

Electric Vehicle “Chargeplace” Scotland Network



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Vehicle Evolution

Mitsubishi iMIEV

- Approx 22 Kwh



Mercedes E Cell

- Approx 80 Kwh



FIA Formula E 2014



Scottish & UK Strategy

- TS developed its technology agnostic carbon reduction strategy in 2011/12.
- At the same time DfT/Office of Low Emission Vehicles developed the 2 year Plugged in Places initiative to set up a national EV charging Infrastructure to provide a credible offer to all users.
- Requires capture of charging data allowing carbon reduction to be calculated.
- TS became one of 8 partners of OLEV.

PiP Partners

8 partners covering circa 70% of UK :-

London, East of England,
Milton Keynes, Midlands,
Manchester, North East,
Northern Ireland, Scotland.

PiP Partners Progress by Mid 2014

<u>Partner</u>	<u>Charge Pt Nos</u>
London	1500
East of England	649
Milton Keynes	220
Midlands	665
Manchester	270
North East	1170
Northern Ireland	385
Scotland	<u>710</u>
TOTAL	5569

PiP UK Operationally

- Each publicly available charge point is registered on National Chargepoint Register (NCR)
www.nationalchargepointregistry.com
- Chargepoint access to each partners membership schemes using RFID cards.
- Critical to transactions is each charge point manufacturers outlet is configured to have an “Open Charge point protocol” OCCP ie it will issue data to any back office system !
- Payments transacted via each separate partners back office system to members accounts.
- **Except** Scotland and North East England where in addition an App based “**Pay as you Go**” system launched in summer 2013.
- **In Scotland will ideally remain free to use until at least Dec14 !**

OLEV LCV Approach

- DfT/OLEV plan was for two year PiP funding programme to 2013 but extended to 2014.
- Focus remains on charging infrastructure.
- OLEV National Strategy used by TS to partly fund 2014/15.
- Wider recognition growing of technologies as set out in DfTs ULEV strategy 2015 -20.
Impact on air quality and carbon reduction to comply with EEC legislative and worldwide targets.

LCV Scottish Government Commitments

- Almost complete decarbonisation of road journeys by 2050 set out in the Climate Change (Scotland) Act 2009.
- Significant progress required by 2030, via the widespread adoption of low carbon vehicles.
- **First EV charging infrastructure across Scotland was available in 2012 and is increasing at approx 200 posts/year to 2015 and likely 2016.**

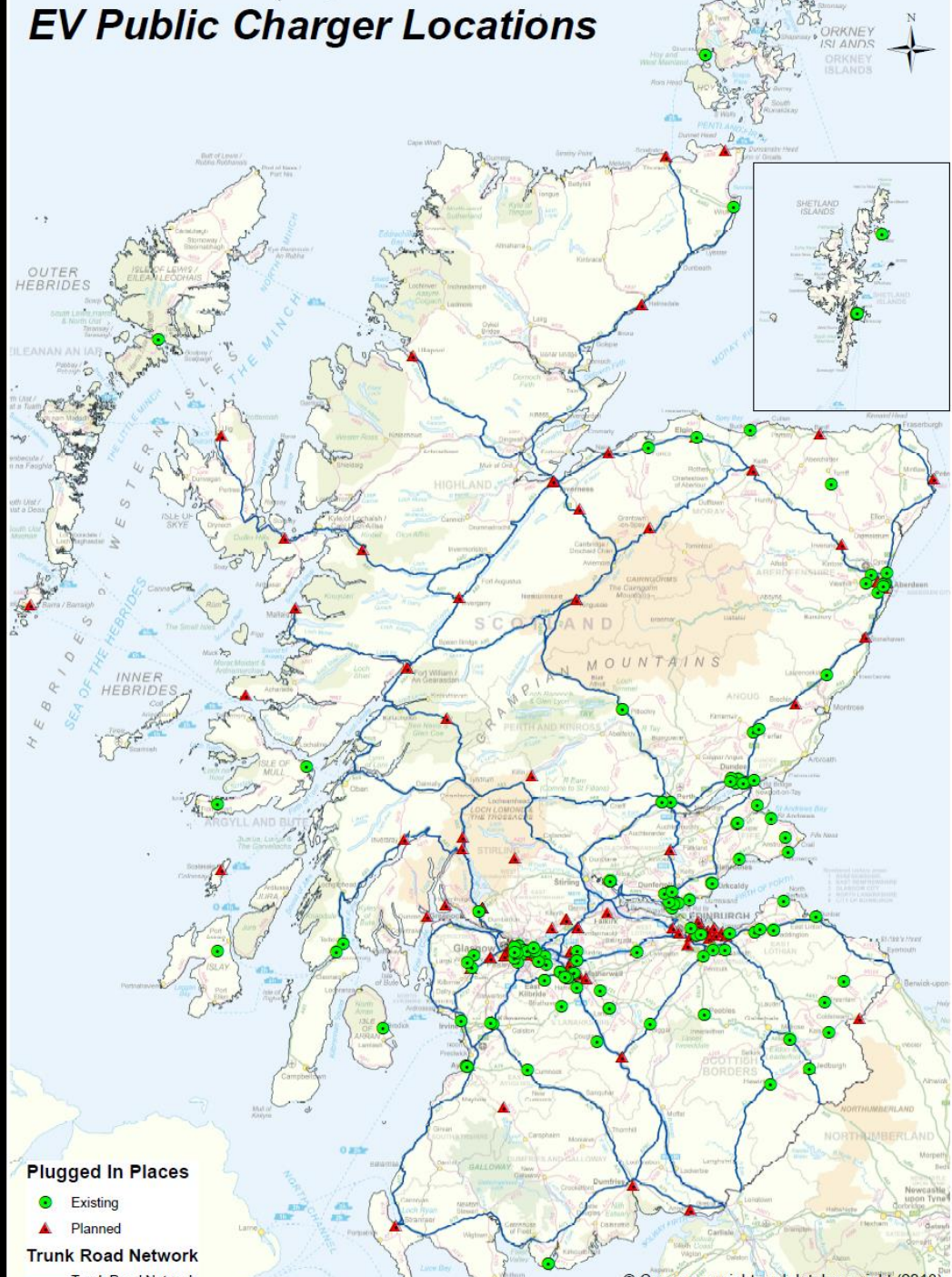
Approach

- In 2010/12- Government - All 32 CPPs/LAs, gap funded EVs and total infrastructure.
- Ensured max trialling, high profile commercial use.
- Acted as a catalyst for EV industry leadership.
- 12/13 Public Network Commenced - 7 cities & largest conurbations, primary road network rapid combi chargers, commercial & domestic chargers.
- 13/14 -11 medium CPPs/LAs, primary road network rapid triple chargers, commercial, domestic and rapid combis upgraded to CCS ! (only TS doing this in UK)

“Chargeplace” Scotland

- Map of EV Public Charger Locations across Scotland by Mid 2014 is attached, locations are shown on the National Chargepoint Registry (www.nationalchargepointregistry.com)
- Also see www.greenerscotland.org for “Chargeplace” Scotland the trademarked national brand identity.

EV Public Charger Locations



Plugged In Places

- Existing
- ▲ Planned

Trunk Road Network

— Trunk Road Network

Scotland EV Investment – Since 2010



- £10.4m on LCVs and charging infrastructure
- 2010/12 - 501 charging outlets, 420 in govt organisations and 81 public.
- In 2012/13 funded the installation of approx 200 charging outlets across major centres of population in public locations across Scotland starting to form a grid of facilities.
- In 2013/14 provided funding for a further 210 outlets across medium centres of population and continue at 35 mile intervals the :-
“The High Powered Interoperable Network”

Achievements !

1. 3rd Largest Charging Network in UK.
2. Largest fleet EV charging facilities sponsorship deal in UK via Dundee Taxis (50 Nissan Leafs / 90 to follow).
3. First CCS Rapid Charger installation in UK at Port Ellen and Oban ferry ports.
4. First CCS Rapid Charger in a Ski Resort (Glencoe) across Europe !

TS Plans 2014/15

- In 2014/15 fund last smallest 10 centres of population CPPs, commercial, domestic and continue “**The High Powered Interoperable Network**” of charging facilities.
- Develop with EVALU8 new remote location rapid CCS charging stations by trickle grid charged battery in unit power storage.
- Provide 100% grant funding across all 32 CPPs to install 22 Kw charging units at Government manned Offices.
- With partners consider multi LCV technology refuelling sites, utilising economies of scale.

TS 2015/16 Wider Future



- Complete with partners **“The High Powered Interoperable Network”**. Fund wider Govt and fleet operating organisations. Assess delivery by business models eg consortia partners.
- Upon EV critical masses, commercially outsource network back office function.
- Seek funders and hosts to commence development of other emerging technologies to decarbonise transport eg :-
LNG HGV refuelling facilities,
Hydrogen generation / refuelling facilities,
Inductive / pantograph Charging.