Driving the roll-out of electric vehicle charging infrastructure

Emu Analytics

The Challenge

- Provide local authorities with the data they need to apply for funding to roll out on-street electric vehicle charging infrastructure

The Benefits

- Faster roll-out of on-street charging infrastructure
- Over 400 unique reports in less than a minute
- Improved decision making within local authorities
- A new value-adding service based on ArcGIS

The data science and software company Emu Analytics has used Esri's ArcGIS platform to show local authorities exactly where electric vehicle charging points should be installed on residential streets to meet rising demand for electric vehicles. Its pioneering analysis is helping councils to access government funding and accelerating the roll-out of charging infrastructure.

The Challenge

Amid growing awareness of the environmental impacts of diesel and petrol engines, more and more people are considering switching to electric vehicles (EVs). This has led to heightened demand for EV charging infrastructure, particularly in residential areas. Emu Analytics has calculated that an additional 83,500 EV charging points could be required in the UK by 2020, which represents an 83% increase in just two years.

To help local authorities respond to this demand, the UK Government has made a substantial grant available to cover 75% of the cost of installing new charging infrastructure on residential streets. The vast majority of councils have, however, been unable to submit grant applications as they haven't had the necessary data to prove exactly where on-street charging infrastructure is needed.

The Solution

Using its existing ArcGIS platform and Python, Emu Analytics has created an automated analytical process that provides local authorities with the data they need to apply for the government grant and accelerate the roll-out of charging infrastructure. The process predicts future demand for EV charger points, at street level, across the whole of the UK, and generates a unique report for each of the UK's 404 local authorities with barely any manual intervention.

Firstly, ArcGIS identifies clusters of young, educated and well-paid individuals who match the profile of electric vehicle 'early adopters'. Then the technology uses open source data from the Department of Transport on vehicle ownership to identify high densities of diesel car owners, who may be persuaded to switch directly from diesel to electric rather than from diesel to petrol. Other potential groups of early adopters are also identified in deprived areas, to ensure that all sections of society are considered.

Next, ArcGIS uses Ordnance Survey road maps and Land Registry data to measure the distances between buildings and the road, to identify properties that are unlikely to have driveways where private EV charging points could be installed. All of the demographic, vehicle ownership and driveway analysis is then combined on digital maps in ArcGIS Desktop to reveal 'hot spots' where there is potential high demand for on-street EV charging infrastructure.

At a touch of a button, Emu Analytics can embed maps and statistics from ArcGIS into bespoke four-page reports for local authorities, highlighting precisely those residential areas where EV charging infrastructure would be most used. Emu Analytics can also create Esri Story Maps to present local authorities with its analysis in a highly visual and interactive format.

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of charging infrastructure, and by giving them the data they need to apply
for funding, we are helping to remove one of the biggest barriers
to electric vehicle usage. "

Molly Strauss, Senior Policy and Programme Officer, Greater London Authority
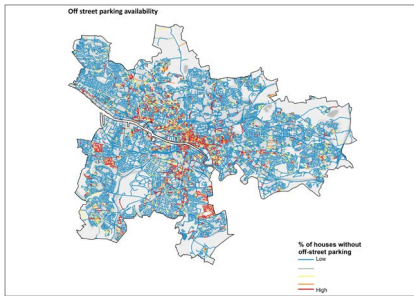
Using ArcGIS, Emu Analytics is able to show local authorities exactly where charging points are needed on residential streets and provide the evidence they require to apply for a government grant of up to 75% of the cost of installation.

The Benefits

Faster roll-out of EV charging infrastructure
Through its use of ArcGIS, Emu Analytics can provide local authorities with the evidence they require to apply for the government grant and accelerate the roll-out of on-street charging infrastructure. One of the main factors currently impeding the widespread adoption of EVs is the shortage of EV charging points, so, by helping local authorities to install charger points more quickly, Emu Analytics is also helping to drive the growth in sustainable forms of transport. "By using ArcGIS to show local authorities where to prioritise the roll-out of charging infrastructure, and by giving them the data they need to apply for funding, we are helping to remove one of the biggest barriers to electric vehicle usage," says Alice Goudie, Senior Location Intelligence Analyst, Emu Analytics.

Over 400 unique reports in less than a minute
Significantly, Emu Analytics has been able to use ArcGIS to create a rapid, repeatable analytical process so that the company can produce bespoke reports for each of the UK's 404 local authorities, at the push of a button, in less than one minute. "Rather than having to produce map images and find the right data 404 times for 404 separate local authority reports, ArcGIS does it for me," Goudie says.

Improved decision making throughout local authorities
Through the development of ArcGIS StoryMaps, Emu Analytics can make its detailed analysis available to clients in a format that they can easily understand and use to help them make effective decisions. The head of the council can see the data clearly explained in overview, while transport planners and highways staff can drill down to individual street level. As Goudie says, "The power of StoryMaps is that everyone can look at the areas they are interested in on a map and interrogate the data themselves to make better-informed decisions."

A new value-adding service
Finally, ArcGIS has enabled Emu Analytics to offer an additional value-adding service for local authorities and develop a new revenue stream for its business. "This new service promotes our ArcGIS capabilities and shows our ability to use GIS in innovative way to solve business challenges," Goudie observes.

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