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Low Emission Cities Workshop

Best practice measures for increasing the take up of low pollution and carbon vehicles in cities

Wednesday, 18th November 2015, Sheffield

Low Emission Vehicle Strategy & LPG Taxi Programme

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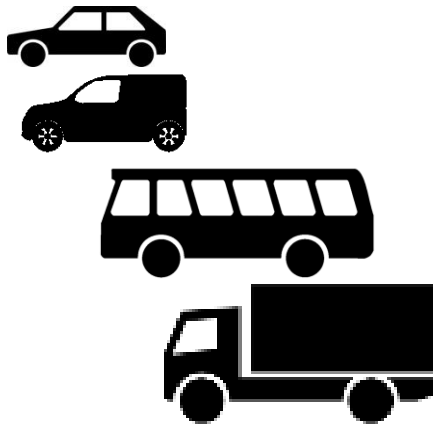


Context

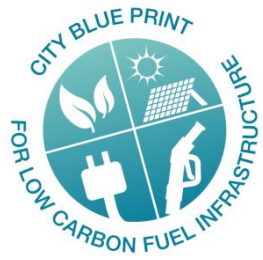
Birmingham Green Commission is targeting 60% CO₂ reduction from 1990 levels by 2027 .

- Birmingham Green Commission & Carbon Road Map
- Air quality a priority for the city- DEFRA 2020

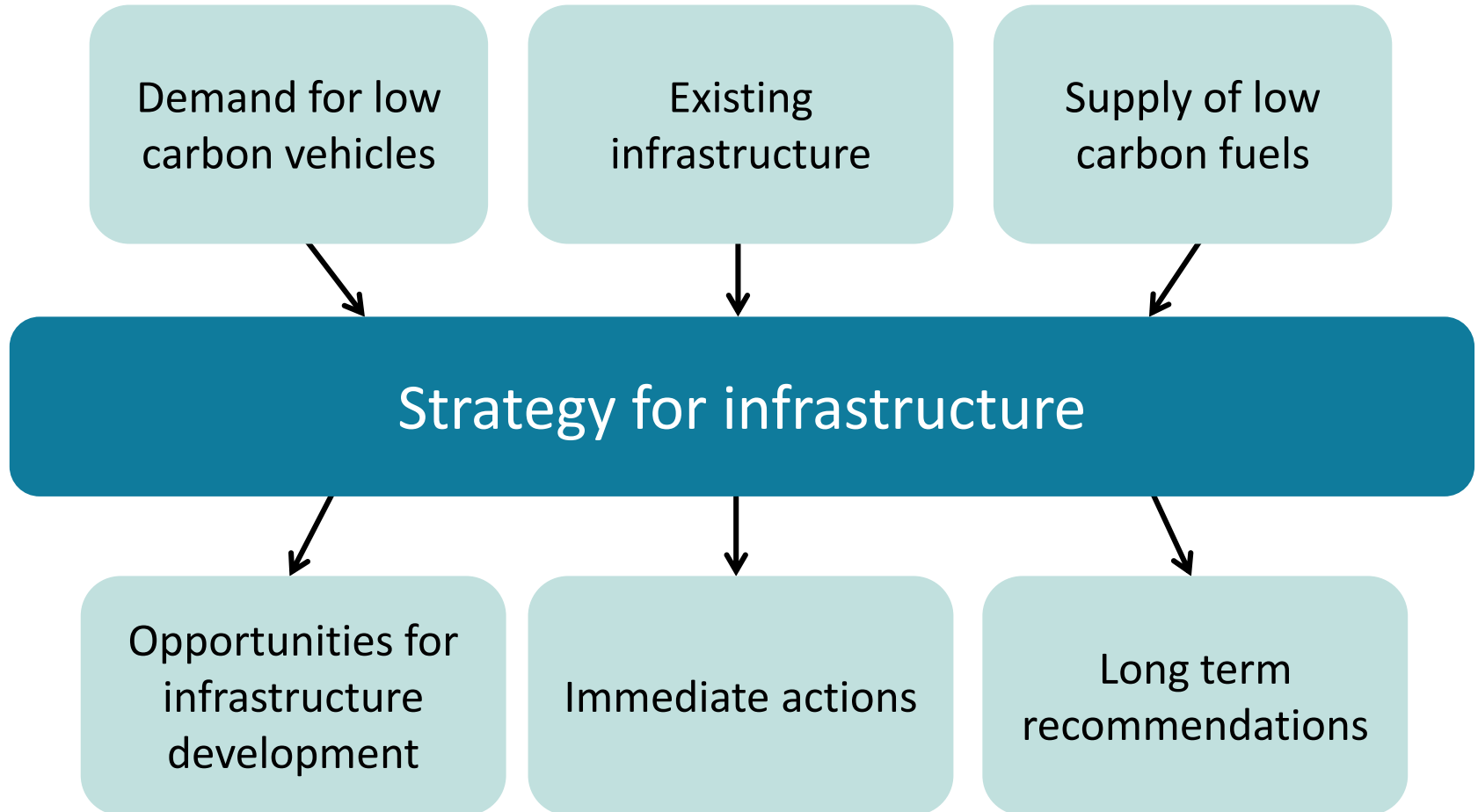
Road transport is a major contributor to greenhouse gas emissions and air pollution – BCC Fleet approx 944 vehicles.

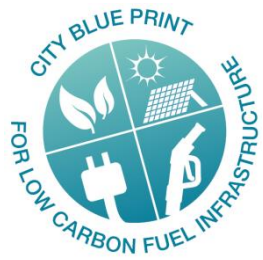


- Lack of infrastructure is a key barrier to deployment of alternative vehicles which can achieve emissions savings and air quality improvements.
- Recent Blueprint strategy identified savings of over 260,000 tonnes of CO₂ by 2035



Birmingham Blueprint sets out a refuelling infrastructure strategy

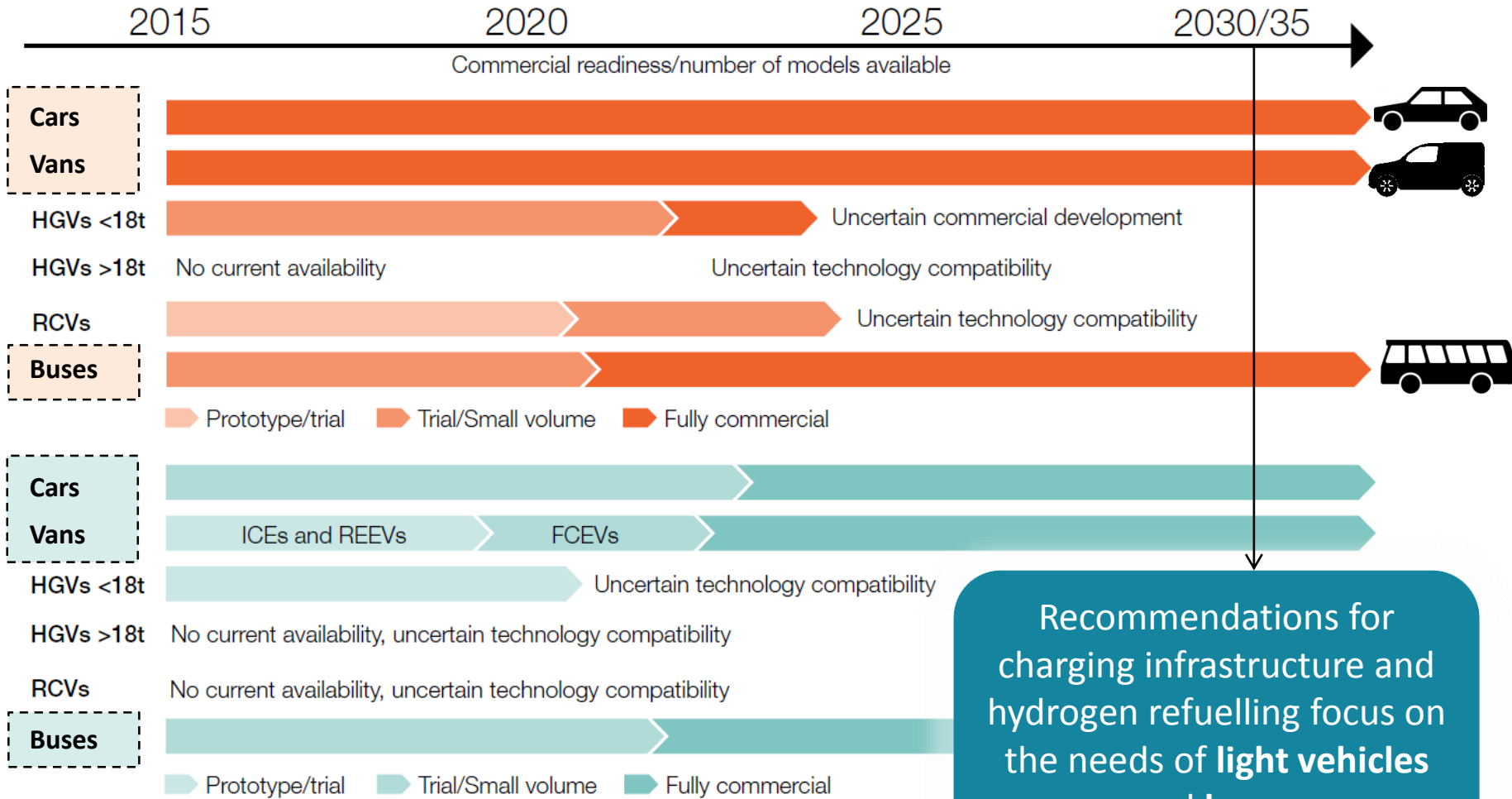




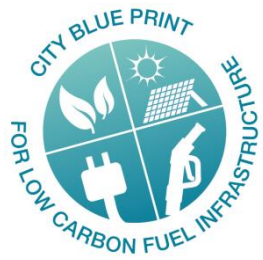
Fuels and vehicle types in the scope of the Blueprint



Market availability for plug-in electric and hydrogen vehicles



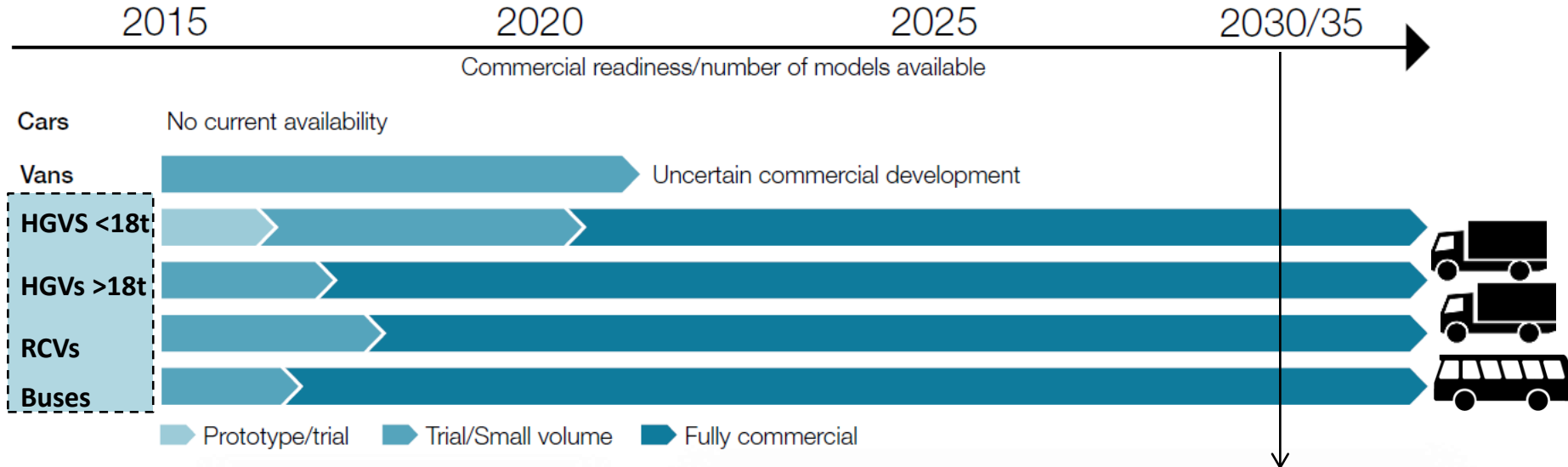
Recommendations for charging infrastructure and hydrogen refuelling focus on the needs of light vehicles and buses



Fuels and vehicle types in the scope of the Blueprint



Market availability for natural gas vehicles



Liquid air is another fuel considered in the report, with the first applications involving refrigeration for heavy goods vehicles

Recommendations for gas refuelling infrastructure refuelling focus mainly on the needs of **heavy vehicles** and **buses**

LPG is also included in the scope of the report; recommendations focus on the needs of light vehicles



Refuelling for Depot based vehicles



- Heavy vehicles such as buses and trucks (and some light vehicle fleets) typically refuel in dedicated, in-depot refuelling facilities
- In the absence of in-depot infrastructure for depot-based fleets, strategically placed public or shared facilities in Birmingham could support vehicle uptake

For depot based **electric vehicles** (buses and light vehicles) in-depot charging facilities are a definitive requirement

For depot-based **hydrogen** vehicles, in-depot refuelling is preferred in the long term; **shared refuelling in strategic locations** could be feasible in the short term

Depot based **gas vehicles** (buses and trucks) could also use shared facilities in the short term

All vehicles using **liquid air** for refrigeration are likely to be depot based – trials will involve in-depot refuelling



Make up of BCC Fleet

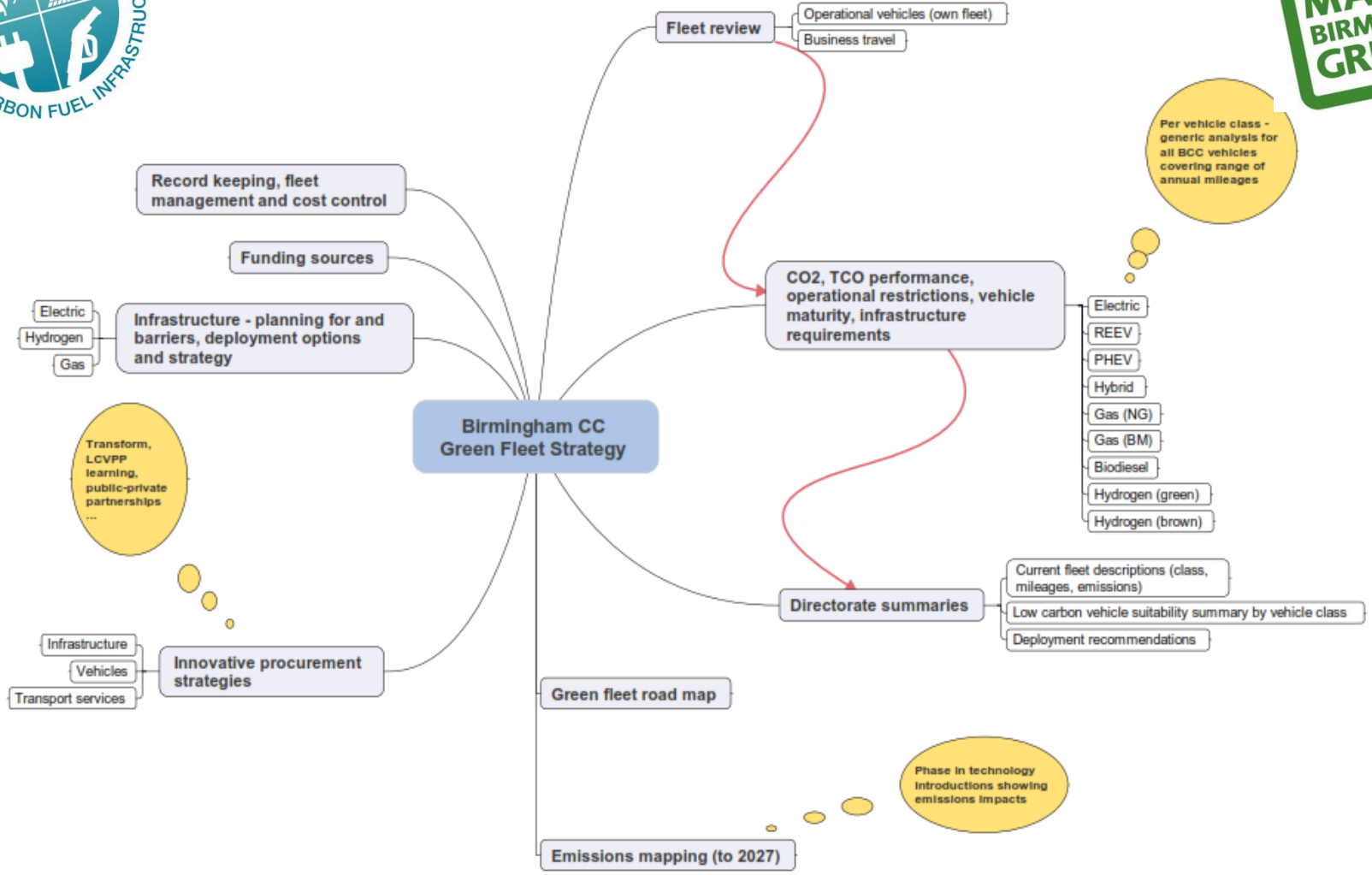
Directorate	Car	Minibus	Plant	RCV	Sweeper	Truck	Van	Grand Total
Adult & Communities	16	3				3	76	98
Development	8					3	15	26
Education	3					1	57	61
Fleet & Waste Management	68		2	147	106	57	162	542
Housing	2						83	85
Local Services	17					1	54	72
Transportation	4						2	6
Unknown	10					5	39	54
Grand Total	128	3	2	147	106	70	488	944

Key issues

- Annual Mileage
- Where Located
- Carbon reduction through downsizing, fuel monitoring, telematics , use of Car clubs etc..
- Demand is not met through supply- infrastructure & OEMS seeing business case.



Green Fleet Strategy Project scope





Strategy for public infrastructure – gas vehicles



Opportunities for public gas stations on trunk routes near Birmingham

- Preferred areas for public gas stations to enable gas vehicle use on routes in and via Birmingham
- Zones with gas network connection opportunities for CNG stations

Relevant vehicle types:



A38/M6



M42/M6

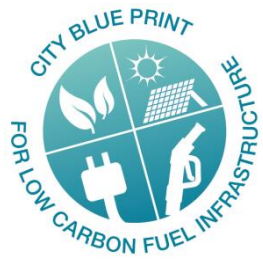


M5/M42



Hams Hall Distribution Centre





Mapping potential vehicle uptake & emissions savings by 2035



- Realisation of these emissions savings will depend on the availability of low carbon electricity, hydrogen and gas

	Potential fleet uptake (average across fleets)	WTW GHG savings (tonnes CO _{2e} /year)	Percentage WTW savings for Birmingham road transport emissions ¹
Plug-in vehicles	20% (Taxis, vans, private cars, buses and small trucks)	190,000 tonnes (based on 100% renewable electricity)	12%
Hydrogen vehicles	3% (Taxis, vans, private cars and busers)	48,000 (based on carbon neutral electrolysis)	3%
Gas vehicles	7% (Buses, heavy goods vehicles, Refuse collection vehicles)	26,000 tonnes (based on injected biomethane)	2%
Liquid air refrigerated vehicles	45% (Refrigerated heavy goods vehicles)	Dependent on applications / duty cycles	Dependent on applications / duty cycles

1 - Compared to a baseline case without low carbon vehicles



Requirements for successful implementation of Green Fleets



- Encourage and contribute to uptake of low carbon vehicles
- Use planning guidance to deliver strategy recommendations for infrastructure
 - Work closely with private fleets on demonstration and deployment activities for low carbon vehicles
 - Make land available for infrastructure providers
- Streamline planning processes for renewable fuel production and infrastructure
- Include low carbon fuels for transport into the development of energy system strategies



Strategic Actions required



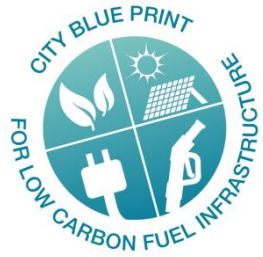
- Launch of Green fleet strategy for Council fleet & LA strategic engagement re Buses, Taxis, HGVs, LGVs, coaches & cars.
- Public/private sector and University collaboration to align energy system strategies – from waste strategies to bio-methane injected into the grid , hydrogen production and electric for heat & power.
- Low/zero carbon re-fuelling infrastructure alignment with ‘Birmingham Connected’ Transport Policy – key focus on Green Travel Districts , enabling take up of new modes & models of integrated green transport.
- Strategic focus on funding sources getting right mix of capital & revenue - LEP, H2020, OLEV, DFT.



BCC Developments



- Specific projects include:
 - Plug in EVs - OLEV LA /Taxi/Demonstrators
 - Hydrogen – H2020 NBF & bus/van project
 - Gas - infrastructure development (LEP funding approved for 4 feasibility studies)- opens up options for CNG Refuse vehicles
 - Hybrid – MSP mini buses-TRANSFORM
- Working with the private sector will be key
- Blueprint will be used to inform projects



Birmingham LPG Taxi Project





OLEV-Clean Vehicle Technology Fund

- 80 Hackney Carriage LTI TX1 & 2 -Euro 2 & 3 (9-15 years old) diesel vehicles.
- Voucher scheme- £6,150 with VAT paid by owner.
- Selection Criteria – location of Air Quality hotspots - Broad St, New St Station and Navigation St.
- New Vauxhall engine/LPG - status of the vehicle ie well-maintained, 5 years + life- no longer issues about engine or radiator related defects & original engine.
- Millbrook certification at Euro 6 (passenger & light commercial)- impact for Taxi Licensing.
- Monitoring of Emissions- LowCVP.
- Conditions of grant & Feedback.
- LPG infrastructure development – alignment with Electric ‘Taxi Only’ scheme.