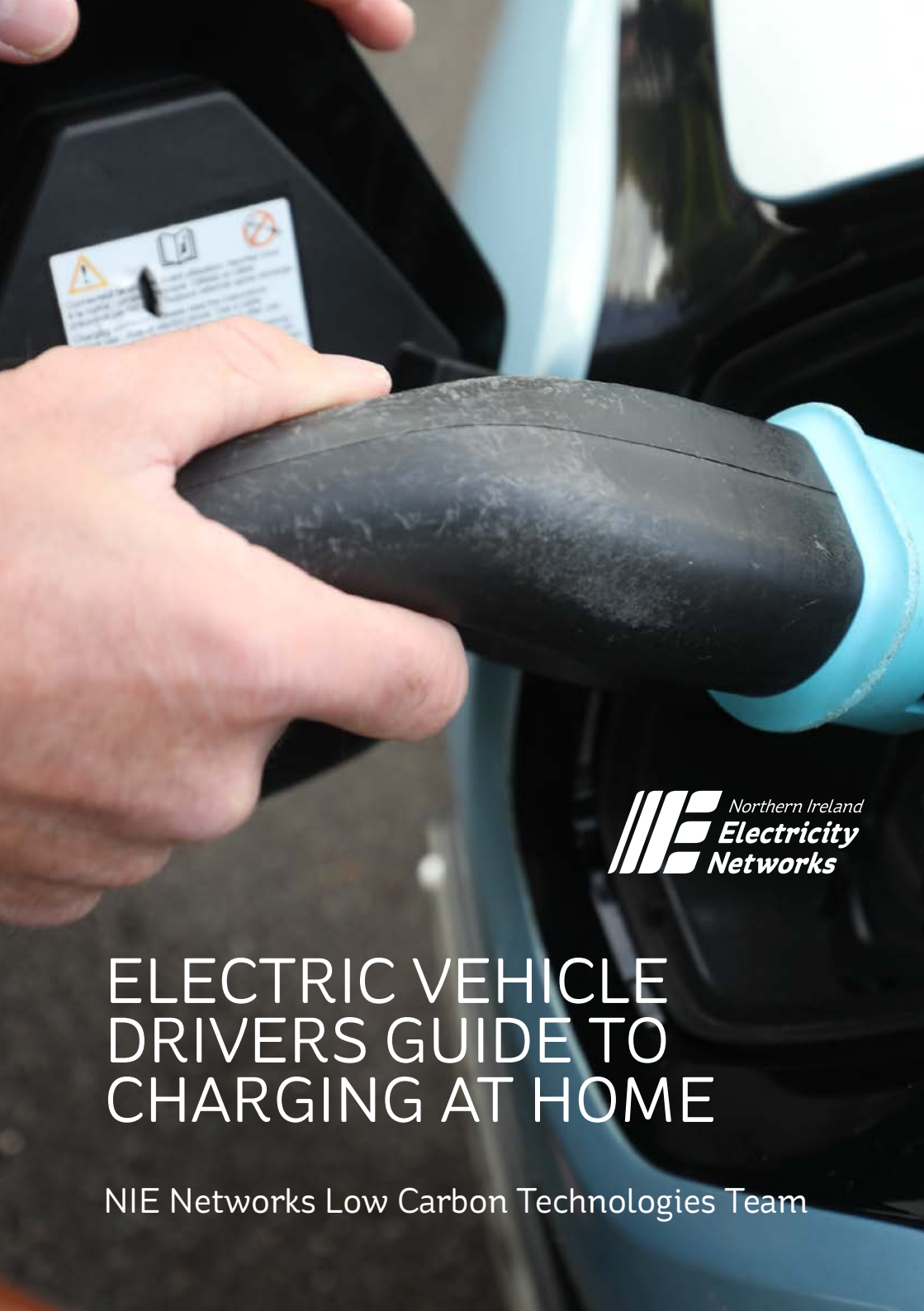

Northern Ireland Electricity Networks

ELECTRIC VEHICLE DRIVERS GUIDE TO CHARGING AT HOME

NIE Networks Low Carbon Technologies Team

Contents

1. Why Electric Vehicles?

The Climate Change Act *(Northern Ireland)* 2022[1] has set out a target of net zero emissions for Northern Ireland by 2050, an ambitious goal that requires dedicated work across multiple sectors including electricity to achieve. In 2020, 16% of Northern Ireland's greenhouse gas emissions came from the Transport Sector[2]. This highlights the vital role electric vehicles have to play in achieving a reduction in the amount of greenhouse gases in our atmosphere.

As we approach the government ban on new petrol and diesel cars, the number of EVs in Northern Ireland will continue to increase with uptake becoming more rapid as we move closer to 2030. NIE Networks is fully committed to facilitating the installation of charge points on the electricity network that are required to charge EVs both at home and in public spaces and play our part in achieving Northern Ireland's wider goals for climate action.

[1] https://www.legislation.gov.uk/nia/2022/31/enacted

[2] https://www.daera-ni.gov.uk/sites/default/files/publications/daera/NI%20Greenhouse%20Gas%20Statistics%201990-2020%20Report%20FINAL-revised.pdf

2. Considerations for Charging Electric Vehicles

EV chargers come in a variety of shapes and sizes which can be roughly broken down into four categories.

CHARGER TYPE	SIZE RANGE	TYPICAL SIZE	TYPICAL CHARGING TIME	TYPICALLY INSTALLED AT
SLOW CHARGER	2.3kW - 6kW	3.6kW	8-12 hours	• Older public charge points e.g. on-street charge points • Older domestic charge points • Charging on a three pin plug
FAST CHARGER	7kW - 22kW	7.36kW	4-6 hours	• Newer public charge points e.g. car parks, supermarkets and leisure centres • Newer domestic charge points • Workplace charge points for office staff
RAPID CHARGER	43kW - 50kW	50kW	80% in 20-30 mins	• Motorway service stations • Fuelling stations • Some supermarkets • Workplace charge points for fleet vehicles
ULTRA-RAPID CHARGER	≥100kW	100kW, 150kW and 350kW	< 20-30 mins	• Motorway service stations • Locations close to main routes • Workplace charge points for large fleet vehicles

3. Your Electric Vehicle and Us

The Electric Vehicle Association Northern Ireland's *(EVANI)* 2022 survey[3] found that 94% of those that currently own an EV have a charger at home and that 71.1% charge most frequently at home.

Today, many domestic EV chargers have a power rating of 7.36kW/32A, which adds a significant energy draw on top of domestic load needed for cooking, washing, heating etc. Customers typically have an electricity supply of up to 18kVA/80A. As such, a typical domestic charger can account for up to 40% of this capacity and In some cases, **can more than double the electricity required for a single household.**

As uptake of EV chargers increase, our electricity network faces an unprecedented rise in electricity demand that was not envisaged when the network was built. Most assets on the network have a lifespan of 40 years or more, meaning that they were installed when electric vehicles were not as readily available on the commercial market and their effects on the local and wider network not well known.

There is also equipment installed on the electricity network that does not have the capability to provide 18kVA/80A. Therefore, to ensure that all domestic customers can enjoy the full benefits of their EV charger, NIE Networks will upgrade your electricity service arrangement, if required, to 18kVA/80A through the Notification Process outlined in section 4 of this guide.

The increased electricity demand for EV charging also has an impact on the wider electricity network.

As an organisation, NIE Networks is investing to upgrade and transform the electricity network to ensure you continue to receive a high quality electricity supply as electricity demand grows. To continue this work and target it effectively, we need to know where EV chargers are installed.

This is where we rely on notifications from EV charger installers and our customers. These notifications are vital to ensure Northern Ireland can enter an era dominated by electric vehicles backed by a strong electricity network to support their use.

We use these notifications to study the effects of individual EV chargers on the electricity supply to a single house, and then aggregate the effects of multiple chargers to consider their effects on the electricity supply to a whole street, a town, a county etc… The more EV chargers we know about, the more accurate our modelling and the quicker we can undertake network investment to remove any barriers to the continued installation of EV chargers from installing larger fuses at customer properties to installing larger assets to cope with higher electricity demand on the wider network.

[3] https://evani.uk/northern-ireland-ev-drivers-survey-2022-results/

4. Notifying NIE Networks of an EV Charger Installation

When you decide to have an EV charger installed at your house, you will need a contractor who is suitably qualified to undertake the installation for you. This ensures that it is done correctly and safely. Going forward in this guide, we shall only refer to an EV charger installer as a suitably qualified contractor to highlight the importance of procuring the services of an indivudal with the appropriate training to perform your installation.

Your suitably qualified contractor is obliged under the NIE Networks Standard Connection Terms and Conditions Section 4 Paragraph *(h)*, IET Electric Vehicle Code of Practice and the Wiring Regulations BS7671 132.16 Additions and alterations to inform NIE Networks of all electric vehicle chargers installed on the Northern Ireland distribution network. When an installer connects an EV charger to a domestic property, they must follow the Energy Networks Association Low Carbon Technology (LCT) Notification process which will ensure NIE Networks is informed.

When an EV charger is installed in a domestic property, it needs to comply with the latest IET Code of Practice for Electric Vehicle Charging Equipment Installation. These professional standards state firstly that the work must be carried out by a suitably qualified contractor, and that the local distribution network operator *(DNO)* must be informed of the installation. NIE Networks is the DNO for all customers in Northern Ireland and we maintain a record of all EV chargers in Northern Ireland for network safety and investment purposes.

When considering the installation of an EV charge point at your home, you should review the following steps:

Installation of EV Charge Point - Customer Steps

Choose the manufacturer and model of your EV Charge Point

Appoint a suitably qualified contractor to install it
Note 1

Download the latest ENA Notification Form
Note 2

Consult your electricity bill to find your MPRN
Note 3

The suitably qualified contractor undertakes a survey of the electrical installation at your property
Note 4

The suitably qualified contractor completes the ENA LCT Notification Form

The suitably qualified contractor determines whether the installation is Apply to Connect or Connect and Notify using the completed ENA LCT Notification Form
Note 5

CONNECT AND NOTIFY

The suitably qualified contractor installs the EV Charge Point

The suitably qualified contractor submits the ENA LCT Notification Form to NIE Networks within 28 days of the installation

Check that your supplier tariff is suitable for your new electricity usage
Note 6

Energise your EV Charger

APPLY TO CONNECT

The suitably qualified contractor submits the ENA LCT Notification Form to NIE Networks
Note 7

The form is passed to the Connections Team and a job is raised

The suitably qualified contractor receives a job number associated with the EV charger installation
Note 8

The Connections Team assesses your property to determine if any reinforcement is required before the EV charger can be allowed to connect
Note 9

NO REINFORCEMENT REQUIRED

If no reinforcement is required, the suitably qualified contractor will receive a Supply Adequate Letter
Note 10

The suitably qualified contractor installs the EV Charge Point

Check that your supplier tariff is suitable for your new electricity usage
Note 6

Energise your EV charger

REINFORCEMENT REQUIRED

If reinforcement is required, the Connections Team will liaise with you *(the homeowner)* directly to arrange for upgrades to take place
Note 11

Once these upgrades are complete, the suitably qualified contractor installs the EV Charge Point

Check that your supplier tariff is suitable for your new electricity usage
Note 6

Energise your EV charger

Notes

Note 1: If you wish to avail of a grant from the Office of Zero Emission Vehicles *(OZEV)* when installing your EV Charge Point you should ensure that the suitably qualified contractor is on the list of authorised installers for the OZEV residential EV ChargePoint grant schemes. This list can be found at: https://www.gov.uk/government/publications/residential-chargepoints-authorised-installers.

Note 2: The latest version of the ENA LCT Notification Form can be downloaded from the NIE Networks website at: https://www.nienetworks.co.uk/connections/low-carbon-technologies/lct-connection-process. For the installation of a single EV charger at a single property the suitably qualified contractor will use the Notification Form. For the installation of multiple EV chargers at single or multiple properties the suitably qualified contractor will use the Multiple Installations Form.

Note 3: Your MPRN is an 11 digit number beginning with an 8. If you are having trouble locating your MPRN from your electricity bill, you can ring the NIE Networks help line on 03457 643 643. Please ensure that the MPRN used on the ENA LCT Notification Form is correct to avoid delays to your application.

Note 4: This includes a maximum demand survey of your house which determines the maximum amount of electricity your house may draw at any given time.

Note 5: If the ENA LCT Notification Form is deemed as an Apply to Connect application, then the form must be submitted to NIE Networks before the EV Charger can be installed so that we can assess your property for any reinforcement needed. If the ENA LCT Notification Form is deemed as a Connect and Notify application, then the EV Charger can be installed immediately. NIE Networks must be informed by submission of the ENA LCT Notification Form within 28 days of the installation.

Note 6: Your supplier may be able to advise on other types of electricity tariffs available which could be more suitable for EV charging.

Note 7: A photograph of the cut-out arrangement at your house must be included with the submission of the ENA LCT Notification Form. If a photograph is not submitted it may delay your application.

Note 8: This job number acts as a unique identifier which is used in communications from our Connections Team when discussing the job.

Note 9: Reinforcement required might include a fuse upgrade or replacing your underground electricity service cable. NIE Networks aims to respond to all Apply to Connect applications within 10 working days.

Note 10: A Supply Adequate Letter confirms to the suitably qualified contractor that it is safe to proceed with the installation of your EV charger. The EV charger must not be installed until the Supply Adequate Letter is received to ensure the suitability of your electricity supply.

Note 11: Please refer to section 6 of this guide for estimates of the timescales and costs involved *(if any)* for reinforcement required before your EV charger can be installed.

5. Examples of Reinforcement Needed to Accommodate an EV Charger

There are a number of scenarios in which the ENA LCT Notification Form will require that your suitably qualified contractor follow the Apply to Connect process as there is insufficient capacity on the network to meet the demand of the new EV charger. Below are the three most common examples of where reinforcement work is required and why:

1. Your house is supplied via a looped service

Houses in Northern Ireland receive their electricity via a cable known as a service cable. Historically some service cables were connected in an arrangement known as a looped service. A looped service is where two properties share a single electricity service cable from the main network. These are typically found in semi-detached or terraced houses. The service cable enters the first house *(usually underground from the mains in the footpath or road outside)* then runs from the electricity meter position in the first house to the electricity meter position in the second house.

Looped services are safe but they are not suitable for houses with EV chargers. Your suitably qualified contractor should notify NIE Networks of the looped service and we will provide a dedicated service cable to each house prior to the installation of the EV Charger.

2. The fuse in your cut out is rated less than 80A

A cut out is a piece of electrical equipment usually located next to your electricity meter.

Historically the size of fuse installed in some cut outs was 60A. If an EV charger is installed at a property with a 60A cut out, there is a chance that the total amount of electricity needed to supply both the EV charger and the rest of the house will exceed 60A, causing the fuse to rupture and the house to go off supply.

Your suitably qualified contractor must undertake a maximum demand survey of your property prior to installation of an EV charger. This will determine the maximum amount of electricity that your house will require at any one time. Where the maximum demand exceeds 60A your suitably qualified contractor must inform NIE Networks. NIE Networks will assess and upgrade your cut out and fuse to 80A if required.

3. You require an increase to the size of your electricity supply

As we have discussed, LCTs including EV chargers add a significant additional energy demand on to the electricity network. If multiple devices are installed at the same house, it is possible that the electricity required to supply all LCTs and other services such as cooking, washing, heating etc… will exceed the 18kVA/80A supply. This will be determined by your suitably qualified contractor as they undertake a maximum demand survey of your house and survey the electrical installation at your property. Where the maximum demand will exceed 18kVA/80A, your suitably qualified contractor will need to apply for a Load Change via our website.

There will be a unique job number and a planner assigned to your job. The planner will design the work needed to upgrade your electricity supply and work with you to arrange timescales. As you are applying for an electricity supply beyond 18kVA/80A, this work is chargeable and must be paid for by the customer. Costs are dependent on the work required and are calculated on a case by case basis.

6. Estimating Connection Cost

The table below summarises the typical reasons why NIE Networks will need to undertake reinforcement at your property before your EV charger can be installed. The chargeable costs and the timescales involved are also shown. Note that the below estimates refer to scenarios where you intend to install a domestic charger rated at 7.36kW/32A *(the most common type of domestic charger)*.

SCENARIO	TYPICAL CONNECTION LEAD TIMES	ELECTRICITY NETWORK CONSIDERATIONS	APPROXIMATE CONNECTION COST
Cut out suitable for 80A and no shared service cable *(looped service)*	None	None	None
Service cable shared with neighbour *(looped service)*	12 - 16 weeks*	Need to unloop service cable and install a dedicated service cable to each house	None
Cut out rated less than 80A	12 - 16 weeks	Cut out and fuse to be upgraded	None
Multiple LCTs being installed at the same property	TBD	An upgrade to the service cable may be required	TBD Submit application

** Please note that the timelines quoted are subject to NIE Networks obtaining all Competent Authority Consents, Property Rights and Statutory Consents required for the Connection Works.*

CUSTOMER SERVICES

03457 643 643