Stephen Shaw

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E-Mobility NSR Conference
“Policy, Practice and Profitability”

The Interreg IVB North Sea Region Programme
Investing in the future by working together for a sustainable and competitive region
European Union
The European Regional Development Fund
Provincie Noord-Holland
Metropoolregio Amsterdam elektrisch

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Re-charging in Public Places

Available, inter-operable, easy to use?

North Sea Region Electric Mobility Network (E-Mobility NSR)

Dr. Stephen Shaw, London Metropolitan University

E-mobility Conference “Policy, Practice and Profitability”

Haarlem, 10.10.13; Session 3: Practice, 13.55.


welcome
to the new
filling
station

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Chicken-and-egg debate: which should *come first?*

a) The charge points: Create a Public Charging Infrastructure (PCI) *ahead of market demand* to reassure drivers that they won't get stranded in a bad place with a flat battery?

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Chicken-and-egg debate: which should come first?

a) The charge points: Create a Public Charging Infrastructure (PCI) *ahead of market demand* to reassure drivers that they won't get stranded in a bad place with a flat battery?

b) Or the EVs: Or, hold back and let charge point providers *respond* to the *demand pattern* of EV driving*, as and when it develops?*

Chicken-and-egg debate: which should come first?

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Perhaps we could have a **'show of hands'** please: Which do ***you think*** is the **right approach (a) or (b)?**

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UK Government decided (a) *would be the right approach* in 2011:

3.4 Why does the Government need to support recharging infrastructure?

We must make sure the *barrier of "range anxiety" does not stop people gaining the experience of electric driving:*

'An *appropriate and effective infrastructure...is necessary to stimulate a growing market'.*

Office for Low Emission Vehicles (2011: 24): Making the Connection: The Plug-In Vehicle Infrastructure Strategy

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To pave the way for future *commercial* investment, a basic network of points must be created *ahead of market demand:*

• To enable drivers to roam with confidence *beyond the usable range of their EVs.*

• And be there for *anyone who cannot recharge at home*.

The points must be: ‘easy to locate and easy to access (ibid: 8)’.

Despite austerity elsewhere, the Government allocated > 30m Euros to match-fund *eight pilot* ***‘Plugged-In Places’…***

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To be fit for purpose, the points:

[1] available where/when needed

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To be fit for purpose, the points:

[1] available where/when needed.

[2] inter-operable, just like filling stations.

To be fit for purpose, the points must be:

[1] available where/when needed.

[2] inter-operable, just like filling stations.

[3] conveniently sited and easy to use like filling stations.

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[1] Availability:

A network of points must be *available with comprehensive coverage*, located to match expected use patterns.

There has been some thoughtful *targeting of points* in areas associated with an emerging demand, e.g. in the NE England and Greater London Plugged-In Places...

Where the 5 Mosaic target types live

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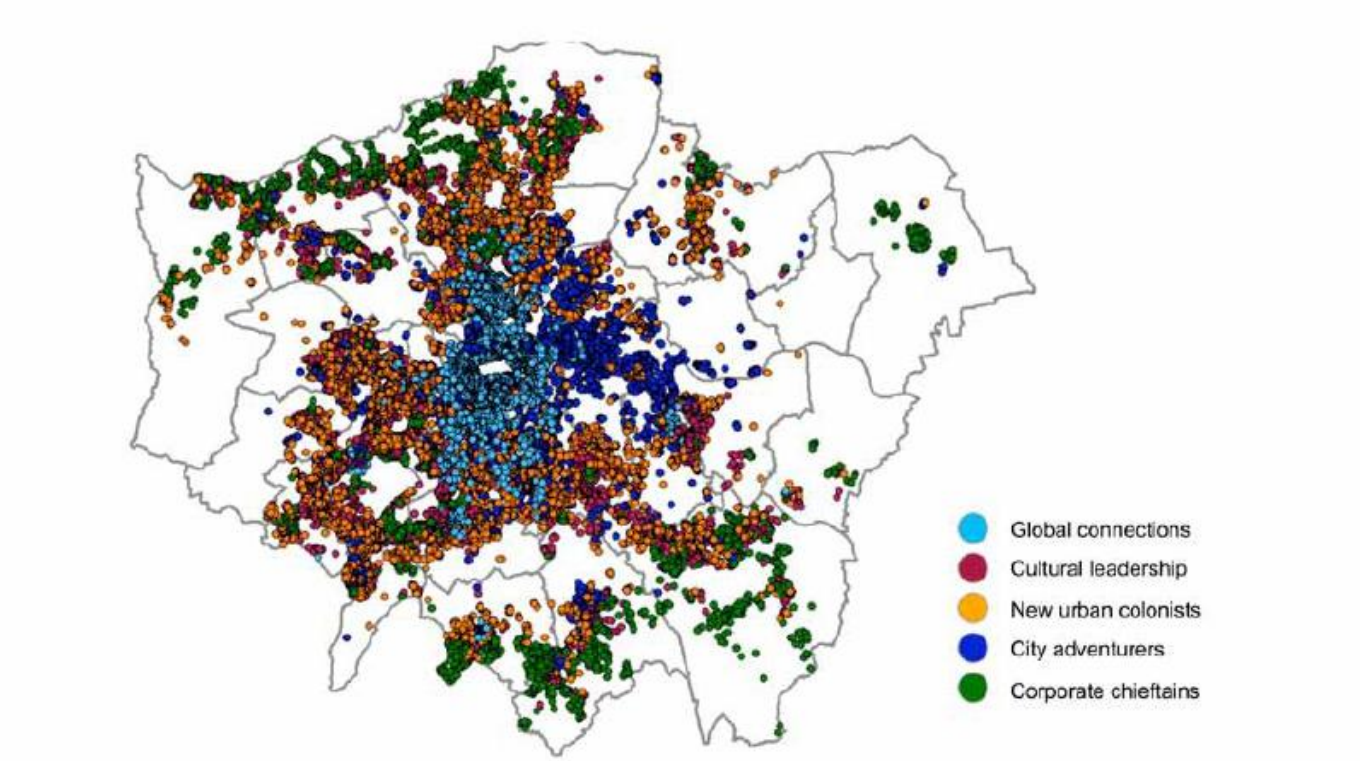

EVs registered for alternative fuel discount

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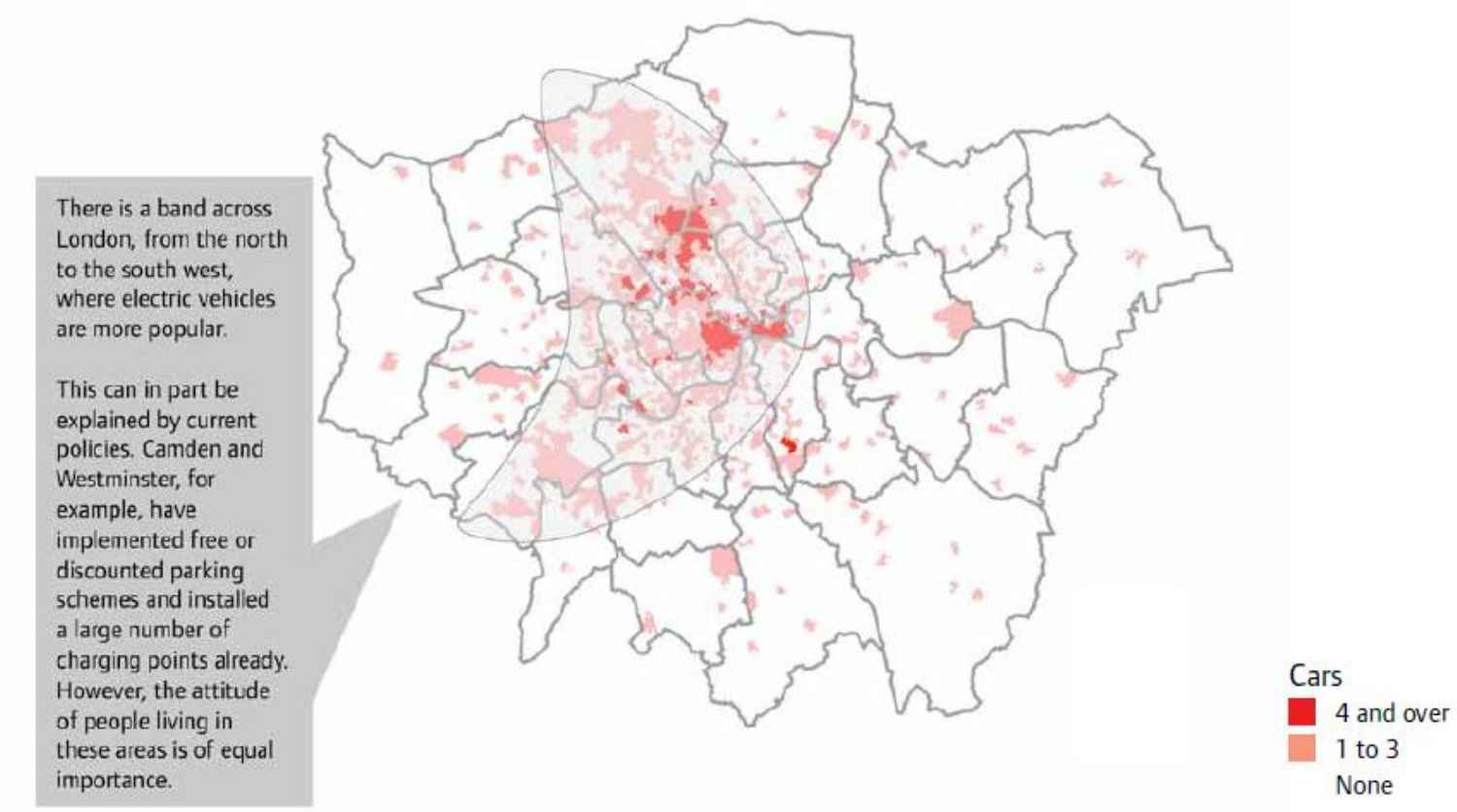
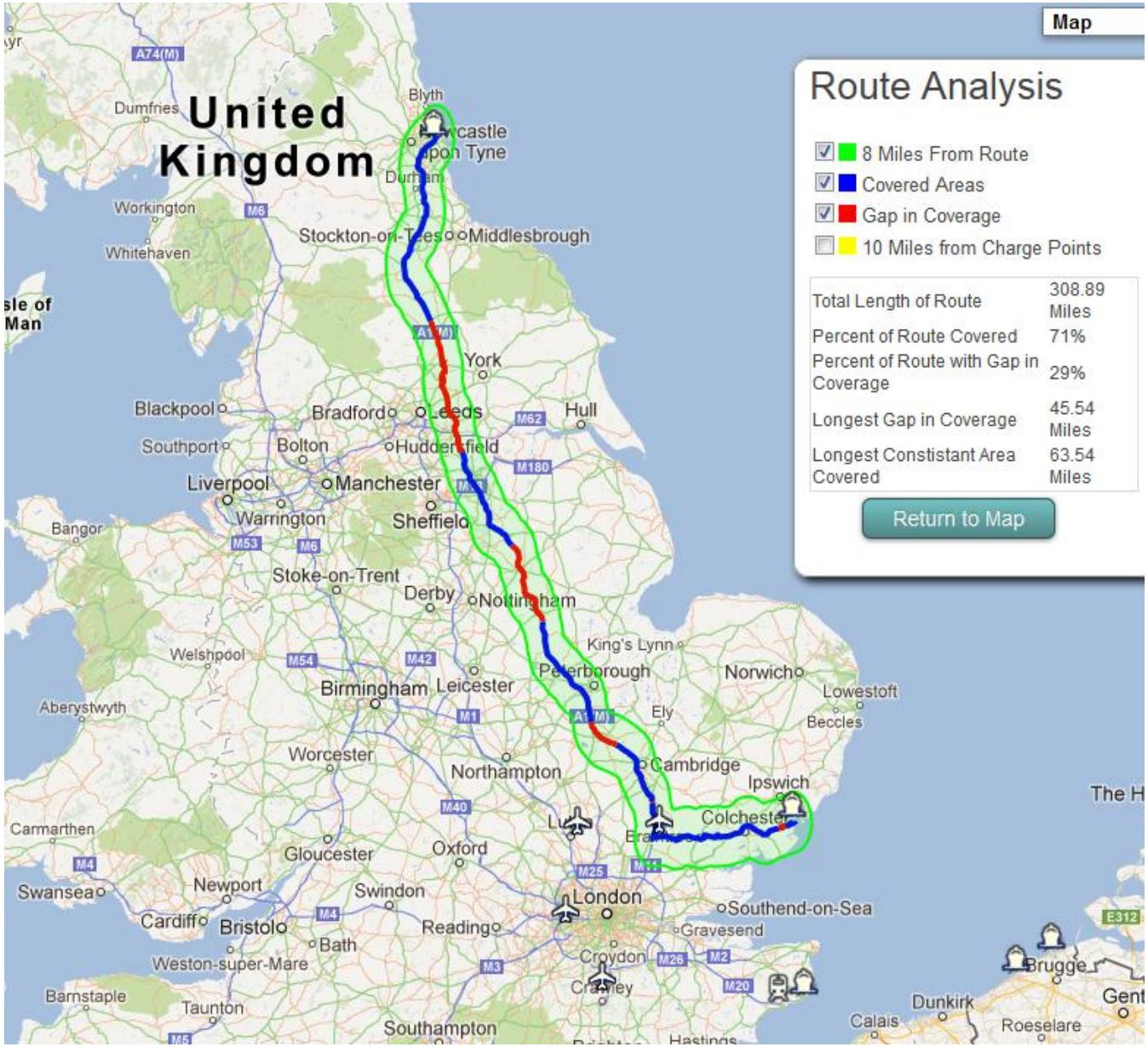
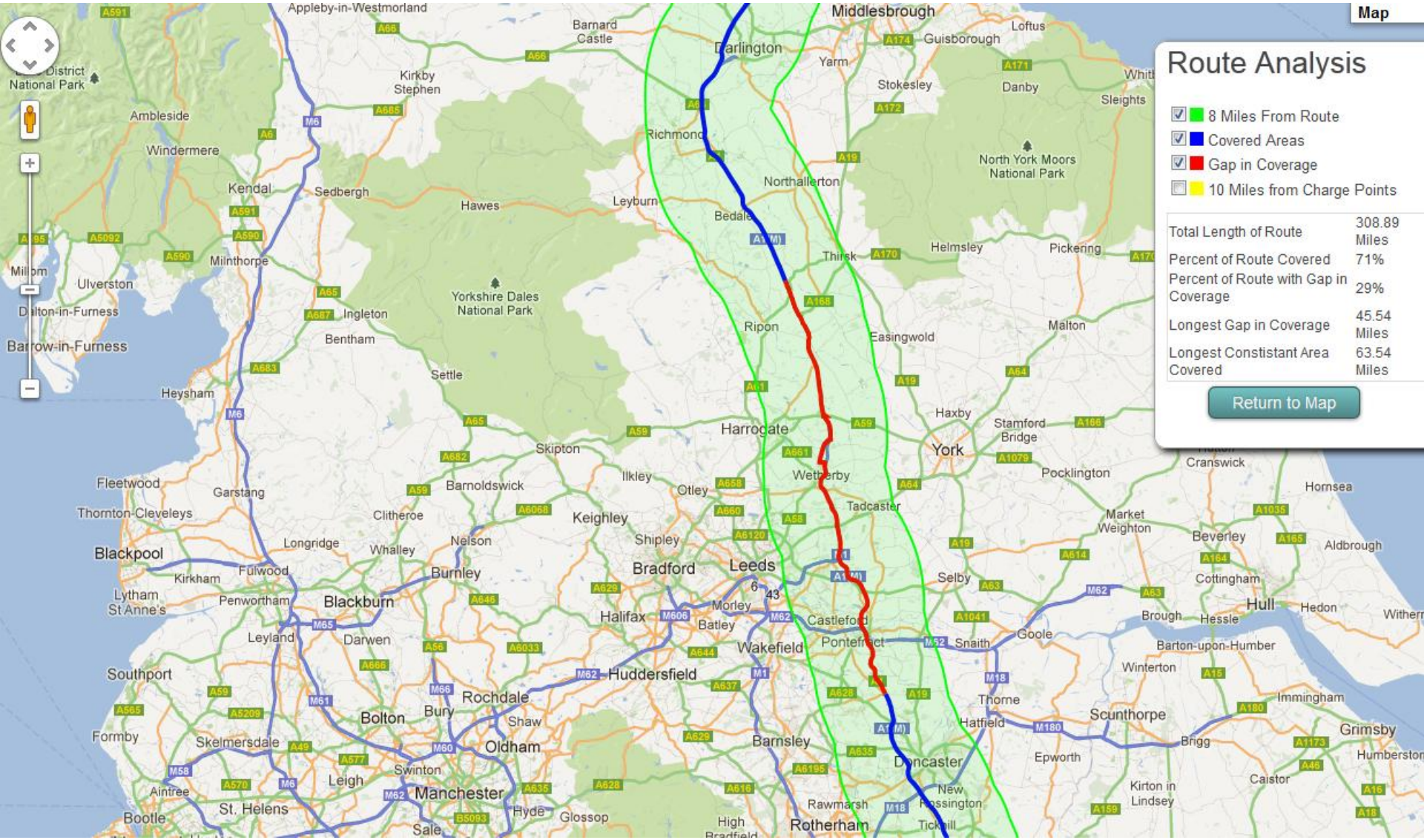



Map
Route Analysis
8 Miles From Route
Covered Areas
Gap in Coverage
10 Miles from Charge Points
Total Length of Route 308.89 Miles
Percent of Route Covered 71%
Percent of Route with Gap in Coverage 29%
Longest Gap in Coverage 45.54 Miles
Longest Constistant Area Covered 63.54 Miles
Return to Map
United Kingdom
Blyth
Dumfries
Workington
Whitehaven
Stockton-on-Tees
Middlesbrough
York
Blackpool
Bradford
Leeds
Hull
Southport
Bolton
Liverpool
Manchester
Sheffield
Warrington
Bangor
Stoke-on-Trent
Derby
Nottingham
King's Lynn
Welshpool
Peterborough
Norwich
Lowestoft
Beccles
Birmingham
Leicester
Aberystwyth
Ely
Worcester
Northampton
Cambridge
Ipswich
Colchester
Carmarthen
Gloucester
Oxford
Swansea
Newport
Swindon
London
Southend-on-Sea
Cardiff
Bristol
Reading
Gravesend
Bath
Croydon
Weston-super-Mare
Brugge
Barnstaple
Taunton
Dunkirk
Gent
Calais
Roeselare
Southampton



http://maps.citiesinstitutesurveys.org/UKEmobility.html

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Our House of Commons Transport Committee has taken a keen interest in the emerging infrastructure, not least because of the *use of public subsidy* to achieve *the intended outcomes.*

The evidence received by the Committee confirmed a somewhat *un*even geographical spread of points across the country...

Table 1: Charging points installed in each Plugged-In Place to 31 March 2012. Source: House of Commons Transport Committee (September 2012)

Plugged-In Place	Charge points installed
East of England	135
London	640
Manchester	0
Midlands	100
Milton Keynes	115
North East	399
Northern Ireland	85
Scotland	199
Total	1673

Table 2: Number of cars eligible for the plug-in car grant (from DVLA written evidence) and the number of points from the national registry across English regions and devolved authorities . Source: House of Commons Transport Committee (September 2012)

Region	**Number of Licenced Cars eligible for Plug-in Car Grant**	**Number of Charge Points on National Charge point Registry**
Northern Ireland	6	44
Scotland	70	82
Wales	14	2
East Midlands	47	18
East of England	67	9
London	147	19
North East	77	213
North West	37	10
South East	313	14
South West	180	10
West Midlands	168	28
Yorkshire and Humberside	28	3
Unknown Region	20	0
Total	**1174**	**452**

As yet, they could not discern (2012: 30) any '*clear relationship between the demand* for plug-in cars and the *supply* of public charging infrastructure'.

'...this may *raise ques*tions about the assumption that *providing infrastructure will stimulate the demand for plug-in cars'.*

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[2] Inter-operability:

From the user's perspective, the infrastructure should be *sufficiently joined-up* to enable *roaming between the networks* of different providers.

In general, however, *each P-IP* set up a *subscription-based scheme* that gave its members unlimited access to points *within their 'home' network* area, and *not* to others.

As yet, the goal of integration has been achieved on a *limited* scale, compared with models such as the *E-Laad PCI in NL.*

Exceptions include the North East of England P-IP (CyC) which has expended (e.g. into Scotland) with *pay-as-you-go* options

And East of England (EValu8) which negotiated a Memorandum with the London PI-P and other neighbours, and harmonization of technologies.

These agreements facilitate *inter-communication between their respective back-office systems*. Thus, since autumn 2012, they have *enabled 'mutual roaming'* e.g. for commuting to the capital.

source EAST

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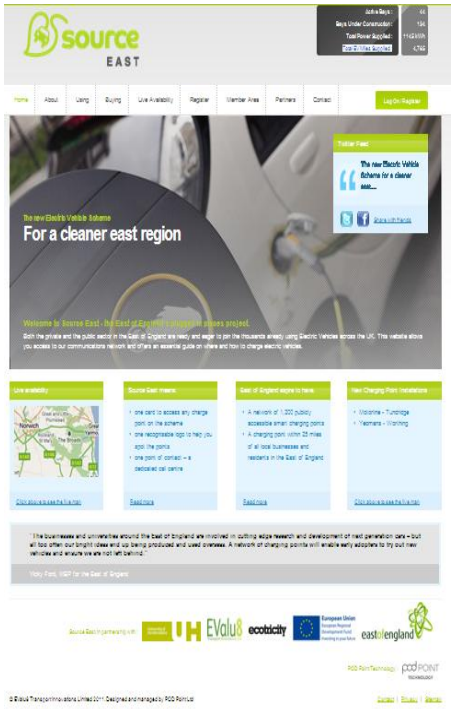

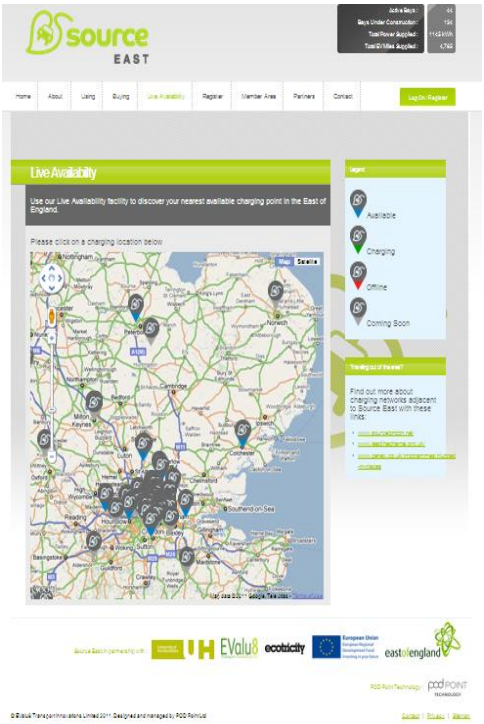

Live Availability can be seen on the website www.sourceeast.net
For further information please visit: www.evalu8-ti.org.uk

[3] Convenience and ease of use:

In principle, the infrastructure should be *sited and designed to fit around the user's travel patterns:* work, study, escorting children, and so on.

The *high visibility* of points should *reduce the range anxiety* of current and potential EV drivers.

This location near a university has proved *popular with EV users, and attracts interest from passers-by...*

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Another show of hands please:

Hands up please if you have *ever seen a charge point (anywhere).*

A recent survey of drivers in the UK (Censuswide and Rexel 2013, n = 1188) revealed that >40% of UK drivers would consider purchasing an EV over the next five years.

However, 50% were put off because they ‘would not know where to plug-in’.

>60% thought EVs ‘an impractical choice’ because of the ‘insufficient number of charging points’.

And >70% had ‘never seen a charger’.

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It seems there are a number of factors which *compromise the visibility and utility of charge points at street level.*

These include: *inadequate signing and lining* and/or poor *web* information, the incompatibility of *adjacent land-uses*, and personal *security* concerns.

With our E-Mobility partners, we are bringing the decision-makers together to work out how to get it right at this *very micro-level*…

Pilot case study: Durrants Hill Road, Apsley car park

Street level: emerging issues, lessons learnt, what works well in different contexts

EV user convenience, access and accessibility?

The Source East chargepoint (two sockets: one standard 13A/ 3kw, one fast 32A/ 7kw) is installed in a Dacorum Council owned car park that is adjacent to a canal and wooded area, close to Apsley village. Within the car park it is conveniently positioned in a location about 6 bays from the entrance/exit where there is also a toilet block and close to a wheelchair users' bay. Parking fees appear low compared with town centre sites: just 10p for under 30 minutes, 3-4 hours £0.90, all day £1.60.

Safety and personal security?

The positioning appears safe and secure for users in that the bay it self is under a streetlight and the walk to the car park exit also appears well lit. However, it is adjacent to bushes, the wooded area and canal, and so the position is not ideal for personal security.

Connections with other transport, especially public transport nodes?

The car park is close to the small commuter village of Apsley and its railway station.

Maintenance and upkeep of the charging infrastructure and streetscape?

The Council are responsible for maintenance.

Visibility of the charging points in this locality, and how does this fit with the promotional and communication strategies above?

The charging points are not visible to people outside, because of lack of advertising on public highway.
There is no external advertising of the charging points.

Rationale, measurable outputs and outcomes?

The chargepoint was installed with 50% funding from Evalue8 and 50% from Local Sustainable Transport Fund (LSTF)

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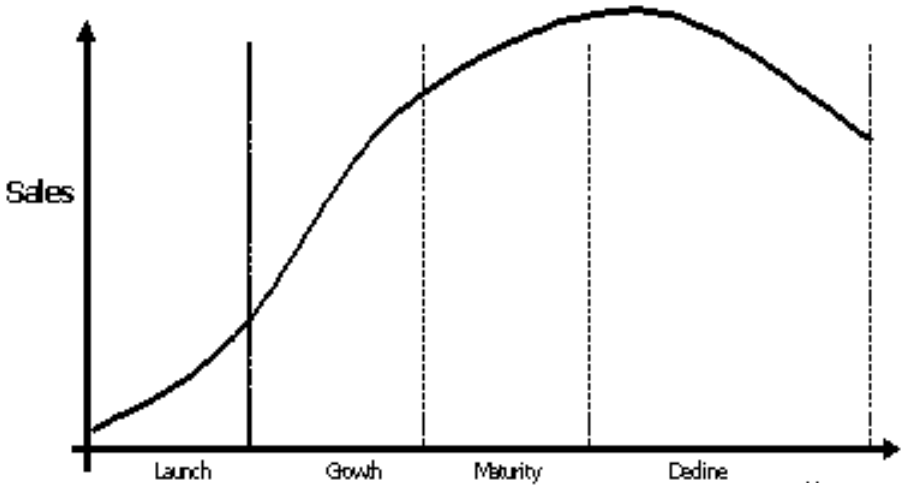
Conclusions:

Despite the *sparse provision* of public charge points until 2012/13, the *'early adopters'* seem to have embraced electric driving with relative ease and some enthusiasm.

A *bigger challenge* remains: to convince the *more cautious, perhaps skeptical 'early majority'* of mainstream drivers…



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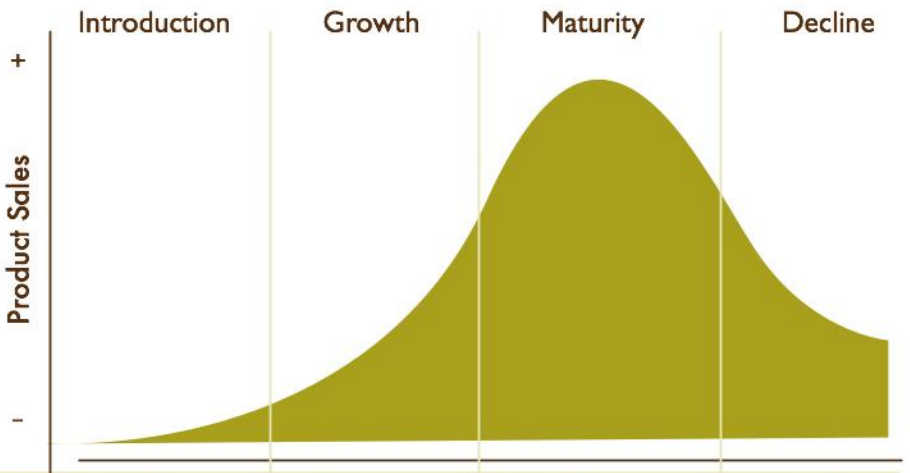
Life Cycle: Four Basic Stages



Audience	Early Adopters	Mainstream	Late Adopters	Laggards
Market	Small	Growing	Large	Contracting
Sales	Low	High	Flattening	Moderate
Competition	Low	Moderate	High	Moderate
Business Focus	Awareness	Market Share	Customer Retention	Transition
Design Focus	Tuning	Scaling	Support	Transition

As the Royal Academy of Engineering (2010: 7) observed, ‘creating a pervasive network of public charging points [will be] a *major but necessary investment if EVs are to achieve acceptability in mainstream market segments’.*

It *isn’t easy* to install EV infrastructure *ahead of demand,* and to ensure that it is *fit for purpose from the user’s point of view.*

But, unless we get it right, the credibility of electric driving may be seriously *undermined:* not only to *potential mainstream converts,* but also to *national and local politicians* as key stakeholders in the project.

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