

FOI-1176-2122

Posters and leaflets promoting/featuring Electric, Hydrogen Fuel Cell and Articulated/Bendy buses:

- Electric buses - Time period from January 2012 to May 2019,
- Hydrogen Fuel Cell buses - Time period from January 2004 to present day,
- Articulated/Bendy buses (including withdrawal and conversion to standard buses) - Time period from May 2002 to December 2011


Electric buses - Time period from January 2012 to May 2019

2014: poster displayed on TfL network

**Over twenty London buses
are now powered by
the same electrical energy
as satellites**

Testing new technology is just one of the ways we reinvest all our income
to run and improve your services. tfl.gov.uk/buses

MAYOR OF LONDON

 **TRANSPORT
FOR LONDON**
EVERY JOURNEY MATTERS

2014: press ad and poster displayed on TfL network



ExterionMedia
WORKING TOGETHER TO CELEBRATE YEAR OF THE BUS

Low-emission hybrid technology powers cruise ships across the Atlantic and 600 buses across London

We already operate more hybrid buses than any other European city,
with 1,700 expected to be running by 2016. Just one of the ways we
reinvest all our income to run and improve your services.
tfl.gov.uk/buses

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**TRANSPORT
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Low-emission hybrid technology powers cruise ships across the Atlantic and 1200 buses across London

Just one of the ways we reinvest all our income to run and improve
your services. tfl.gov.uk/buses

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PHOTO: G4

2016: press ad



**Get there cleaner with
70 new electric buses**

We are helping to improve air quality and health of Londoners.
Search TFL electric bus

Another reason to love your bus

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**TRANSPORT
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2016: poster displayed on TfL network



**Get there cleaner
with new electric buses
on routes 507 and 521**

We're helping to improve air
quality and health of Londoners.
Search TFL electric bus

Another reason to love your bus

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100% of new TfL buses to be electric by 2020

100% of new TfL buses to be electric by 2020

2016: Zero emissions bus leaflet distributed to bus conference attendees



About Tower Transit

Tower Transit operates route RVI under contract to TfL, and is part of the Tower Transit Group. Established in 2013, the Tower Transit Group has around 3,000 employees and operates 1,030 buses. In London, it has more than 1,700 staff and 450 buses, while the Singapore division has been running 380 vehicles and employing more than 900 staff since May 2016.

Tower Transit Group also operates around 230 buses, with two other wholly-owned subsidiary companies, Impact and Whippet.

About Clean Hydrogen In European Cities (CHIC)

The CHIC project started in 2010 and will run until December 2016. CHIC involves 23 partners from eight countries.

In total, 54 fuel cell electric buses have been operating daily within the project. As well as London, the Fuel Cells and Hydrogen Joint Undertaking (FCH JU) co-funded 26 buses and their infrastructure in Aargau (CH), Bozen (IT), Milan (IT) and Oslo (NO).

Cologne and Hamburg (DE) operate an additional fleet of eight buses through separately funded programmes. A further 20 buses were deployed in Whistler (Canada).

In addition to the 54 fuel cell buses, four hydrogen internal combustion engine (ICE) buses operated in Berlin until 2014.



London Buses



London's low emission and ultra-low emission buses: cleaner air for London



Printed on recycled paper

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CHIC



Mayor Sadiq Khan has detailed plans to urgently clean up London's air quality, which is a contributory factor in the deaths of nearly 10,000 Londoners each year.*

There is a major focus on buses within his proposals, which includes the launch of Low Emission Bus Zones in the Capital. These will only allow the greenest buses on the worst polluted routes.

From February next year, Putney High Street will become the first route to be used exclusively by cleaner buses. These will be either diesel electric hybrid double deckers, or diesel single deckers, which feature anti-pollutant systems that meet or exceed the Euro VI emission standards. The second route – between Brixton and Streatham – will be converted in October 2017.

Diesel vehicles are recognised as a major contributor to pollution and associated health impacts in London and the Mayor intends to phase them out from bus, taxi and other fleets.

We, at TfL, are therefore looking at a variety of buses that have lower emissions. These include hybrid, electric and hydrogen fuel-cell buses, as well as retrofitting current buses with cleaner exhaust systems.

What are fuel cell buses?

Fuel cell buses are a type of electric bus. They use electric motors rather than traditional engines for propulsion, and use hydrogen as a fuel. A fuel cell is used to transform hydrogen into electricity, which powers the electric motor.

London, its low emission and ultra-low emission buses

London has been pioneering the development of clean bus technology to tackle the Capital's challenging poor air quality issues.

An Ultra-Low Emission Zone (ULEZ) is being introduced within central London where all vehicles have to meet exhaust emission standards or incur a daily charge. Double-decker buses will have to be Euro VI standard hybrid, and all single-decker buses will need to be fully electric or hydrogen powered. The Low Emission Bus

Zones are outside this area and all buses operating in these corridors will need to meet or better the Euro VI engine standard.

Outside central London, Euro V and Euro IV buses will be retrofitted to reduce tailpipe nitrogen oxide (NOx) and particulate matter by up to 95 per cent. This will bring them up to, or better than, the latest Euro VI emissions standard.

London's fuel cell bus fleet

The RVI bus route has eight hydrogen fuel cell buses running between Tower Gateway



Key facts (data from end of June 2016)	
Number of fuel cell buses	8 buses (2 metre buses from Wrightbus)
Daily duty	16-18 hours
Hydrogen source & delivery	Trailer delivery of gaseous hydrogen
Total distance	806,890 miles since 2011
Fuel consumption	9.7 kg hydrogen/100 km
Diesel fuel replaced	480,469 litres
Local partners	Transport for London, Tower Transit, UK Department of Energy and Climate Change (DECC), Air Products, Wrightbus, Ballard

station and Covent Garden, as part of the EU-funded project Clean Hydrogen in European Cities (CHIC). They have been in operation along this popular commuter and tourist route since 2011 and have notched up an impressive 800,000 miles. The buses are refuelled at an Air Products' hydrogen refuelling station located at the bus depot. Each bus can be refuelled in less than 10 minutes. Two additional fuel cell buses will join the fleet in 2017 as part of the European project.

3Emotion London is expected to expand the fuel cell bus fleet further in years to come, subject to external funding. More than 70 drivers have been trained to drive these buses, and their feedback has been positive. 'It is a very nice ride because these buses do not have the vibrations and shakes of a combustion engine,' said one driver. 'It is the first time I have driven an electric engine and it is much more powerful than I expected for this type of vehicle.'

* Source: Understanding the Health Impacts of Air Pollution in London, King's College London, 14 July, 2015

2016-17: posters displayed on TfL network



CLEANER AIR FOR LONDON

Our greener fleet of buses, including hybrid and electric, is helping to make London's air cleaner for all.

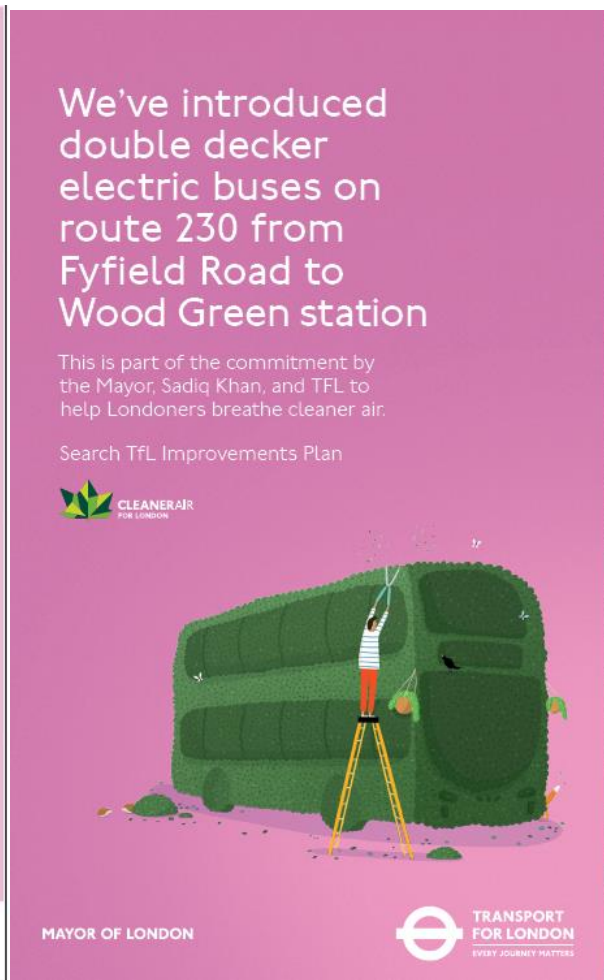
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TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS




We've introduced double decker electric buses on route 230 from Fyfield Road to Wood Green station

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS



The new Low Emission Bus Zone with greener buses runs between Lewisham Road and Bromley Road

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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The zone runs along Lewisham Road from The Junction with Blandford Road to Lewisham High School, Lewisham, and Bromley Road to Lewisham High School, Bromley.

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Putney High Street is the first of our Low Emission Bus Zones

Using our greenest buses is helping us and the Mayor, Sadiq Khan, to make London's air cleaner.

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Our buses across the entire city now meet the highest emission standards

Our core fleet* of around 9,000 buses meet the ULEZ emissions standards and some are even zero-emission**.

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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*Meal relief buses, training buses, and additional school buses provided to help with social distancing are not included in the core TfL bus fleet.
**At the tailpipe.

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2019: posters displayed on TfL network






There are now over 150 electric buses on London's roads that are kinder to the environment

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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MAYOR OF LONDON  TRANSPORT FOR LONDON




We've introduced electric buses on route C1 from Victoria to White City that are kinder to the environment

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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MAYOR OF LONDON  TRANSPORT FOR LONDON




We've introduced electric buses on route 70 from Chiswick Business Park to South Kensington that are kinder to the environment

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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MAYOR OF LONDON  TRANSPORT FOR LONDON



Every bus you catch in the central London Ultra Low Emission Zone now meets the highest emission standards

This is part of the commitment by the Mayor, Sadiq Khan, and TFL to help Londoners breathe cleaner air.

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All TFL buses operating in the zone will meet Euro VI emission standards or be electric.

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There are now 12 Low Emission Bus Zones for a greener London

This is part of the commitment by the Mayor, Sadiq Khan, and TFL to help Londoners breathe cleaner air.

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Investing in the future matters

Station upgrades, new Cycleways, more electric buses and Tfl single pay as you go frozen fares*. Every penny we earn goes back into running and improving the network.

EVERY JOURNEY MATTERS

*Bus, Tube, tram and DLK single pay as you go. Fares and Santander Cycles charges until 2020.

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2020: poster displayed on TfL network


We've introduced electric buses on route 94 from Acton Green to Piccadilly Circus

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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TRANSPORT FOR LONDON
BEST JOURNEY PRACTICE

2021: posters displayed on TfL network

A poster with a green background. A large blue leaf shape is centered, containing a white bus icon at the top, the text "ELECTRIC BUSES ON ROUTE" in white, and the number "173" in large white font below it.

This is part of the commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS

A poster with a green background. A large blue leaf shape is centered, containing a white bus icon on the left, the number "500" in large white font in the middle, and the text "ZERO EMISSION* BUSES IN OUR FLEET" in white on the right.

This is part of the continued commitment by the Mayor, Sadiq Khan, and TfL to help Londoners breathe cleaner air.

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*at the tailpipe

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TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS


Hydrogen Fuel Cell buses - Time period from January 2004 to present day,

2011: poster displayed on TfL network

Cleaner air for Londoners


Our hydrogen and hybrid buses are better for the environment, adding to our increasingly green fleet. Find out more at tfl.gov.uk/buses

Cleaner. Greener. Better.

MAYOR OF LONDON  **Transport for London** 

PM0214012/11


2014: poster displayed on TfL network




**Hydrogen powers rockets
to space and route
RV1 bus passengers to work**

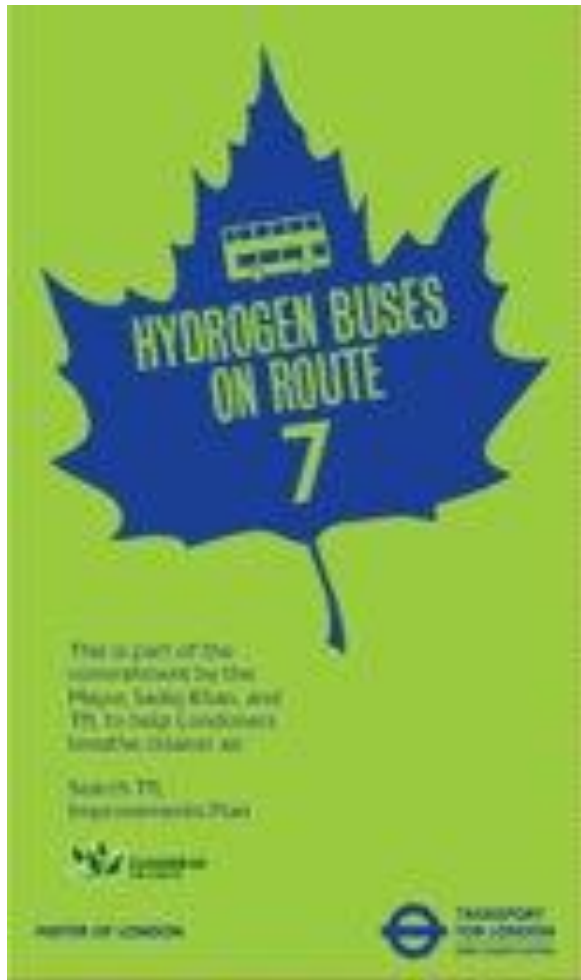
Just one of the ways we reinvest all our income to run and improve
your services. tfl.gov.uk/buses

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OF LONDON**


ExterionMedia
WORKING TOGETHER TO CELEBRATE YEAR OF THE BUS


**TRANSPORT
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EVERY JOURNEY MATTERS

2021: poster displayed on TfL network



**Articulated/Bendy buses (including withdrawal and conversion to standard buses) -
Time period from May 2002 to December 2011**

Unable to find creative for this time period promoting articulated buses