

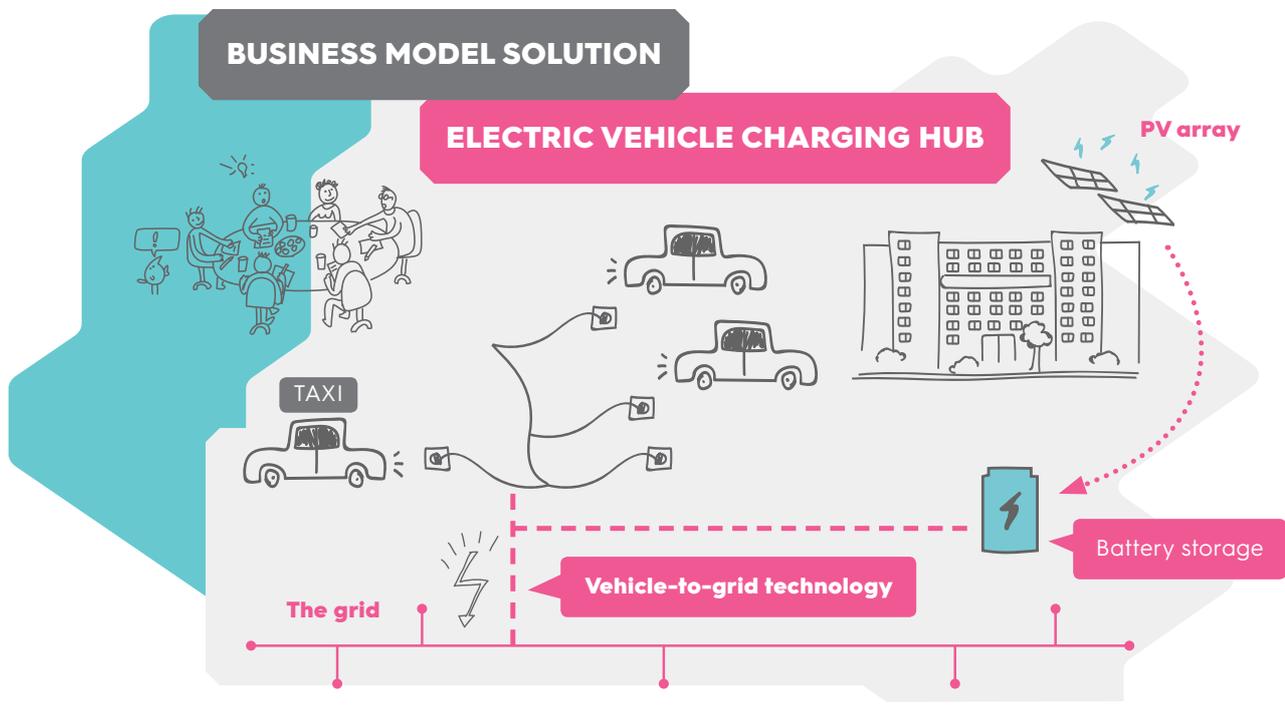
EV charging hub in city centre car park

Glasgow

Smart electricity grid & e-mobility

BUSINESS MODEL SOLUTION

ELECTRIC VEHICLE CHARGING HUB



The objective of this solution is to create an electric vehicle (EV) charging hub in the project district that utilises renewable energy and is connected to battery storage. As well as understanding the various technological challenges of integrating these technologies, the hub will include a range of charger types which, via connection to the battery and the grid, will allow for exploration of innovative business models related to 'vehicle-to-grid' technology, electric taxis, and citizen parking options for EVs in congested cities.

Main partners involved:

SIEMENS



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FACTSHEET G5

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How does it work?

The challenge is to develop the business case for the concentrated deployment of EV chargers, as well as the connection of those chargers to renewable technologies and battery storage. The charging infrastructure will be funded by TSCO with the innovative connection to renewables and storage funded by the Horizon 2020 programme.

Connected EVs will receive charge directly from photovoltaic array(s) when demand and generation match. Where generation and demand are asynchronous, electric vehicles will charge from the battery or grid as appropriate.

The control software will seek to understand the parameters set by drivers with regards to: the minimum charge required and utilised, and; headroom above the minimum amount for 'vehicle-to-grid' approaches to be used in a grid demand-response measure. The scope for this will be relative to the type of charger, with more 'vehicle-to-grid' benefit anticipated from the slower chargers, due to the electric vehicle battery being connected for a longer time, and therefore theoretically available to provide demand response. Utilisation of the most up-to-date charger communication software will enable more sophisticated control of the charging.

Estimated impacts

The solution should:

- Provide charge to a wide range of vehicles in the Duke St car park, over varying charging time frames.
- Utilise storage to minimise the impact of charging on electrical network.
- Utilise storage to maximise local renewable energy use.
- Provide grid support, where necessary, through demand-side response.

Replication potential

Glasgow City Council operates 6 multistorey car parks. In addition, a number of private car parks exist in the city. Successful delivery of the battery storage linked to EV charging could result in deployment of this technology in Glasgow City Council-operated car parks alongside EV charging deployment. Additional work will be done to engage private car park owners regarding deployment on their sites.

Contact:

ruggedised@glasgow.gov.uk



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