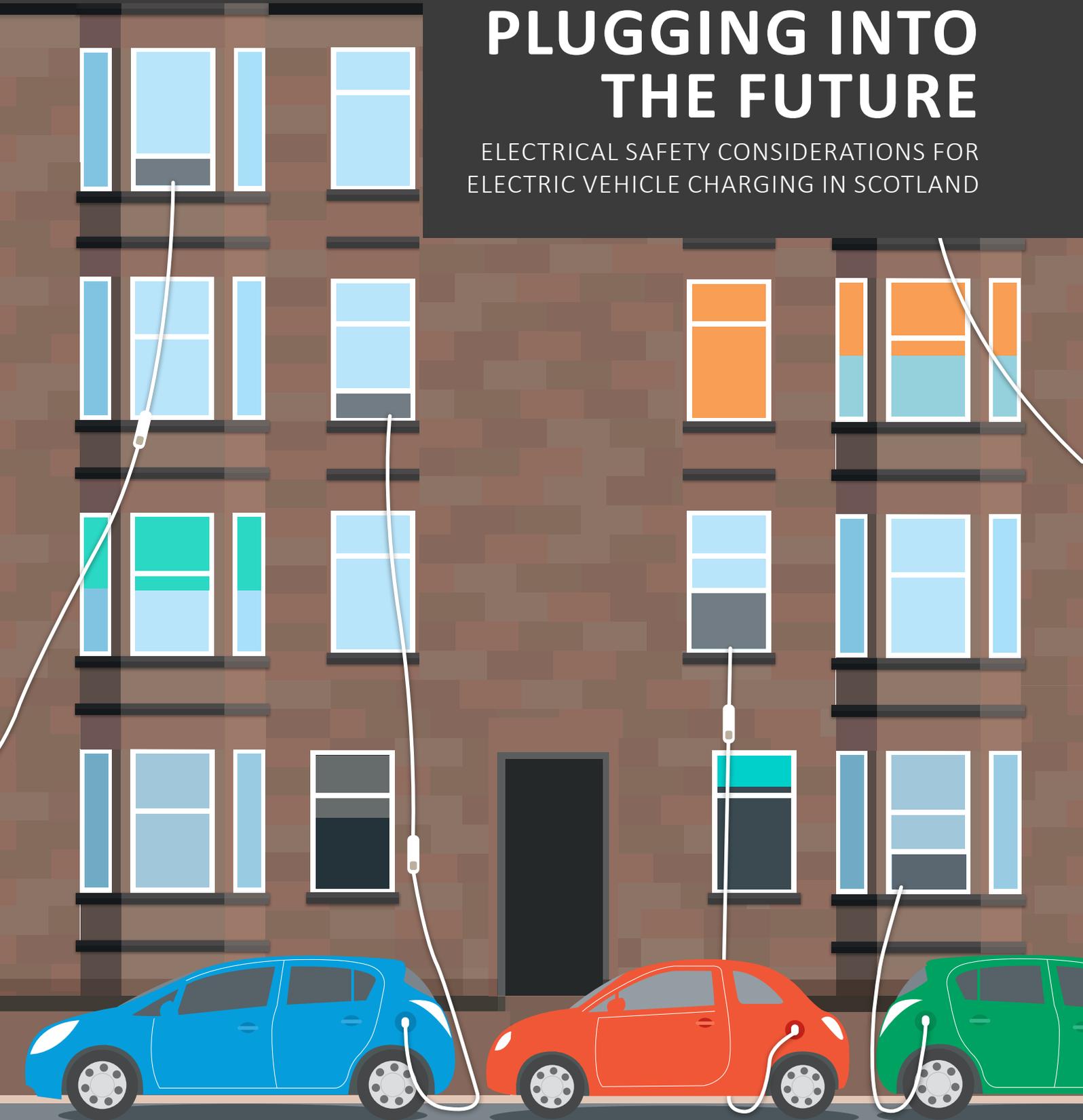


# PLUGGING INTO THE FUTURE

ELECTRICAL SAFETY CONSIDERATIONS FOR  
ELECTRIC VEHICLE CHARGING IN SCOTLAND





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## Who we are

Electrical Safety First is a consumer safety charity dedicated to reducing the number of deaths, injuries and accidents caused by electricity. We do this by campaigning on behalf of consumers to improve safety regulations. We also work to raise awareness of electrical risks in the home.

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# 1. EXECUTIVE SUMMARY

Charging points are being installed at motorway services, railway stations, workplaces, supermarkets and in car parks but drivers expect the convenience of charging their car at home. In fact, it is estimated that 80% of Electric Vehicle (EV) charging will be done this way.<sup>1</sup> As well as being convenient, home-based charging, particularly overnight, has the advantage of being, in most cases, the cheapest way to recharge.

However, research carried out by Electrical Safety First found that EV owners are charging their vehicles dangerously due to a lack of nearby public charging infrastructure or appropriately installed domestic charging points. Drivers are using domestic multi-socket extension leads, not suitable for outdoor use, to charge from the mains in their home. In our survey, 8 out of 10 respondents in Scotland admitted knowing that these should not be used outside.<sup>2</sup> Additionally, nearly half of Scottish EV users who charge using an extension lead have left cables running to their vehicle whilst it was raining. All of these practices increase the risk of electric shock and fire.

Whilst new build homes can and must plan for the electrification of transport, existing homes will prove more difficult to adapt. This is particularly the case for residents of flats, tenements and terraced housing which account for nearly 60% of Scotland's dwellings.<sup>3</sup> A lack of available parking options, together with restrictive building regulations and piecemeal local infrastructure delivery plans, will impact on the ability of residents to access safe charging facilities. Tenants also face additional obstacles because of prohibitive tenancy agreements.

 A LACK OF AVAILABLE PARKING OPTIONS, TOGETHER WITH RESTRICTIVE BUILDING REGULATIONS AND PIECEMEAL LOCAL INFRASTRUCTURE DELIVERY PLANS, WILL IMPACT ON THE ABILITY OF RESIDENTS TO ACCESS SAFE CHARGING FACILITIES.



1 <https://www.energysavingtrust.org.uk/sites/default/files/23465-EST%20BDF-FT-Charging%20Electric%20Vehicles%20-%20Best%20Practice%20Guide-WEB.pdf>

2 Consumer research commissioned by Electrical Safety First and conducted by Censuswide surveying 1,500 owners of plug-in vehicles in the UK in March 2019.

3 <https://www.gov.scot/publications/scottish-house-condition-survey-2019-key-findings/>



THERE MUST BE A FOCUS ON REMOVING SOME OF THE UNDERLYING BARRIERS FOR DRIVERS LIVING IN PROPERTIES WITHOUT PRIVATE PARKING OR INADEQUATE ON-STREET INFRASTRUCTURE.



We believe national standards should be developed for charging point provision in Scotland with flexibility for local authorities to create policies tailored to local circumstances. It goes without saying that the public network needs to keep pace with demand, and this will require considerable government activity and coordination. However, there must also be a similar focus on removing some of the underlying barriers for drivers living in properties without private parking or inadequate on-street infrastructure. Currently there is a risk that they will resort to unsafe charging practices. More widely, all consumers must be provided with the information required to access qualified and competent installers to ensure high quality and safe installations.

## Recommendations

- ⓔ A change to building regulations that requires the installation of dedicated charging points in all new build properties with parking spaces.
- ⓔ Amend the Tenements (Scotland) Act 2004 to allow a tenant or co-owner to install a charging point without having to obtain consent or to ensure that consent cannot reasonably be withheld.
- ⓔ Consider updating the Scottish secure tenancy agreement in liaison with landlords and their insurers to make it easier for tenants to install EV charging points.
- ⓔ Decisions about charging provision should not be made in isolation by local authorities – two-way communication channels need to be established with residents to better understand their specific needs.
- ⓔ Local authorities' delivery schemes must focus on implementing more on-street charging and consider 'Charging Hubs' as part of planning decisions to provide solutions in areas of high density housing.
- ⓔ Use current government policy plans, such as the 'Housing to 2040' Strategy, the new neutral-tenure Housing Standard and the Private Rented Sector Strategy, to increase domestic charging infrastructure opportunities.
- ⓔ Easy to access routes to find registered installers for EV charging points.

## 2. INTRODUCTION

This paper explores the electrical safety implications of the growing use of Electric Vehicles (EVs) as new petrol and diesel cars are phased out by 2030 to support the decarbonation of transport in Scotland. The paper focuses on highlighting specific issues for renters and residents of properties without access to private parking – including flats, tenements and terraced housing – where there are extra barriers and challenges to installing dedicated and safe home charging facilities. It provides a range of recommendations for national and local government to ensure the policy environment allows consumers to safely transition to EVs.





# 3. Policy and Regulatory Landscape

THE TRANSITION TO ELECTRIC VEHICLES IS CENTRAL TO WIDER POLICY OBJECTIVES TO DECARBONISE TRANSPORT IN SCOTLAND BY 2045



## 3.1. Central Government & Funding

In December 2020, the Scottish Government updated its Climate Change Plan and brought forward the date for phasing out the sale of new petrol and diesel vehicles in Scotland to 2030.<sup>4</sup> The transition to Electric Vehicles (EVs) is central to meeting this target and forms part of wider policy objectives to decarbonise transport in Scotland by 2045.

The Scottish Government has invested over £32m in public infrastructure with the aim of delivering a diverse vehicle charging network through ChargePlace Scotland in collaboration with Scotland's Local Authorities (LAs). The UK Government's Office for Zero Emission Vehicles (OZEV) provides grant funding to Scottish LAs to support local charging infrastructure projects. Direct grants for both home and workplace charging points are also available through this scheme.

Some of the financial support provided by the Scottish Government included extending support through the Switched on Towns and Cities Challenge Fund (STCCF) and the Local Authority Installation Programme (LAIP) to help deliver the roll-out of larger on-street charging schemes and rapid charging hubs in communities.

However, in its last report to the Scottish Parliament in December 2020, the Climate Change Committee concluded that more needed to be done to eliminate the need to buy a petrol or diesel car in Scotland by 2030 and that, specifically, building regulations and planning decisions had to evolve to cope with the expected rapid rise in EVs.<sup>5</sup> As part of a

<sup>4</sup> <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/pages/9/>

<sup>5</sup> <https://www.theccc.org.uk/publication/reducing-emissions-in-scotland-2020-progress-report-to-parliament/>

building regulations review of energy standards<sup>6</sup>, the Scottish Government committed to working in partnership with Transport Scotland to investigate provision of EV charging points or enabling infrastructure within new buildings. However, there has been no progress in developing these policy changes.

### 3.2. Role of Local Government

Local Authorities (LAs) in Scotland are the main beneficiary of funding from both the UK and Scottish Governments to deliver EV charging infrastructure in communities. LAs control a range of local assets and have powers which can be harnessed to help residents with charging installations. For example, through the UK Government's On-Street Residential Chargepoint Scheme (ORCS), Scottish LAs can access funding to install public residential charging points for those without access to private parking.

In these instances, consumers are required to ask their LA to install a roadside charging point near their home and the onus lies with the LA to apply to ORCS for funding, which will only be done if forecasts show there is a demand for EVs in the area. Since 2017, the scheme has supported just seven of the 32 LAs in Scotland.<sup>7</sup> A recent UK-wide study also highlighted that local installation plans are not distributed evenly across the UK with Southern English councils set to install significantly more on-street EV chargers by 2025 than councils in Scotland.<sup>8</sup>

The Scottish Government recently provided an additional £20.6 million to LAs through STCCF and LAIP with the aim of filling in existing gaps in infrastructure. Dundee City Council received funding to invest in 'Charging Hubs'. The city has the second highest population density in Scotland and many residents do not have dedicated off-street parking with 51% living in flatted accommodation.<sup>9</sup> In response, the council created several 'Charging Hubs' on the top of car parks, providing hundreds of charging points across the city. With more than half of Dundee's population not having a driveway or off-street parking, commuters are able to charge at the hubs during the day, with residents of nearby homes able to access them at night.

A RECENT UK-WIDE STUDY HIGHLIGHTED THAT SOUTHERN ENGLISH COUNCILS ARE SET TO INSTALL SIGNIFICANTLY MORE ON-STREET EV CHARGERS BY 2025 THAN COUNCILS IN SCOTLAND.

6 <https://www.gov.scot/publications/scottish-building-regulations-review-energy-standards-call-evidence/pages/2/>

7 [https://energysavingtrust.org.uk/wp-content/uploads/2020/10/Successful-ORCS-Applicants\\_300321.pdf](https://energysavingtrust.org.uk/wp-content/uploads/2020/10/Successful-ORCS-Applicants_300321.pdf)

8 <https://www.centrica.com/media-centre/news/2021/driveway-discrimination-just-35-on-street-electric-vehicle-chargers-per-council-to-be-installed-by-2025/>

9 <https://www.dundee.gov.uk/services/housing>

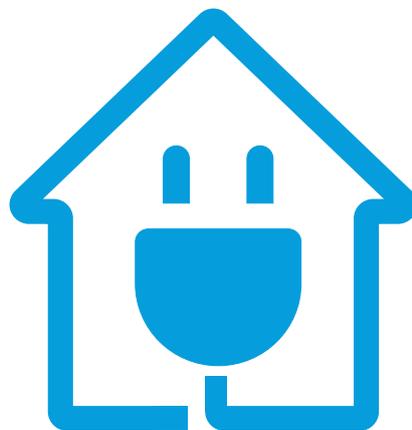


A RECENT STUDY  
REVEALED THAT  
SCOTLAND ONLY HAS  
**739**  
ON-STREET  
CHARGERS, WHICH  
EQUATES TO AROUND  
20 PER 100,000  
PEOPLE



Another method being adopted by some LAs is the modification of lampposts to provide sockets to charge EVs in built-up residential areas. Stirling Council, for example, has included lamppost chargers in their local delivery plans to accommodate the needs of residents of flats without off-street parking. In comparison to other EV charging points, lamppost charging is quicker and cheaper to install and does not add additional 'furniture' to the pavements. These benefits make them a viable on-street charging option. However, they can be problematic, and a major concern is trip hazards caused by having to run the charging cable down the gutter to your car. There are also issues for the elderly and disabled as the cables can be heavy and will usually need to be stored in a car boot.

It is encouraging to see some LAs deliver a range of charging initiatives to help those without private parking make the transition to EVs. However, a recent study revealed that Scotland only has 739 on-street chargers, which equates to around 20 per 100,000 people, and that figure is expected to rise by just 370 by 2025, only taking the total to 30 per 100,000 residents.<sup>10</sup> This leaves many drivers – particularly those who live in properties such as flats, tenements and terraced housing - a long way behind in the transition to EVs and increases the likelihood of dangerous charging practices.



<sup>10</sup> <https://www.dailyrecord.co.uk/lifestyle/motoring/theres-need-plug-ev-charger-23361367>



## 4. ELECTRICAL SAFETY ISSUES

We surveyed 1,500 EV owners across the UK and found that the 74% who had used domestic multi-socket extension leads, (not suitable for outdoor use), to charge from the mains in their home, had done so due to the lack of public charging points near their home.<sup>11</sup>

More than 8 out of 10 respondents in Scotland admitted they were aware these should not be used outside. Almost half of Scottish EV users who charge using an extension lead have left cables running to their vehicle when it has been raining.

There has been an encouraging increase in Scotland's public charging network – the average distance from any given location to the nearest public charging point is 2.78 miles.<sup>12</sup> However, our research highlighted that EV owners had concerns about the accessibility of charging points in their area and as charging can take several hours, it is impractical for many to rely solely on public charging points.

We also found instances of “daisy chaining”, where short extension leads are plugged into one another to increase the access range from a domestic wall socket. This dramatically increases the risks of socket overload and electric shock and can also place excessive physical strain on both the socket and extension lead. This practice also encourages the use of extension leads as a permanent solution – where they are only intended for temporary supply of power.

Dedicated home charging points have built-in safety features and most domestic charging points, which are rated at 3 kW or 7 kW, are wired directly to the fixed electrical installation, on its own circuit for safety and to enable monitoring separate from other electrical loads. Using a competent



ALMOST HALF OF SCOTTISH EV USERS WHO CHARGE USING AN EXTENSION LEAD HAVE LEFT CABLES RUNNING TO THEIR VEHICLE WHEN IT'S BEEN RAINING.



<sup>11</sup> Consumer research commissioned by Electrical Safety First and conducted by Censuswide surveying 1,500 owners of plug-in vehicles in the UK in March 2019.

<sup>12</sup> <https://www.gov.scot/publications/foi-19-00181/>



  
AROUND  
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THE INSTALLATION  
OF DEDICATED AND  
SAFE CHARGING  
FACILITIES MORE  
DIFFICULT.  


and properly qualified person to install a domestic charging point is the safest option for consumers and provides added consumer protection and redress guarantees.

A key concern is that the EV roll-out could by-pass a significant number of drivers and inadvertently lead to an increase in unsafe charging methods. We estimate that around 60% of people in Scotland live in housing such as flats, tenements and terraced housing with limited off-street parking options, making the installation of dedicated and safe charging facilities difficult.<sup>13</sup>

A recent UK-wide survey of 2,000 drivers showed the negative impact the lack of charging points was having on people's plans to transition to EV ownership.<sup>14</sup> Out of the drivers who do not have a driveway or off-street parking, just 7% already have an EV.

More importantly, only 24% are considering switching, while 53% are not considering purchasing an EV at all. When asked about barriers to EV ownership, 49% of drivers who said they would not consider purchasing an EV blamed the lack of access to on-street or public charging points in their area.

#### 4.1. Private Rented Sector

Tenants face unique challenges from the EV roll-out, particularly those living in the Private Rented Sector (PRS). These residents are entirely reliant on their landlord providing permission for the installation of a charging point. As 14% of Scottish households (around 325,649 properties) live in the PRS and flats account for 67% of all dwellings rented from private sector landlords, this is a significant issue.<sup>15</sup>

Through our consumer helpline, Electrical Safety First has heard testimony of private renters who have had great difficulty in having a charging point installed in their home. In one case in Aberdeen, the renter requested a charging point for their EV, only to have an increasing number of barriers placed in their way. In the end, the landlord refused the request citing issues with insurance cover which led the tenant to seek alternative housing.

It is understandable that landlords need assurance that their investment is protected but a dedicated charging point, installed

<sup>13</sup> Derived from the Scottish House Condition Survey 2019 which states that terraced (21%), tenement (24% and other flats (13%) accounted for 58% of dwellings in Scotland. These are the types of properties which are less likely to have off street parking options unless dedicated parking facilities are offered.

<sup>14</sup> <https://www.centrica.com/media-centre/news/2021/driveway-discrimination-just-35-on-street-electric-vehicle-chargers-per-council-to-be-installed-by-2025/>

<sup>15</sup> <https://www.gov.scot/collections/scottish-house-condition-survey/>



by a competent installer, is a far safer option than tenants charging from a wall socket using an extension lead.

In 2019, the Scottish Government introduced a revised model private residential tenancy agreement for landlords to set up a tenancy.<sup>16</sup> It provides improved security of tenure with an open ended tenancy which means it doesn't have a fixed length or a set end date. In regard to alterations, it provides a tenant with the right to adapt the property in special circumstances, such as to make the property suitable for a disabled person and ensures that these requests should not be reasonably withheld. The model agreement would be an effective tool to make it easier for renters to have access to safe charging points.

The social housing sector has a similar tenancy agreement model which could also be adapted to assist social tenants in the same way. Adopting a wholesale approach using these model agreements could also help resolve any issues with insurance companies which may be a factor in refusing a tenant request to install an EV charging point.

#### 4.2. Residents of Tenements

A tenement- the most widely built form of housing in the 19th and 20th centuries in Scotland - is a type of multi-occupancy building, with most having several storeys. They account for nearly a quarter (24%) of all occupied dwellings in Scotland.<sup>17</sup> Most residents in tenements do not have sole access to the ground level in front of their home and use stairs to access the street level from their homes, raising the issue of how to install a charging point linked to individual flats' electricity meters.

The majority of tenement buildings are also mixed-tenure, comprising of owner-occupiers and rented households. As the installation of charging points in front of the building is something all the owners of the flats will have to agree on, this could create an extra barrier to the EV transition for these residents and lead to unsafe charging methods, such as the use of domestic multi-socket extension leads.

The Tenements (Scotland) Act could, however, offer an opportunity to overcome some of these challenges. Introduced in 2004, it sets out the rights and responsibilities of all individuals living in tenement flats in Scotland. The Act makes provision

AS 14% OF SCOTTISH HOUSEHOLDS (AROUND 325,649 PROPERTIES) LIVE IN THE PRS AND FLATS ACCOUNT FOR 67% OF ALL DWELLINGS RENTED FROM PRIVATE SECTOR LANDLORDS, ACCESS TO SAFE EV CHARGING WILL BE A SIGNIFICANT ISSUE.



<sup>16</sup> [https://consult.gov.scot/private-rented-sector-policy/regulations-and-policy-private-housing/user\\_uploads/page-7.pdf](https://consult.gov.scot/private-rented-sector-policy/regulations-and-policy-private-housing/user_uploads/page-7.pdf)

<sup>17</sup> <https://www.gov.scot/publications/scottish-house-condition-survey-2019-key-findings/>



HOUSING TO 2040 OFFERS AN OPPORTUNITY TO ADDRESS SOME OF THE ISSUES AROUND THE INSTALLATION OF DOMESTIC EV CHARGING POINTS.



for the installation of new amenities and could be amended to make it easier for tenement residents to install EV home charging points.

Glasgow is known for its tenements. There are 297,070 residential properties in the city and 73% are flats, which means that there are more than 200,000 flats in Glasgow. Of these, about 70,000 flats (or 20,000 blocks) are pre-1919 tenements. In 2017, Glasgow City Council published a City Development Plan with guidance on sustainable transport. This outlines the provision of EV charging for new builds but does not make recommendations for existing buildings with multiple occupants. However, the challenge of providing existing tenements with EV charging facilities is currently being considered by the Council which is a welcome move. Amending the Tenements Act, as outlined above, could help the Council address some of these issues.

### 4.3. Wider Policy Opportunities

Early in 2021, the Scottish Government published its first ever long-term housing strategy, setting out the government's ambitions for housing over the next 20 years. 'Housing to 2040' outlines plans to develop a new tenure-neutral Housing Standard and Private Rented Sector Strategy.

The Housing Standard will create a single set of quality and accessibility standards which all homes, no matter their tenure, will be required to meet. The policy intention is to work with local authorities, social and private landlords to drive improvements to the quality of all homes, balanced with the rights of building owners and householders. The Standard will be aligned to the proposed regulatory standards for net-zero heating. This joined up approach is encouraging and suggests that the new Housing Standard could also provide the opportunity to address some of the issues around the installation of domestic EV charging points.

A new Private Rented Strategy will also be developed as part of 'Housing to 2040' to support a fair, accessible private rental sector, covering all types of rented homes. As some of the outcomes proposed will require changes to legislation, a new Housing Bill will be introduced in the Scottish Parliament and provide another policy avenue to remove some of the barriers to EV ownership for renters.



## 5. Conclusion

People without a driveway will be left behind in the race to EVs in Scotland unless policy intervention is taken across a number of key areas. As our findings indicate, there are already issues with drivers charging their vehicles dangerously due to a lack of nearby public infrastructure or appropriately installed domestic charging facilities. This issue will only worsen as the rate of EV adoption increases, having a disproportionate impact on renters and residents of properties such as tenements, flats and terraced housing. Wider research has highlighted the importance of creating many more on-street charging points for EVs in the years ahead, with drivers blaming the lack of them as a key barrier to EV ownership.

There is a clear need to plug the EV charger gap to prevent any harm caused by dangerous charging practices. A number of proactive policy changes across local government, housing and building standards, could be implemented to ensure safe EV charging is accessible for more residents, and becomes the norm in new housing developments from the design stage. Without these changes huge sections of the population will be left behind – unable to plug into the future- as we decarbonise transport.



RESEARCH HAS HIGHLIGHTED THE IMPORTANCE OF CREATING MANY MORE ON-STREET CHARGING POINTS FOR EVS IN THE YEARS AHEAD, WITH DRIVERS BLAMING THE LACK OF THEM AS A KEY BARRIER TO EV OWNERSHIP.



## 6. Recommendations



A change to building regulations that requires the installation of dedicated charging points in all new build properties with parking spaces.



Consider updating the Scottish Secure Tenancy Agreement in liaison with landlords and their insurers to make it easier for tenants to install EV charging points.



Amend the Tenements (Scotland) Act 2004 to allow a tenant or co-owner to install a charging point without having to obtain consent or to ensure that consent cannot reasonably be withheld.



Decisions about charging provision should not be made in isolation by Local Authorities – two-way communication channels need to be established with residents to better understand their needs.



Local authorities' delivery schemes must focus on implementing more on-street charging and consider 'Charging Hubs' in planning decisions to provide solutions in areas of high density housing.



Provide easy to access routes to find registered installers for EV charging points.



Use current government policy plans, such as the 'Housing to 2040' Strategy, the new neutral-tenure Housing Standard and the Private Rented Sector Strategy, to increase domestic charging infrastructure opportunities.

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