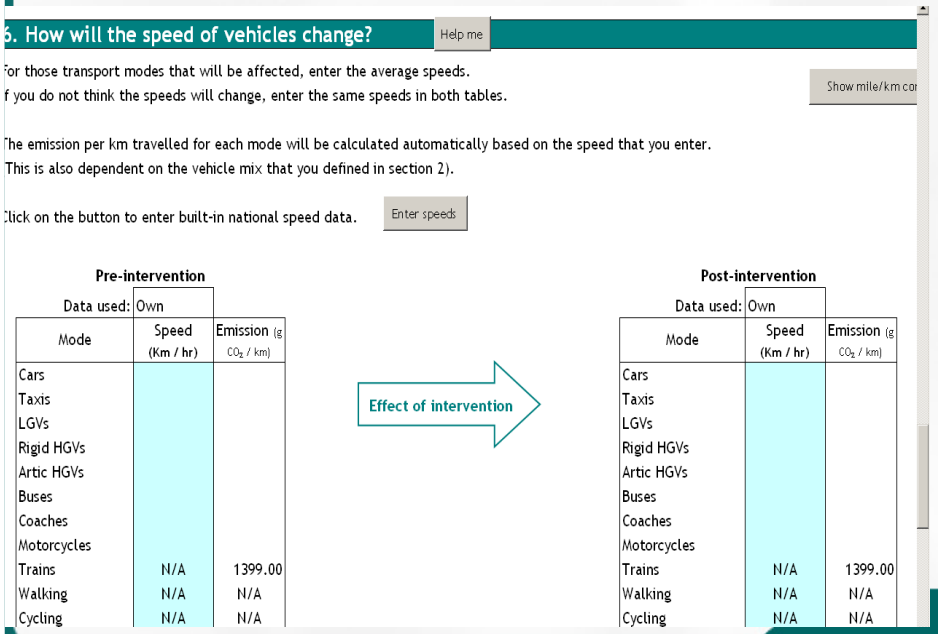




Create a scenario - name and time period affected

↓

Input local information – roads and regions

↓

Identify which transport modes the intervention affects

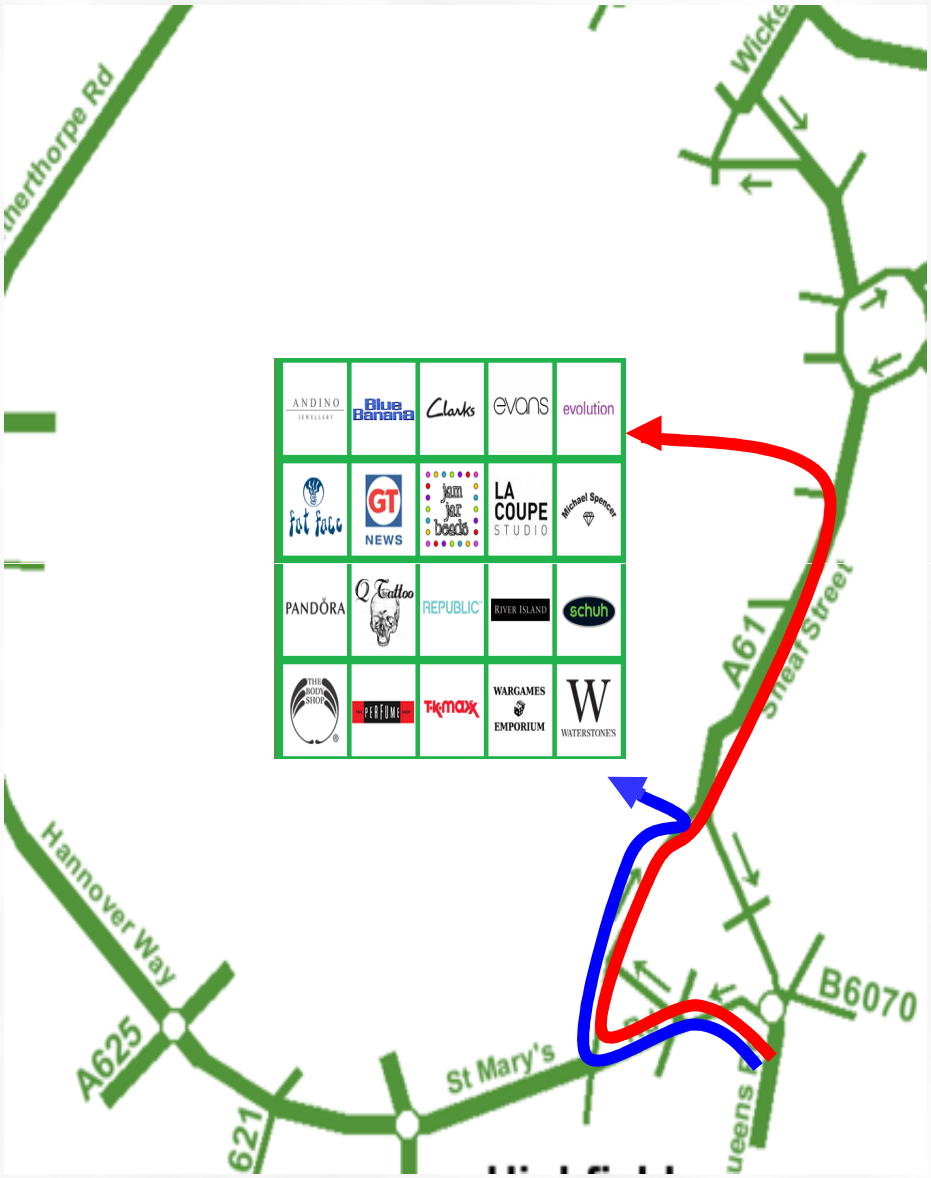
↓

Input data - distance, vehicle numbers, and days affected

↓

Enter the speed change data

Worked Example



Hypothetical worked example.

Previously freight route was around a long ring road to access Shopping Centre (Red Line).

Proposed transport Intervention will allow a more direct access route to the Shopping Centre (Blue Line).

Worked Example

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Estimate the effect of a transport intervention on carbon emissions

Return to main menu | Save details | Clear Sheet | + | -

Consider what will be affected by the transport intervention. The total change in emissions will be given at the bottom of the sheet.
The assumptions and impacts document available on the main menu sheet will help you answer the following questions.
Enter into the blue cells only.

When you have finished you can save the scenario, by clicking on the button above.

Intervention details

Intervention name: Two way access for freight on a road

Brief description of intervention (max 255 characters)

Freight would no longer have to go all the way round the ring road to access a shopping centre

1. What time period will be affected?

Describe the time period that will be affected: Peak

If the intervention will affect more than one time period, then you may need to create multiple scenarios.
(one for each time period).

2. What type of area will be affected?

If the intervention will affect more than one road type or area, then you will need to create multiple scenarios.
(one for each road type / area).

Select the road type that will be affected: Major

Select the type of area that will be affected: Urban

Select the region that will be affected: East Midlands

Select the year that will be affected: 2011

3. Which transport modes will be affected by your transport intervention?

Please tick all transport modes which will be affected:

☐ Cars	☑ LGVs	☐ Buses/coaches	☐ Trains
☐ Taxis	☑ HGVs	☐ Motorcycles	☐ Walking/cycling

(LGV = Light Goods Vehicle)

4. Optional: change vehicle mix

The tool will use national average vehicle mixes within each mode unless you wish to change them using the button. Vehicle mix

Worked Example

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4. Optional: change vehicle mix

The tool will use national average vehicle mixes within each mode unless you wish to change them using the button.

Vehicle mix

Proportions data used (Vehicle mix):

	Pre-int	Post-int
Cars	n/a	n/a
LGVs	Overall	Overall
Trains	n/a	n/a
Motorcycles	n/a	n/a

Own data always used for trains

Proportions data used (Detailed vehicle mix):

Pre-intervention	Built-in
Post-intervention	Built-in

5. How will the distance change?

For the modes that will be affected, enter the total distance travelled per mode during this time period over a year.
If you do not think the distance will change, enter the same distance in both tables.

Show mile/km converter

Please note that distances should be entered in kilometres. Use the converter on the right to convert distances from miles to km and vice versa.

Pre-intervention

Mode	Daily distance per vehicle (km)	# vehicles	Days affected per year
Cars			
Taxis			
LGVs	12	40	312
Rigid HGVs	12	40	312
Artic HGVs	12	20	312
Buses			
Coaches			
Motorcycles			
Trains*			
Walking			
Cycling			

*For trains: vehicles=carriages

Effect of intervention

Post-intervention

Mode	Daily distance per vehicle (km)	# vehicles	Days affected per year
Cars			
Taxis			
LGVs	6	40	312
Rigid HGVs	6	40	312
Artic HGVs	6	20	312
Buses			
Coaches			
Motorcycles			
Trains			
Walking			
Cycling			

Please enter notes of assumptions here (max 255 characters)

Worked Example – Output

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6. How will the speed of vehicles change?

Help me

For those transport modes that will be affected, enter the average speeds.
If you do not think the speeds will change, enter the same speeds in both tables.

Show mile/km converter

The emission per km travelled for each mode will be calculated automatically based on the speed that you enter.
(This is also dependent on the vehicle mix that you defined in section 2).

Click on the button to enter built-in national speed data. Enter speeds
*This will be based on a typical Major road in Urban area, during Peak time. (As defined in section 1 and 2).

Pre-intervention

Data used: Own

Mode	Speed (Km / hr)	Emission (g CO_2 / km)
Cars		
Taxis		
LGVs	15.0	331.55
Rigid HGVs	15.0	1163.63
Artic HGVs	15.0	1622.79
Buses		
Coaches		
Motorcycles		
Trains		
Walking		
Cycling		

Emissions from walking and cycling are taken to be negligible

Effect of intervention

Post-intervention

Data used: Own

Mode	Speed (Km / hr)	Emission (g CO_2 / km)
Cars		
Taxis		
LGVs	28.0	222.50
Rigid HGVs	28.0	871.14
Artic HGVs	28.0	1276.29
Buses		
Coaches		
Motorcycles		
Trains		
Walking		
Cycling		

Change in total CO_2 emissions -0.22 thousand tonnes CO_2 (a net saving)

Total emissions pre-intervention 0.35 thousand tonnes CO_2

Total emissions post-intervention 0.13 thousand tonnes CO_2

What do my results mean? The average carbon footprint for people in the UK is 8.9 tonnes CO_2 (The International Energy Agency)
Your carbon saving is equivalent to the effect of planting 216 trees (www.car

What about biofuels? Cost of carbon

Detailed results

Alternate Output

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Return to scenario sheet | + | -

Shadow Price of CO_2

The low, central and high values of CO2 are given in the table below. The CO2 emitted due to electricity generation is "traded", whereas the CO2 emitted by burning petrol and diesel (and other fuel types) is "non-traded". As most transport interventions are likely to decrease the vehicle km travelled by petrol and diesel vehicles, we recommend you use the central non-traded value of CO2. However, if your intervention actually results in fewer vehicle km travelled by electric cars or electric trains, you will need to consider using traded values as well

* Total change in CO_2 emissions (thousand tonnes): -0.22

* The price of CO_2 (per thousand tonnes): £52,475.53

* Total carbon saving / increase: -£11,544.62

	Traded (per thousand tonnes CO_2)			Non-traded (per thousand tonnes CO_2)		
In 2009 prices	Low	Central	High	Low	Central	High
2008	£12,000	£21,001	£26,184	£25,092	£50,183	£75,275
2009	£12,084	£21,315	£26,575	£25,468	£50,936	£76,404
2010	£12,260	£21,637	£26,974	£25,850	£51,700	£77,550
2011	£12,444	£21,967	£27,380	£26,238	£52,476	£78,713
2012	£12,636	£22,289	£27,794	£26,631	£53,263	£79,894
2013	£12,820	£22,626	£28,208	£27,031	£54,062	£81,092
2014	£13,012	£22,964	£28,630	£27,436	£54,873	£82,309
2015	£13,211	£23,309	£29,059	£27,848	£55,696	£83,543
2016	£13,410	£23,662	£29,496	£28,266	£56,531	£84,797
2017	£13,610	£24,014	£29,941	£28,690	£57,379	£86,069
2018	£13,817	£24,375	£30,386	£29,120	£58,240	£87,360
2019	£14,024	£24,743	£30,846	£29,557	£59,113	£88,670

Underlying data sources

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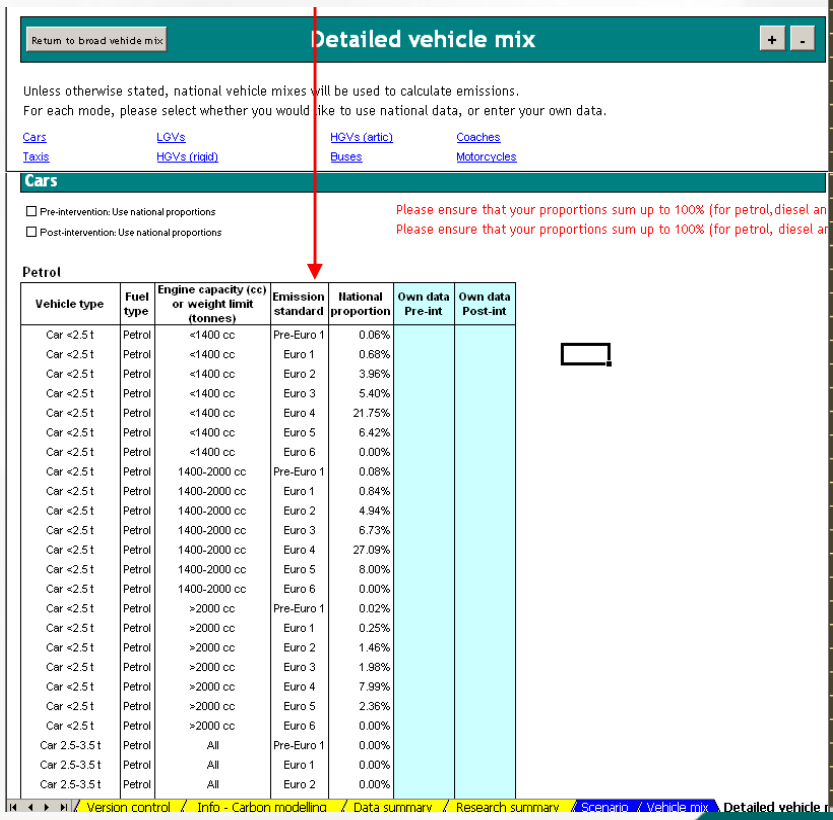
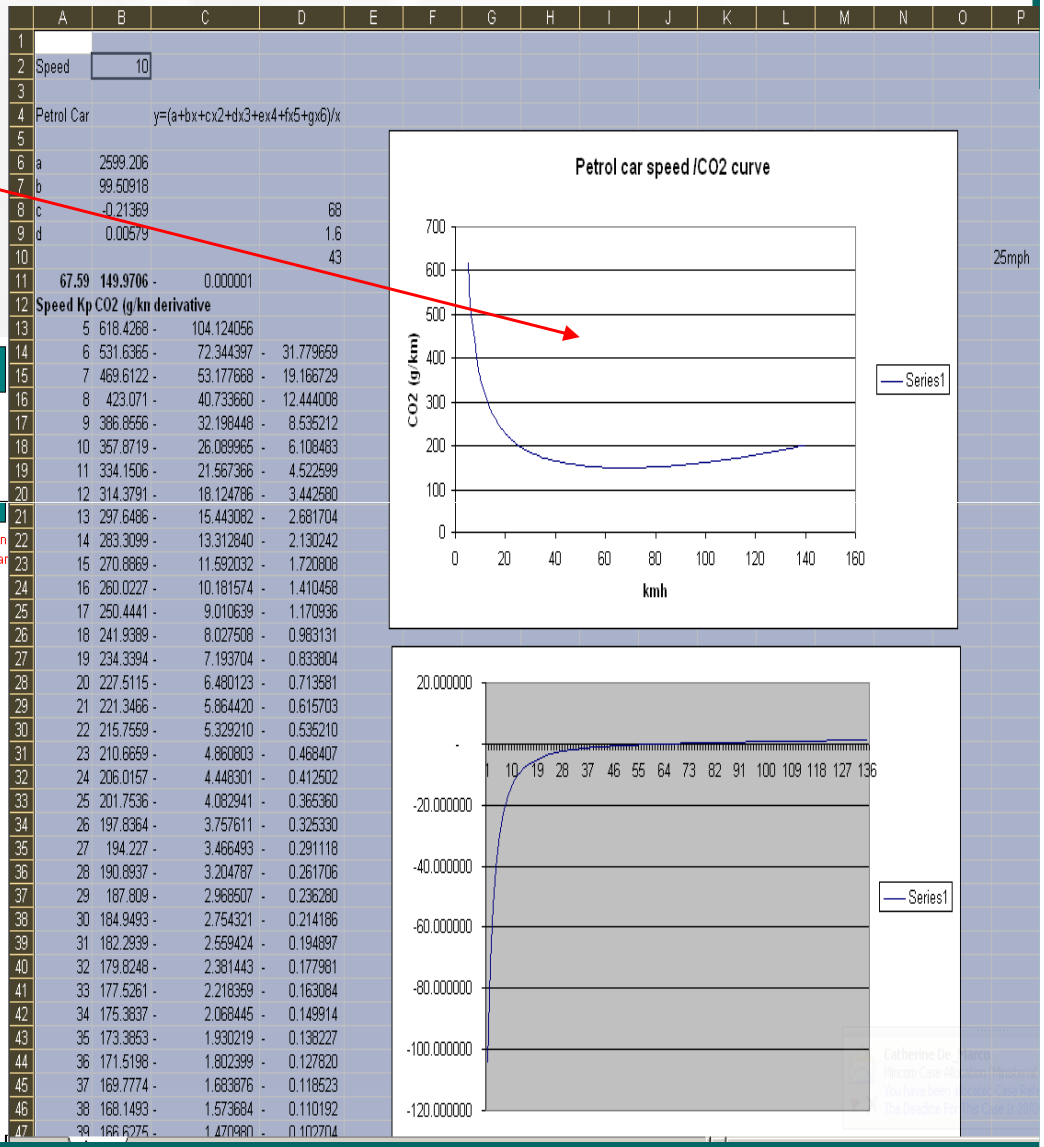
Built-in emissions-related data such as:

- Speed curves
- **Average Emissions Factors**
- Average speed data, and
- Vehicle Mix Data





Flexibility

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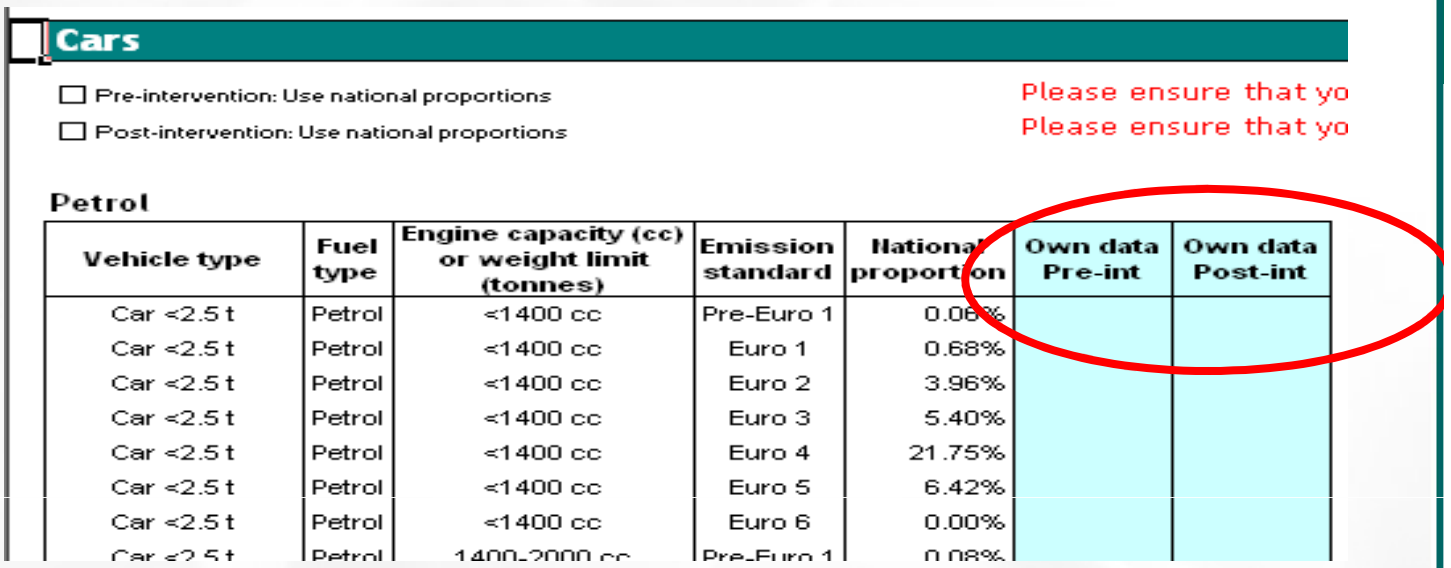
Flexibility is at the heart of the Carbon Tool.

Local Authorities are encouraged to use their own datasets wherever possible.



Cars

☐ Pre-intervention: Use national proportions

☐ Post-intervention: Use national proportions

Please ensure that yo
Please ensure that yo

Petrol

Vehicle type	Fuel type	Engine capacity (cc) or weight limit (tonnes)	Emission standard	National proportion	Own data Pre-int	Own data Post-int
Car <2.5 t	Petrol	<1400 cc	Pre-Euro 1	0.08%		
Car <2.5 t	Petrol	<1400 cc	Euro 1	0.68%		
Car <2.5 t	Petrol	<1400 cc	Euro 2	3.96%		
Car <2.5 t	Petrol	<1400 cc	Euro 3	5.40%		
Car <2.5 t	Petrol	<1400 cc	Euro 4	21.75%		
Car <2.5 t	Petrol	<1400 cc	Euro 5	6.42%		
Car <2.5 t	Petrol	<1400 cc	Euro 6	0.00%		
Car <2.5 t	Petrol	1400-2000 cc	Pre-Euro 1	0.08%		

Info - Carbon modelling | Data summary | Research summary | Scenario | Vehicle mix | Detailed vehicle mix | Record of scenarios | Cost of CO2 | Biofuels

Carbon Tool information and data is transparent and easily accessible.

Consultation

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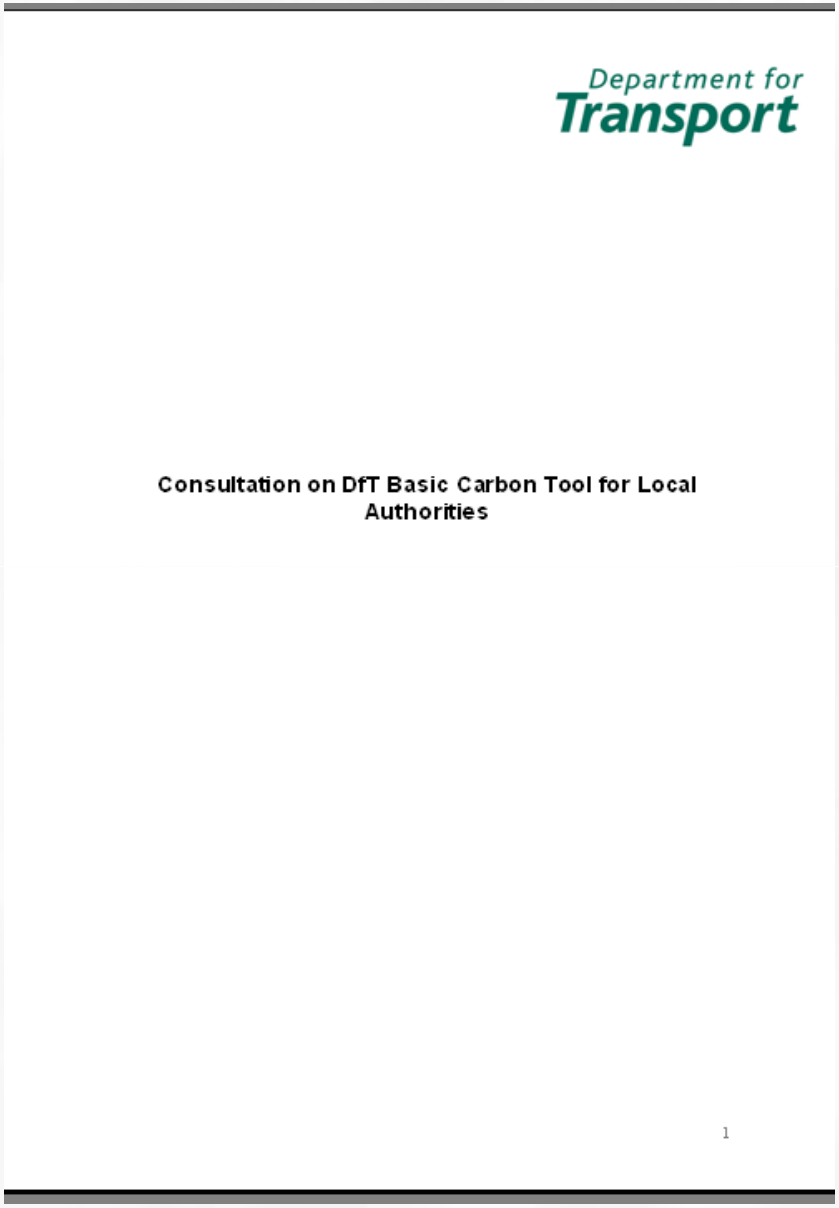

Final version release of the tool this summer. Possible enhancements, depending on resources and value added.

Next Steps

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- Carbon remains a key driver for emerging transport policy, e.g. Local Sustainable Transport Fund, Local Carbon Framework pilots,

- Coalition Government's Carbon Plan sets out high-level transport strategy: http://www.decc.gov.uk/assets/decc/What%20we%20do/A%20low%20carbon%20UK/1358-the-carbon-plan.pdf

- Authorities are already doing a lot to deliver sustainable low carbon travel. Continue to working effectively with partners and consider how best to plan for a low carbon future, especially in a tighter spending climate – central government can provide the tools, but it is up to local areas to make the decisions.

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Q&A