



The image shows a man in a white sweater standing and presenting to a woman seated at a table. Behind him is a large computer monitor displaying the Citizens Advice website. The website has a navigation menu with categories like 'Debt and money', 'Consumer', 'Housing', 'Family', 'Law and courts', 'Immigration', 'Health', and 'More'. A search bar is visible on the website. The man is holding a pen and pointing towards the screen. The woman is looking at him attentively. The entire scene is overlaid with a blue tint.

Navigating the Network

How to improve the consumer journey
when installing low carbon technology

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Executive summary

Executive Summary

The UK Government's recently published Warm Homes Plan¹ offers a significant opportunity for consumers. If delivered effectively, it could help millions of households lower their energy bills and cut carbon emissions through installing low carbon technologies (LCTs) such as heat pumps, solar panels, and battery storage. Energy networks - both electricity and gas - have an important role in ensuring the uptake of LCTs works well for consumers.

Today, nearly all homes in the UK are connected to the electricity grid, and around 85% of homes are connected to the gas grid.² Government policy direction and independent advisers suggest that most consumers are likely to move to electrified heat sources such as heat pumps. If this occurs, the expectation is that many of these consumers would then disconnect from the gas grid.³ The number of heat pump installations has been slowly increasing: over 210,000 retrofit heat pump installations have taken place between 2018 and 2025, with nearly 52,000 installations in 2025 alone - a 7% increase compared to the previous year.⁴ Additionally, there have been over 2 million solar PV installations since 2009⁵ and there are estimated to be around 1 million home EV chargers⁶ in the UK.

When LCTs are installed, there may be multiple touchpoints between the consumer and their energy networks. Electricity distribution networks (Distribution Network Operators or DNOs) may need to grant permission for the LCT installation and sometimes have to complete work at the consumer's home. If the consumer is on the gas network and chooses to remove their gas disconnection, they may have to contact their gas distribution network (GDN).



This report explores this consumer journey and the types of interactions consumers can have with electricity and gas networks during the installation of LCTs. Based on qualitative research with consumers, interviews with installers, and analysis of Citizens Advice data, we found that:

- Interactions with DNOs are often "invisible" to consumers. There is often no direct consumer interaction and consumers are largely unaware of who their DNO is and the role they would have in the process of LCT installation.
- However, where consumers do have interactions with DNOs they can often find this process confusing, particularly when tasked with administrative tasks such as 'self-surveys', which can be barriers for vulnerable individuals.
- There are significant pain points in the consumer journey, including variable wait times for connection permissions, high and poorly communicated costs for work carried out by the DNO, and post-installation voltage issues that disrupt LCT operation.
- The gas disconnection process lacks transparency, leaving many consumers unaware of their options or facing unexpected costs and disruption.



Recommendations

To improve the consumer experience, we recommend that Ofgem and energy networks should work together to:

- **Improve clarity on connection charges:** DNOs should ensure consumers understand how connection charges are calculated, providing a transparent breakdown of costs for all necessary work at the property, communicated clearly at the survey stage.
- **Improve the standards consumers can expect from their DNO:** Ofgem should review Guaranteed Standards of Performance (GSoPs) to protect consumers from poor performance, and proceed with incorporating qualitative measures like customer experience into the "smaller connections" incentive.
- **Implement proactive unlooping:** DNOs should develop proactive unlooping strategies in ED3, supported by consistent standards, to streamline the process and avoid the pitfalls of reactive unlooping.
- **Enhance voltage management:** Ofgem should amend GSoPs to require DNOs to resolve voltage fluctuations outside statutory limits within a specific timeframe, and, along with DESNZ, hold DNOs accountable through monitoring, reporting, and appropriate incentives in the ED3 DSO framework.
- **Provide clear guidance on gas disconnections:** Ofgem should mandate that GDNs and energy suppliers provide standardised, clear, information to consumers on gas disconnection options, ensuring consumers can easily access plain-language explanations of processes, providers, and potential costs.



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Glossary



Glossary

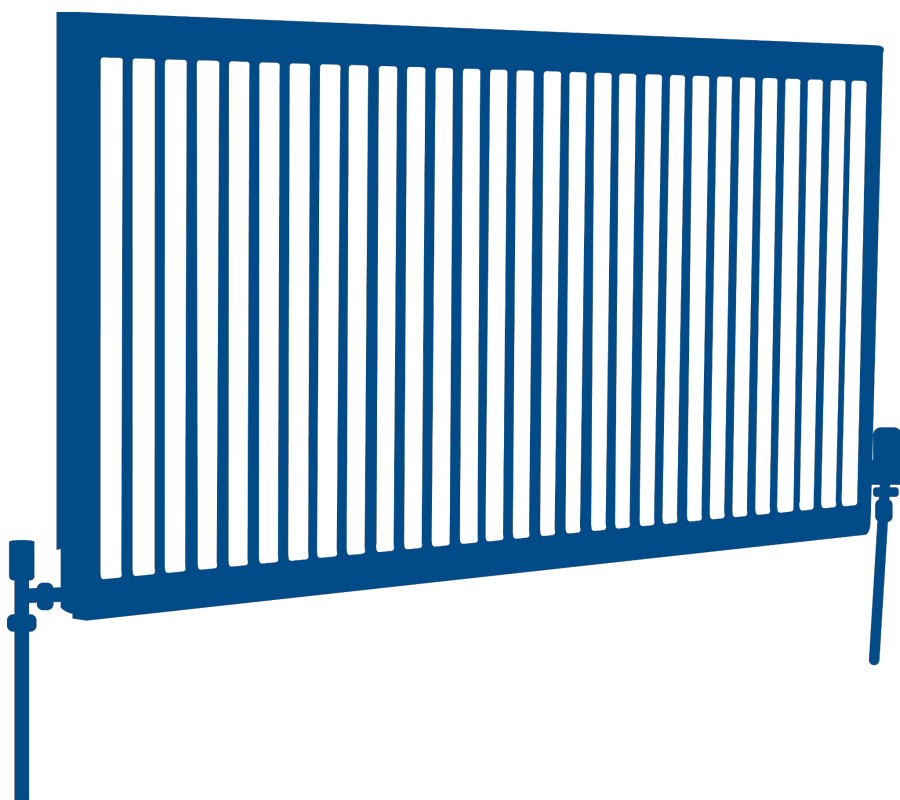
Distribution Network Operator (DNO) - A DNO is a licensed company that owns and maintains the physical infrastructure of the electricity grid, such as power lines and cables, that delivers electricity to homes and businesses. DNOs are regional monopolies and are different from energy suppliers, which are the companies consumers pay for their electricity use. Some consumers are served by an Independent Distribution Network Operator (IDNO), rather than a DNO. These companies are still licensed by Ofgem to own and operate local electricity networks, however they are not subject to the same price control framework as DNOs.

Fuse upgrade - The main fuse in consumers' homes limits the total electricity entering the property. It is usually rated between 60 to 100 amps and is legally owned by the relevant DNO. When installing an LCT, the DNO may have to attend the property to upgrade the consumer's main fuse to handle the increased electricity demand from LCTs.

Gas disconnection - A gas disconnection is the complete removal of a property from the mains gas network. It typically involves physically removing the gas meter and permanently sealing (capping) the incoming gas pipe to ensure no gas can flow into the building.

Gas Distribution Network (GDN) - A GDN is a licensed company that owns and maintains the physical infrastructure, such as underground pipes, that deliver gas to homes and businesses. GDNs are regional monopolies and are different from energy suppliers, which are the companies consumers pay for their gas use.

Installer - An installer refers to a qualified professional who installs LCTs such as heat pumps, EV chargers, and solar panels. In the UK, installers often register with the Microgeneration Certification Scheme (MCS), which ensures that the installations meet industry standards. An installer which may work locally for themselves or as part of a small team, be from an established national heat pump installation company or part of an energy retail company.





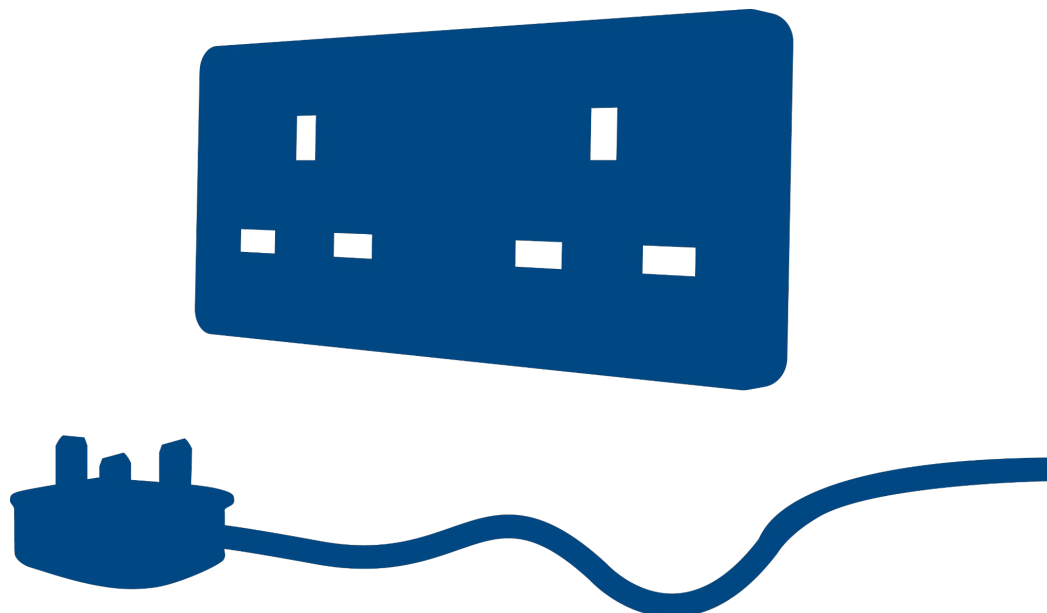
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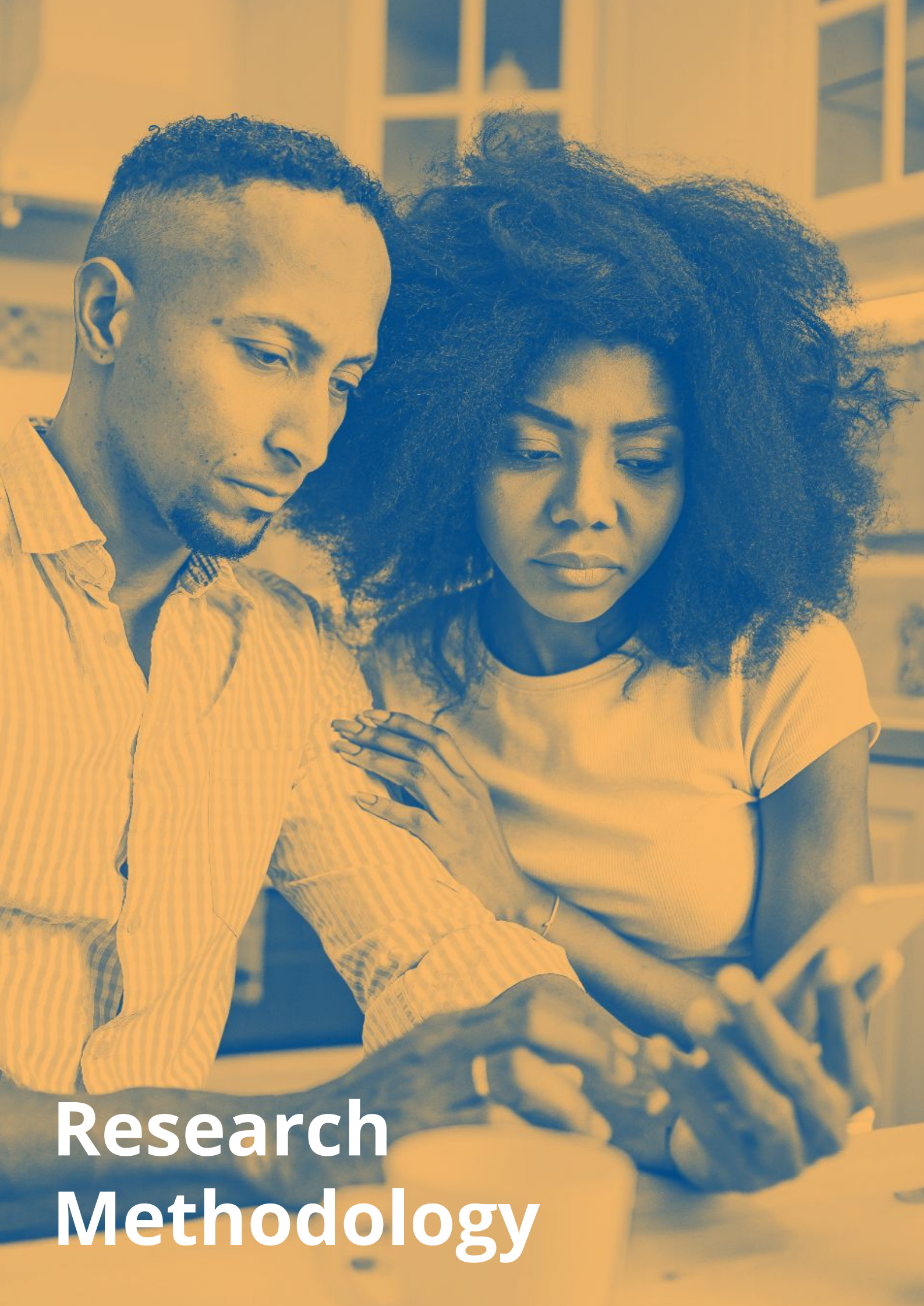
Low Carbon Technology (LCT) - Low carbon technologies are systems and appliances that have been designed to use electricity, rather than fossil fuels, and thereby reduce carbon emissions. The types of LCTs that consumers might install in their home can include:

- *Batteries* - A home battery is a rechargeable energy storage system that captures electricity. It draws power from solar panels or the electricity grid and discharges back to the home or to the grid. Batteries can reduce consumers' reliance on the electricity grid at peak times.
- *Electric Vehicle (EV) Chargers* - An EV charger is a device that supplies electrical power to recharge the battery of an EV. EV chargers can be found in places like car parks as part of public charging infrastructure. They can also be installed in consumers' homes, allowing them to charge their EV in off-peak periods such as overnight.
- *Heat pumps* - Heat pumps are an electric device that extracts thermal energy from the outside air or ground to heat consumers' homes and water. Heat pumps are used to replace or, more rarely, supplement traditional gas or oil boilers.
- *Solar Photovoltaic (PV) panels* - Solar PV panels are a device that captures sunlight and converts it into electricity, which the consumer can then use in their home or sell back to the grid. Solar PV panels are different from solar heat panels (also known as solar thermal), which capture the sun's thermal energy directly to heat water for domestic use.

Unlooping - Around 4 million homes², typically built before the 1990s, were built with a 'looped' supply, where a single service cable from the street enters the first house and then splits to provide power to the adjacent neighbours. Unlooping is the process of splitting a shared electricity supply so that neighbouring homes each have their own direct, independent cable to the main network.

3-phase supply - A 3-phase power supply is an electrical system that delivers electricity through three separate live wires, rather than through a single live wire as with a single-phase supply. Most homes run on single-phase, but sometimes homes with lots of high power electrical equipment may need to use 3-phase to avoid overloading their circuit.





Research Methodology



Research Methodology

To gain an in-depth understanding of the consumer journey and experiences of people who are contacting and interacting with their gas and electricity networks when installing LCTs, we conducted 3 strands of research. This research did not cover experiences of plug-in solar, which, at the time of publication, is not legal to install in the UK. Some of the issues explored, such as notifying the DNO of a new installation, will apply to plug-in solar if it approved in the future.

Interviews with heat pump installers: Installers play a crucial role in the consumer journey when people undertake home upgrades. They are the primary point of contact with consumers and provide information about the scope of the work that is required and the associated costs. Additionally, installers often engage with the DNO during the installation process, either to apply for required permissions or to provide post-installation notification. To understand heat pump installers' experience of interacting with DNOs, their role in the consumer journey and what can be improved, we spoke to 3 installers in November and December 2025.

Research with consumers: We commissioned Yonder to conduct a multi-phased qualitative research project with people who have had low LCTs installed in their home. Throughout February and March 2026 they conducted the research in 4 stages:

- 48 participants completed a 3-day online pre-task to explore their decarbonisation journey at a high level.
- 12 focus groups were held with those who completed the pre-task to further understand their consumer journey and how the decarbonisation process can be improved.
- 6 in-depth interviews were completed with vulnerable participants, such as those experiencing fuel poverty, to explore their consumer journey and consider how their vulnerability shapes their experience.
- 5 in-depth interviews were completed with participants who had more detailed interactions with their DNO during their home decarbonisation journey.

Yonder also completed a short online survey as part of this research. This survey asked a nationally representative sample of 2114 people whether they had LCTs installed in their home and whether they had contact with their DNO during installation. The online fieldwork for this survey was completed between 13th and 15th February 2026.

Analysis of Citizens Advice's data: The Citizens Advice Consumer Service gives advice on all consumer issues, with specialist advice on energy issues. We analysed Consumer Service cases from April 2022 to March 2026 to understand the issues people encountered with their DNOs and GDNs while installing LCTs. We have used Citizens Advice case studies within this report to illustrate the types of problems our clients face.





Overview of the customer journey

Overview of the Consumer Journey

Households are expected to decarbonise their heating systems over the coming decades. Government policy direction and independent evidence suggests most consumers will move to electrified heat sources such as heat pumps, and disconnect from the gas grid.⁸ Consumers may also install other LCTs in their home, such as solar panels, battery storage, or chargers for electric vehicles. This report explores the current journey for people who interact with electricity and gas networks as part of making this switch to LCTs.

To get an LCT fitted, consumers have to contact an installer. The installer should assess the property and help the consumer decide which technology is most suitable for their home. Installers may also recommend changes to the property to ensure that the technology runs as efficiently as possible.

For most consumers, energy networks play a limited role throughout the process of installing an LCT. There is often no direct consumer interaction with the DNO and GDN. Where this interaction does happen, it is often minimal in relation to the other steps and communication touch points with other parties.

Our research found that largely consumers are unaware of who their DNO is, the role they would have in the process of LCT installation and if they were involved in their installation at all. This is generally positive for consumers, as it reduces friction in the LCT installation process. If the DNO is involved, it is often 'invisible' to the consumer. These invisible interactions are the most common experience for consumers, where the DNO is completely behind the scenes and the installer handles all grid applications and permissions themselves. In this scenario there is no visible permission request, no site visit, and no other direct communication from the DNO. From the consumer's perspective: *'the heat pump was installed like any other appliance'*.

However, at the other end of the spectrum, the process of installing an LCT may mean that the consumers' electricity and gas networks need to carry out extensive work at their property. In this scenario, there may be multiple touch points between the consumer and the energy networks during the LCT installation process.

All the potential interactions with DNOs and GDNs, and the most common pain points in the consumer journey are detailed below.



▶ Step 1 - Assessing the suitability of the electricity supply

In addition to confirming the overall suitability of the consumer's property for LCTs, it is essential to verify that the electricity supply is adequate for the LCT and that the consumer's electricity supply will not be overloaded, ensuring a safe connection. Installers typically are responsible for initially assessing this and passing on relevant information to the DNO. However, in some cases the DNO may require a site visit to confirm the information provided or, more rarely, consumers are sometimes asked to carry out the survey themselves and share the information with the DNO.

Pain points: Consumers can find it confusing if they are asked to carry out the survey themselves. There can potentially be delays while waiting for the DNO to attend the property.

▶ Step 2 - Receiving permission from the DNO to install the LCT

Depending on the technology being installed, installers either can install the technology and notify the DNO afterwards, or they must receive permission first before installing. This is typically handled by the installer. However, it can sometimes require the consumer to sign a form granting their installer permission to apply on their behalf. Occasionally, the consumer is instructed by their installer to apply directly to the DNO themselves.

Pain points: Installers report variable wait times (anywhere between 1 day and 3 months) to receive permission from the DNO. Consumers find it frustrating to act as a 'middleman' who is responsible for passing data between the DNO and the installer.

▶ Step 3 - DNOs completing work at the property

In some cases upgrades are needed to the consumer's electricity supply to ensure the LCT can be safely connected. If this is the case the DNO will liaise with the consumer to arrange this and communicate any associated costs to them.

Pain points: It can take several weeks for DNOs to arrange to attend the property and carry out the necessary work. This can in turn delay the installation of the LCTs. Consumers also report that communication about costs can be unclear and that costs can be prohibitively high, particularly if the supply needs to be 'unlooped' or upgraded to a 3-phase supply.

▶ Step 4 - Resolving issues after LCT installation

Sometimes consumers need to contact their DNO if they experience problems with their LCT after installation. In particular, people sometimes experience issues with the voltage of their supply, which causes their LCTs to stop working or stop working properly.

Pain points: Consumers report unclear communication and difficulty resolving voltage issues with their DNO.

▶ Step 5 - Disconnecting from the gas network

If the consumer has installed a heat pump and they no longer need a gas supply, for instance for cooking, they may choose to disconnect from the gas network.

Pain points: There is limited consumer information and awareness about gas disconnections which can cause confusion and potential detriment to consumers. Disconnecting from the gas network can also involve a high cost to consumers.



Assessing the suitability of the electricity supply



Assessing the suitability of the electricity supply

Before installing an LCT, it is essential to verify that the electricity supply is adequate for the LCT and that the consumer's electricity supply will not be overloaded. This verification usually involves dedicated load and capacity checks to ensure the technology can be connected safely.

There can be a lot of variation in how these assessments and surveys are carried out. Whilst often conducted by the installer, these surveys can also be conducted in-person by a DNO engineer or remotely via consulting their records. In some cases the consumer can also be responsible for this, and have to respond to DNO requests for information and imagery to assess the load and capacity of their electricity supply.

Where a DNO visit to the property is required, we found that consumers thought this process was efficient, and did not add unnecessary delay or disruption to the installation process. These visits were usually easily scheduled via phone call or email, with the installer providing the consumer with direct DNO contact details and instructions of what to organise. The visits were usually short, lasting between 10 and 45 minutes. Following the survey, the DNO surveyor submits a report to the installer to confirm if the connection is approved or if upgrades are required.

Where consumers were asked to provide information to the DNO themselves, the process was more challenging. The case study below details some of the problems consumers can encounter:



Harry's Story:

Harry lives in a housing association property. He is a wheelchair user but is able to walk limited distances, though he finds bending and physical manoeuvring challenging. His EV charger installation was prompted by a new vehicle lease through Motability, which included the provision of a smart EV charger.

The process required Harry to interact directly with his DNO to secure permissions and verify the home's electrical capacity. Rather than a technician visiting to assess the site for the DNO, Harry was required to conduct a 'self-survey' by providing a specific list of photographic evidence. The process was as follows:

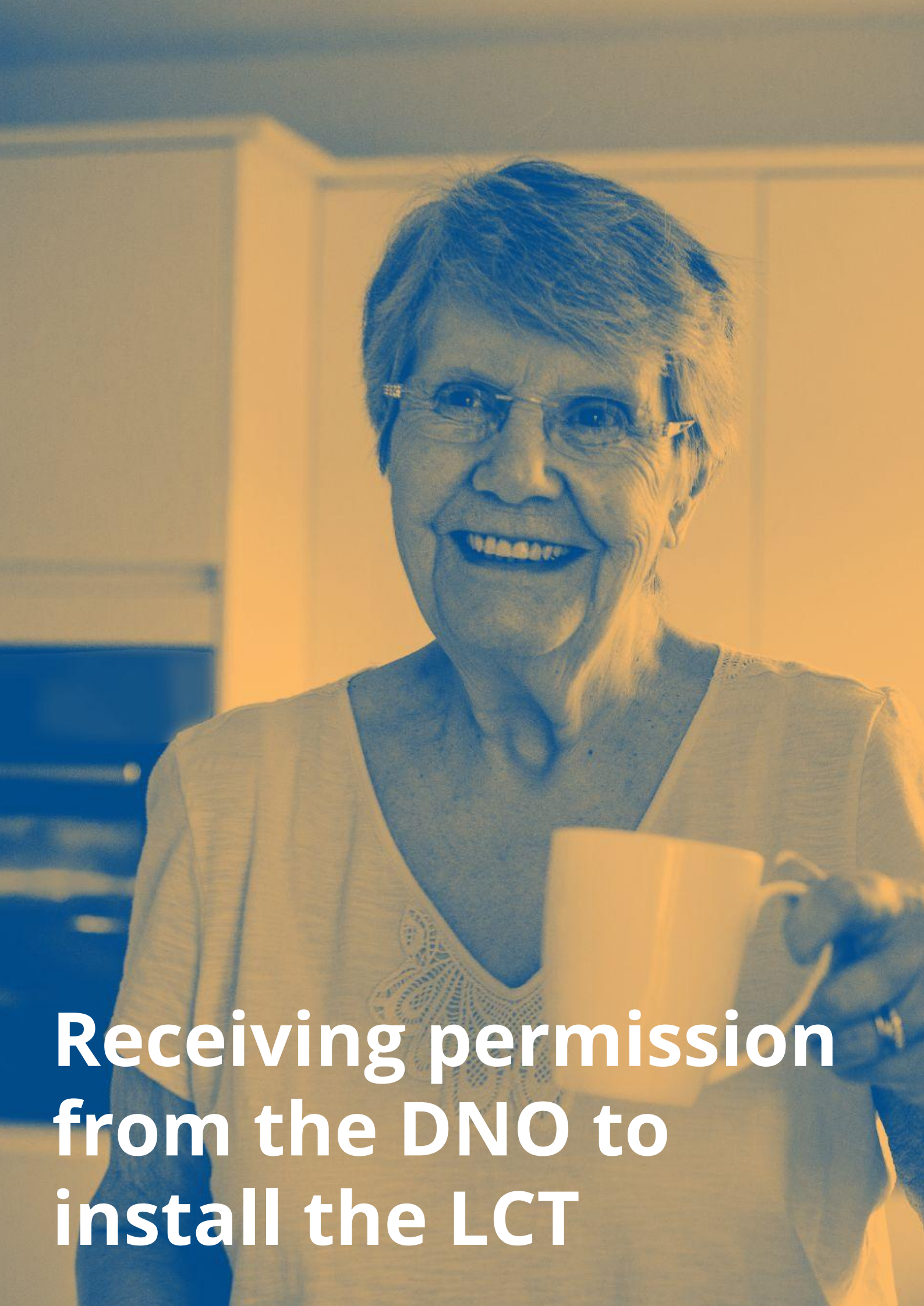
- Harry received a form via post outlining the specific photos needed.
- Harry had to photograph the fuse box from a certain distance, the wire entry point into the house, the driveway, the exterior wall where the charger would be fitted, and the electricity meter, which was especially difficult due to his limited mobility.
- Once the photos were taken, Harry emailed them to the DNO.
- The DNO confirmed the photos were correct but then required Harry to provide proof of permission from his landlord (the housing association).

Harry resented this additional administrative burden and felt he was doing their job for them by taking the photos and acting as the primary liaison between the DNO, the installer, and the housing association. He had to manage the communications between all parties himself, which he found confusing and stressful. Harry believes this 'self survey' model would be particularly challenging for the elderly or vulnerable and that some people would have found the process "impossible" due to the technical and photographic requirements.

We recommend that DNOs carefully consider people's characteristics when asking them to be responsible for completing the assessment of their own electricity supply when installing an LCT. 'Self-surveys' can be a significant barrier for vulnerable, elderly, or disabled consumers. While consumers who are willing and able to provide the necessary information and photographs should be permitted to do so, this should not be a mandatory requirement. If a consumer is carrying out the assessment, installers and DNOs must ensure the following:

- Provision of clear, non-technical, and consumer-friendly guidance on how to complete the survey.
- Signposting of further support for consumers requiring assistance during the process.
- Clarity that an alternative party can conduct the survey if the consumer is unable to do so.





**Receiving permission
from the DNO to
install the LCT**

Receiving permission from the DNO to install the LCT

Homeowners are responsible for informing electricity networks about the LCT they are installing.⁹ However, this task is often handled by installers and certification schemes such as the MCS (Microgeneration Certification Scheme) state that the installer should notify the DNO.¹⁰ DNOs need to be notified to ensure that the consumer's electricity supply is not overloaded and that the connection will be safe. Notification of LCT installations also helps networks to map and manage the increased network load associated with the rollout of these technologies.

Depending on the technology being installed, installers either can install the technology and notify the DNO afterwards (known as 'Connect and Notify'), or they must receive permission first before installing (known as 'Apply to Connect'). According to the installers we spoke to, heat pumps are more likely to fall into the second category than other LCTs (e.g. EV chargers), due to the higher load they may place on the electricity supply at peak times. Installers told us that they mostly use the ENA Connect Direct portal to contact DNOs. The ENA Connect Direct portal is an online platform LCT installers use to get approval to connect these technologies to the grid. Its aim is to 'to remove the friction from the LCT connections process, by connecting installers directly to [DNOs], and by automating as much of the process as possible.'¹¹

Installers told us that using the online portal is an improvement on the previous process, where they had to contact each DNO separately by email. However, installers reported that even when using the portal the process of receiving connection permission from the DNO lacks standardization. There is very little guidance given to installers on how to complete the necessary forms, and the way DNOs use the portal can vary. Notification of installation approval is not always communicated through the portal. Instead, installers receive email correspondence rather than an application status update within the platform. Installers also noted a significant range in response times across DNOs, varying from one day to several weeks, which introduces delays into the installation timeline.

Though requests for permission to connect LCTs are typically handled by the installer, it can sometimes require the consumer to sign a form granting their installer permission to apply on their behalf. Occasionally, the consumer is instructed by their installer to apply directly to the DNO themselves. Additionally, for tenants, the DNO may require proof of a landlord's or housing association's consent before approving an application. In these situations, consumers can find it frustrating to act as a "middleman" passing data between the DNO and the installer.



Recommendations

To improve the consumer and installer experience regarding LCT connection permissions, DNOs should ensure the administrative process for consumers and installers to contact them is straightforward. DNOs must prioritise standardising how they use the ENA Connect Direct portal. Inconsistencies in how different networks utilise the system and a lack of clear guidance can make the process confusing and time-consuming for installers, which has knock-on impacts for consumers. We are also supportive of Ofgem's introduction of a 'Time to Approve' metric as part of the 'Smaller Connections Incentive' in ED3, the next price control for DNOs.¹² If well-designed, this metric should help incentivise an increase in the number of applications that receive a timely approval to connect, e.g. within 24 hours, reducing the delays that consumers and installers currently experience.



**DNOs completing
work at the property**

DNOs completing work at the property

In some cases, when a consumer seeks to install an LCT at their property, the DNO may need to complete additional engineering work first. This is to ensure that the consumer's electricity supply is safe and that it can handle the increased load associated with LCTs. The DNO may need to:

- Upgrade the consumer's main fuse to handle the increased electricity demand from LCTs.
- 'Unloop' the electricity supply to the property, meaning that a shared ('looped') power supply between neighboring properties is disconnected and each property is given its own direct connection to the main electricity network.
- Upgrade the property from a single-phase to a 3-phase supply. 3-phase power provides a more continuous and efficient flow of electricity compared to single-phase systems, which may in some circumstances be needed for the increase in demand from LCTs.

If the DNO determines that work needs to be completed at the consumer's property, they will inform the installer of this. DNOs will then contact the consumer at the property, who is usually responsible for liaising with the DNO to arrange any visits to the property and the completion of necessary work. The relationship is typically between the consumer and the DNO, but installers may offer support and guidance throughout the process.

The amount of time it can take to complete the necessary work varies greatly. In our research we found that some consumers' DNOs attended the property very quickly, whereas others reported that it could take up to 3 months for the DNO to complete the necessary work. Our research also indicates that consumers feel that there can be unclear communication about costs. The associated costs of necessary work can also be prohibitively high, particularly for consumers who need to upgrade to a 3-phase supply.



Upgrading fuses

In our research we found that the most common physical upgrade was swapping the property's main incoming fuse e.g. upgrading to a 100 amp fuse to prevent tripping when the heat pump or EV charger was in use. In our survey research we found that over 1 in 5 (22%) people who have an LCT needed to have their main fuse upgraded. Typically consumers found it very easy to arrange this type of upgrade with their DNO.

"I contacted my local DNO when I realised the main cut out was 60A. Upon ringing, they very quickly sent an engineer out the next day to upgrade the main fuse to 80A. I had a quick look online and read that I was able to give my local DNO a call and explain the situation and what was going to happen in my property. They were very good over the phone and within less than 24 hours they had an engineer at my property changing the main incoming fuse." - Quote from research participant



"We'd actually had a new fuse board fitted a couple of years prior and we also had a fault with our incoming fuse, our main fuse. Previously one of the cables had become detached from the base, so we had an emergency call out from the supplier anyway to repair that and at that point they put a 100 amp fuse in. So [there was] plenty of space and capacity left on the system [and] there weren't any upgrades required." - Quote from research participant

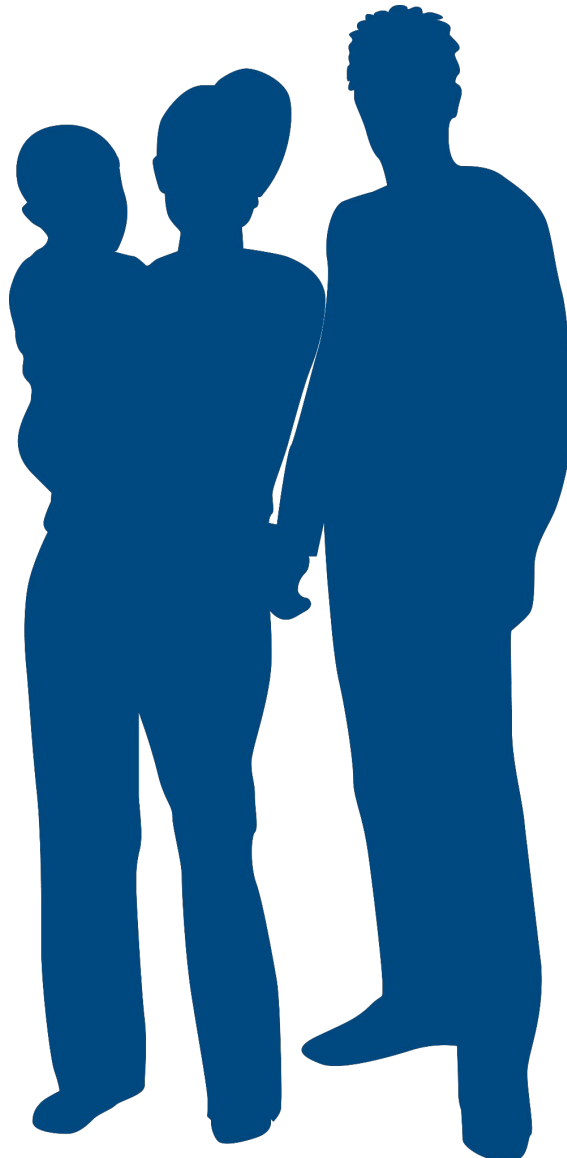
Though fuse upgrades are typically free, some consumers reported that there were 'hidden costs' associated with the upgrade. For example, one consumer reported that though their fuse upgrade was free, they had to pay a £200 'assessment and design fee' to the DNO, which had not been communicated to them previously.

Unlooping

Issues related to unlooping properties were not identified in our qualitative research with Yonder, however in our survey research we found that around 1 in 8 (12%) people who have an LCT needed to have their electricity supply unlooped. Unlooping was also a common theme amongst the Citizens Advice cases we analysed. The key consumer concerns we identified were:

- **Concerns about costs:** Although unlooping is typically provided free of charge to the consumer¹³, we found instances where consumers were charged for this service. These consumers expressed dissatisfaction with the charges or uncertainty regarding their liability for these costs.
- **Complications with neighbours:** We identified issues where difficulties arose with neighbours who did not understand the necessity of work being performed on their property when they were not personally installing a LCT, or who withheld permission for the DNO to access their property.

Evidence from research conducted for DESNZ shows that the physical disruption of unlooping, and the need to engage with neighbours who share the same looped supply can present a significant barrier to adopting LCTs.¹⁴ In a survey of consumers who had been unlooped, less than 5% reported uncooperative neighbours, but when extreme cases occur they can add substantial delays to the installation of LCTs.¹⁵





Jodie's Story:

Jodie wants to install solar panels in their property but needs their electricity supply to be unlooped before they can do this. Jodie has contacted their DNO and the DNO has stated that unlooping the supply will cost £8500. Jodie is disputing this and feels like they are being overcharged.



Wesley's Story:

Wesley's neighbour is having a heat pump installed. Wesley and their neighbours supply is looped, and to unloop the supply the DNO will have to excavate Wesley's garden and remove floorboards in the kitchen. Wesley is unhappy with this and does not want the work to go ahead. The DNO have sent further letters requesting permission, and have stated that if Wesley refuses they may be at risk of being disconnected. Wesley feels pressured and frustrated.



Tracy's Story:

Tracy's neighbour is installing a home charger for their electric vehicle. Tracy and their neighbour are on a looped electricity supply and Tracy's driveway will need to be excavated to access the cable. Tracy is unhappy about this and wants to know what their rights are in this situation.



Grace's story:

Grace wants to install a home charger for an electric vehicle. Grace is on a looped electricity supply so needs this to be unlooped before the installation. Grace's DNO said that to do this an additional electricity pole would have to be installed in their garden and that it would cost £6000. Grace wants to know if this is standard, as their relative is also having their electricity supply unlooped but does not have to pay anything.



Upgrading to a 3-phase supply

Some homes need to be upgraded from a single-phase to a 3-phase supply, particularly if they have or are planning to have multiple LCTs installed or have other high power electrical equipment. Installers told us that upgrading the electricity supply at a property to a 3-phase supply usually incurs a cost. This can range from £2k to £5k, with some quotes reaching much higher than this. Installers said that the high cost associated with this upgrade means that many consumers in this situation will decide not to proceed with the LCT installation. Issues related to upgrading properties to a 3-phase supply were not identified in our qualitative research with Yonder, however in our survey research we found that around 1 in 6 (16%) people who have an LCT needed to have their electricity supply upgraded to a 3-phase supply. Our analysis of Citizens Advice data found that consumers usually contact us with questions or concerns about the costs associated with upgrading to 3-phase.



Fred's story: Fred has an old inefficient oil boiler and is planning to upgrade their home by replacing it with an electric boiler and installing solar panels. Fred's installer asked them to contact their DNO as it is likely that they will need to have their electricity supply upgraded to a 3-phase supply. Fred's DNO confirmed this and stated that Fred would need to pay for this upgrade.



Glenn's Story: Glenn wants to install solar panels and a heat pump in their property, and has been advised that they will need to upgrade to a 3-phase supply to do this. Glenn's DNO has stated that it will cost £7000 for them to complete the necessary work. Glenn believes this is too expensive and wants to know if they can use a 3rd party to complete this work.



Policy recommendations



Ensure consumers have clarity on what works they are liable to pay for:

DNOs are obliged to have, comply with, and publish on their website, charging methodologies and statements describing how the costs associated with connecting to the electricity distribution network are apportioned between the connecting customer and the DNO.¹⁶ Where only the DNO can provide that connection service, they must also provide a quotation within specified timeframes which complies with those methodologies and statements. However, our analysis of Citizens Advice data indicates consistent consumer confusion regarding the rationale behind costs and the assessment of whether the charged amount is fair or reasonable.

DNOs and the ENA should take steps to ensure that consumers have an understanding of how connections are calculated. This should include all costs the consumer is liable for, and provide a clear breakdown for the cost of each element of the required work. All potential costs incurred by DNO work must be clearly communicated up front at the survey stage. From April 2028, via the 'smaller connections' incentive, DNOs will receive a penalty or reward based on the satisfaction of customers after the connection work has been completed.¹⁷ This should help drive DNOs to improve their communication of connection costs. Meanwhile, DNOs will continue to be incentivised to improve their communication of costs to those who do not proceed with the connection work via the 'general enquiries' customer satisfaction survey. We recommend that Ofgem move the subset of the general enquiries relating to connections to the smaller connections incentive. This will enable the incentive to capture all stages of the customer journey, and incentivise DNOs to address factors driving customers away from proceeding with the connection.¹⁸



Improve the standards consumers can expect from their DNO:

In their ongoing end-to-end review of connections, Ofgem have decided to proceed with the development of minimum standards that DNOs are obliged to meet for smaller connection requests (such as consumers requiring upgrades in order to connect LCTs).¹⁹ Ofgem have also decided to review the Guaranteed Standards of Performance (GSoPs) related to smaller connections and focus on 'the parts of the journey where customers are most at risk of harm from poor DNO performance'.²⁰

We support Ofgem's approach to improving outcomes for minor and smaller connections, but believe that delivering real benefits in practice will depend on strong implementation of standards. Strong monitoring and enforcement will be essential to improve consumer outcomes. We recommend that Ofgem requires monthly connection performance data, publish it quarterly in a comparable format, and consider using financial penalties, in addition to customer compensation, to create meaningful incentives for improved performance.

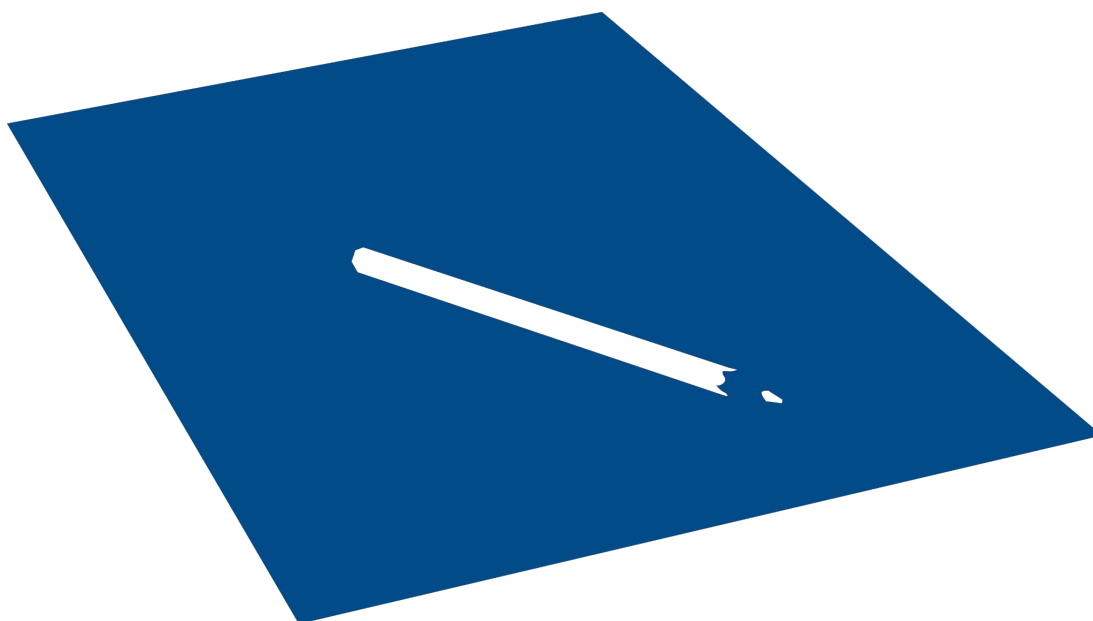
We are also supportive of Ofgem’s introduction of a ‘Time to Connect’ metric as part of the ‘Smaller Connections Incentive’ in ED3. Ofgem intends for this to ‘reward strong performance, penalise sustained underperformance’ to ‘drive timely decision-making and delivery for small-scale LCT connections and any associated enabling works’.²⁴ As outlined above, we support the fact that this reward/penalty will also depend on the customer satisfaction of those whose DNO has carried out works required prior to installation. Customer experience and service quality are important elements of the installation journey which must not be sacrificed for speed. On that note, we will engage closely with Ofgem as they develop safeguards for ‘conditional approvals’, where customers have their connection approved subject to limitations while they wait for work to be carried out. As mentioned above, we also recommend that the smaller connections incentive includes the customer satisfaction of those who enquire about a connection but do not proceed. Customers may be driven away from proceeding with a connection if the communicated time frame is too long, and we believe their experience should be included in an incentive designed to drive timely delivery of those connections.



Introduce proactive upgrades for unlooping homes:

Currently, only one DNO is undertaking proactive unlooping as a core part of their unlooping strategy; other DNOs are doing this on a limited basis, have trialled this or are planning on trialling this approach.²² Evidence from research on behalf of DESNZ suggests that ‘consumers are more likely to consent to unlooping if others in their area are also being unlooped’ and ‘several DNOs mentioned ... that unlooping on a street-by-street basis is more efficient, as neighbours tend to agree more quickly and willingly’.²³

Ofgem expects DNOs to develop and deliver proactive unlooping programmes between 2028-2033, and expects to introduce a licence obligation that DNOs develop and comply with an unlooping Code of Practice. This would aim to ‘harmonise... DNO best practice behaviours... so that customers receive a consistent end-to-end experience regardless of where they live, while still allowing operational flexibility in how work is delivered locally’. We support DNOs introducing proactive unlooping in ED3, along with more consistent standards of practice. However, we want to ensure that unlooping delivers value for money for consumers and the process works for all of those directly affected by unlooping. We will investigate this area further.





Problems post LCT installation

Problems post LCT installation

Voltage issues

In our analysis of Citizens Advice data²⁴ we found that people are coming to us with issues relating to the voltage of their supply, which is causing their LCTs to stop working. We found that:

- Over 1 in 13 people seeking our help with network safety or reliability issues are having problems with over or under voltage, mostly over voltage.²⁵
- Of those, most are because people cannot charge their EV. Both over and under voltage causes the charger's protection to trip, which prevents people from charging their car at cheaper times (such as overnight), or at all. Some clients have also been unable to install or use their heat pump.



Sam's Story: Sam's electric vehicle charger is failing to charge their car overnight. Sam has been in contact with their DNO and engineers have attended Sam's property twice. The engineers have stated that they believe there is a voltage issue with Sam's supply and that a further visit will be needed to measure the voltage again. Two months have gone by since the last visit and Sam is finding it difficult to deal with the DNO and arrange a further visit to the property. While this issue is ongoing, Sam is unable to charge their vehicle at home.



Aisha's Story: Aisha had an electric vehicle charger fitted in their property around a year ago. Shortly after installation the charger began repeatedly failing. Aisha contacted their energy supplier who advised that the issue appeared to be related to over-voltage on their electricity supply and told them to contact their DNO. The DNO has not been able to resolve this issue and so Aisha has raised a formal complaint with them. This issue has caused Aisha significant inconvenience and financial impact, as they are unable to charge their car at home and have to rely on more expensive public charging infrastructure.

One of the reasons that equipment stops working is that protection which is in place, such as circuit breakers, stops the equipment drawing power. This can happen when voltages are within statutory limits (216 - 253V), but it is more likely to happen when those limits are breached. Within our data we found reports from consumers that their voltage is either below or above those legal limits. It can take weeks if not months for DNOs to confirm if there is a voltage issue and it does not seem that DNOs are resourced to monitor this problem adequately.

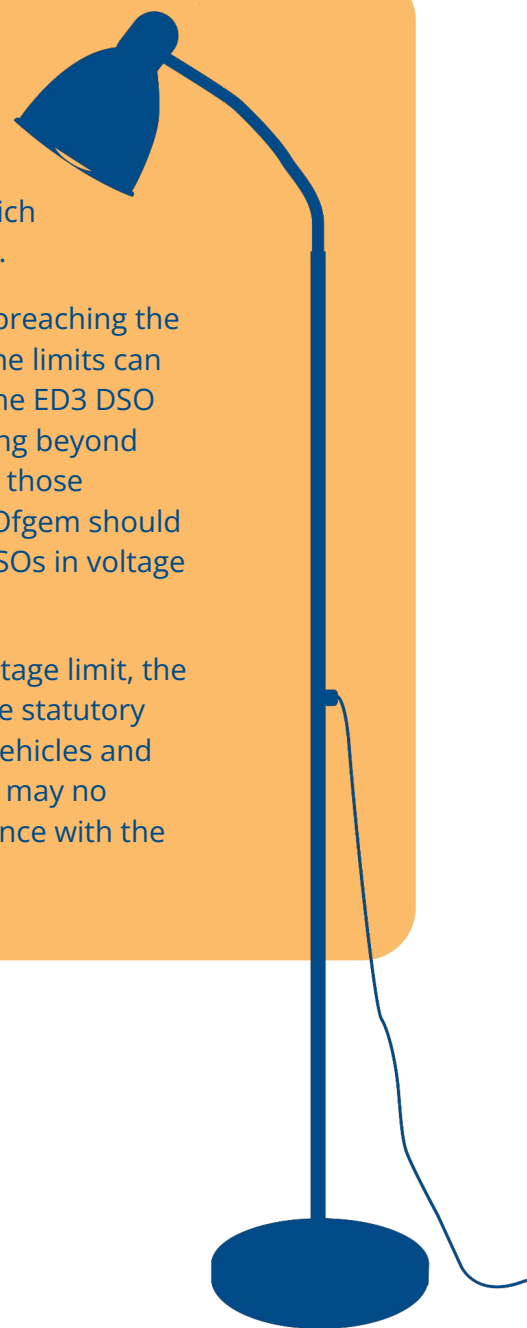
The Energy Networks Association (ENA) is currently consulting on changing the statutory voltage limits, and lowering the lower statutory voltage limit.²⁶ This could reduce the likelihood of over voltage stopping people's equipment from working, although it could create other perverse outcomes.

Ofgem have decided that in ED3 DNOs, in their role as Distribution System Operators (DSOs), will have a new function to manage voltage. They will need to improve monitoring and enhance management of voltage, which among other things should aim to 'eliminate interruptions of operation of LCTs such as EV chargers and PV inverters.'²⁷



We recommend that:

- Ofgem should amend the guaranteed standards of performance so that DNOs must fix voltage fluctuations which are over/under statutory limits within a specific time-period.
- DESNZ and/or Ofgem must hold DNOs to account who are breaching the statutory limits. They must consider how compliance with the limits can be monitored and reported, alongside the introduction of the ED3 DSO incentive. Arguably, incentives exist to reward DNOs for going beyond their core responsibilities, or penalise them for not meeting those responsibilities. Given that the voltage limits are statutory, Ofgem should consider this in the design of any incentive or funding for DSOs in voltage management.
- As the ENA proceeds with consultation into lowering the voltage limit, the ENA should investigate the risks and benefits of lowering the statutory voltage limit, including upon people charging their electric vehicles and with older appliances, typically more than 30 years old, that may no longer function as well. They should consider how compliance with the limits can be monitored and reported.



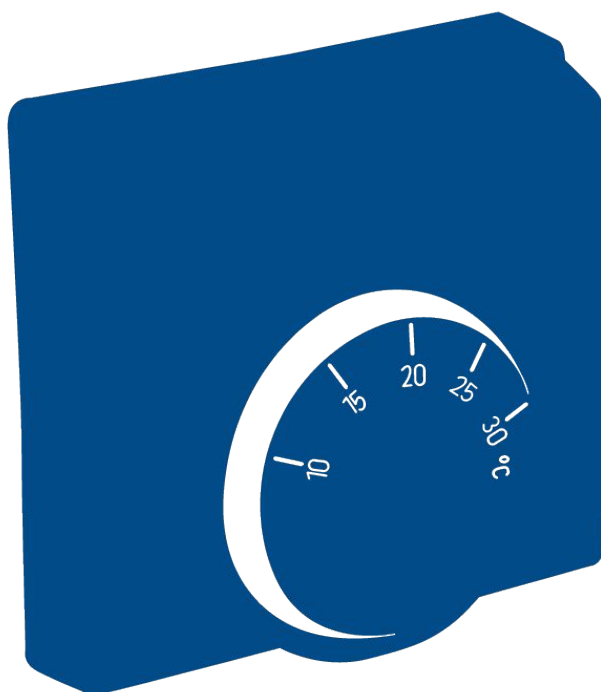
Gas disconnections

Once a consumer has installed a heat pump they may choose to disconnect from the gas network, so that they no longer have to pay a standing charge for their gas meter. To do this, consumers will first need to contact their energy supplier to remove the gas meter. The cost of removing a meter can vary by supplier and information on charges is generally hard to find. Some suppliers offer this service free of charge,²⁸ however a fee may be incurred which can be upwards of £200.²⁹ In our research with Yonder, one consumer reported being quoted £400 for a meter removal.

After meter removal the consumer may then potentially engage with their gas distribution network to disconnect their gas supply. In the current gas disconnections policy framework there are two routes for consumers to disconnect from the gas grid:

- **Voluntary disconnection:** Consumers can pay upfront for a 'voluntary disconnection'. The amount consumers pay for this disconnection can vary according to the circumstances of the disconnection and the gas distribution network's charging methodology.
- **Health and Safety Disconnection:** The 'health and safety disconnection' route means that consumers do not have to pay the GDN upfront for a disconnection. In this case the consumer would ask their supplier to remove their gas meter, which may require a fee. After 12 months, health and safety legislation requires the gas network to ensure that the disconnection is safe. This may involve capping and disconnecting pipes which supply the property. Gas distribution networks are not able to charge individual customers for work required under health and safety legislation. However, the costs of the disconnection are socialised across all remaining gas network users.

Heat pump installers have a very limited role in the gas disconnections process. They will cap any gas pipes within the property to ensure that they are safe, and may advise consumers to contact their energy supplier if they wish to have their gas meter removed.



The people we spoke to in our research had a variable understanding and awareness of the gas disconnections process:

- **Many people were unaware of the possibility of disconnecting their gas supply.**

Not everyone was aware that gas disconnection was a possibility, and only learnt about this option while participating in the focus groups. This means that some consumers are continuing to pay for a gas supply that they do not need after heat pump installation, simply because they were not told meter removal was possible and potentially free to access.

"It was only after being asked in the research diary that I realised, it's nothing I've ever thought of. I didn't even realise you could get disconnected."

- Quote from research participant

- **Other people opted to retain their gas for hybrid benefits.**

For some, they chose to keep their gas connection active for the benefits and reassurance of a hybrid system i.e. cooking with a gas hob, or having a back up heating option.

"I've kept it for the use of the hob, because we just prefer cooking that way."

- Quote from research participant

- **Some people decided to have their gas meter removed because they did not want to pay the standing charge.**

These people were usually either advised by their installer to contact their supplier to get their meter removed, or their supplier was their installer, and this was readily advised and performed as part of their installation process. Some consumers were informed by the supplier that the GDN might arrive to inspect the capping and meter removal, but no one we spoke to had experienced this inspection despite it being 2-3 years since the meter removal.

- **A small minority actively looked into a full voluntary disconnection but decided it was too expensive, disruptive and logistically complicated.**

Consideration of this option is more likely among those who are more engaged in the LCT installation journey as a whole and have a greater understanding of possible outcomes. For example, one consumer who was an engineer explained that due to their own technical knowledge they knew that having the gas pipe entirely disconnected and removed would have required extensive work and would have taken too long and been too disruptive to do. Instead, they had the meter capped by his installer and then his meter removed by the energy supplier to remove the standing charge.

We found that there is a clear gap in consumers' knowledge and understanding of the gas disconnections process, which limits informed decision-making and can negatively impact the overall consumer experience. This means consumers are reliant on the quality of advice they receive from their installer, supplier or GDN. Our analysis of Citizens Advice data shows that people can often be confused about how to access a gas disconnection and what the process entails:



Sinead's Story: Sinead has recently had a heat pump installed and no longer requires their gas supply. Sinead contacted their energy supplier to request that they remove their meter and cap the supply point. However the supplier states that this is not a service that they offer and that Sinead must contact their GDN. Sinead's GDN states that it will cost £1700 to have their gas supply disconnected. Sinead wants to know if their energy supplier is obliged to remove their gas meter.



Bianca's Story:

Bianca upgraded their home to be all electric a few years ago and no longer required a gas supply. Bianca realised they were still paying a standing charge for their gas supply and agreed to pay their energy supplier to come and remove their meter and cap their supply. Recently Bianca's GDN contacted them and said they would need to attend the property to complete a gas disconnection. The GDN arrived at Bianca's property with little warning and have drilled multiple holes in their driveway and have had to temporarily stop gas supply to Bianca's neighbour. Bianca is unhappy as they had no prior information from the GDN or from their energy supplier that such extensive work would be required to disconnect them from the gas network.



Recommendations

To prevent detriment to consumers, the advice and information they receive around gas disconnections needs to be improved. We recommend that **Ofgem should mandate that GDNs and suppliers provide standardised, clear, consumer-facing information.** All consumers should have access to a plain-language explanation of disconnection options, what each involves, who carries it out and what it costs. Where consumers contact their GDN directly, guidance should direct them to the most appropriate and cost-effective option, even if that means recommending a free supplier-led solution over a chargeable GDN service.

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