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Pilot: Charging Up Electrical Apprenticeships

Measuring the programme impact

Context

The UK is currently striving to be a net zero economy by 2050 and for this transition to succeed, the transport strategy will be a key pillar. The transport sector is one of the UK's largest emitters of CO2 and a major source of air pollution in cities[1], making decarbonisation a priority and providing sufficient electric vehicle (EV) infrastructure a necessity.

The demand for electric vehicles has grown rapidly but as the number of battery-electric cars increases so does the need to expand the UK's EV charging infrastructure.

To make reliable EV charging access a reality for drivers, in 2022 the UK government set a target of installing 300,000 public EV charge points (EVCPs) across the UK by 2030[2]. According to figures from Zap-Map, which is used by the Department for Transport (DfT), in the last three months of 2022, 2,401 EV charging points were installed, which was roughly 25% of the monthly installation rate needed to reach the government's target[3].

The demand is also evolving over time as new regulation and targets come into place across the UK. In Scotland, for example, new regulations on electric vehicle charging came into force in June 2023. The updated building regulations would require new residential buildings with parking spaces to have at least one EV charge point[4], which has led to increased demand for EV charging skills in the industry.

In England, London has been given £35.7m to invest in its EVCPs expanding the charging network across all 32 boroughs and the City of London[5]. The ambition is to have at least one electric vehicle charge point on every street where needed. London has almost 13,000 charge points, and the predictions are that 60,000 chargers will be needed by 2030 to meet the demand[6].

In order to meet the demand, a consistent talent pipeline of EV charge point installers needs to be created. Nearly 65% of employers say it's challenging to find qualified or competent electricians to design and install EVCP installations. **Over one third of electrical installers installing EV charging points learned the skills on-the-job, without any formal training[7].**

Upskilling electricians for EV charging

Delivering effective EVCP installation training is vital to upskilling electrical professionals to build the capacity that is now sorely needed. Giving individuals and communities access to these skills creates new opportunities while also establishing the market of talent needed for the energy transition.

The growth in electrical vehicle charging infrastructure has presented a significant opportunity for education and industry to collaborate to ensure the workforce is skilled enough to install and maintain this infrastructure safely and efficiently. But, without targeted investment, both employers and training providers will struggle to meet this demand for skills development.

The Shell UK sponsored City & Guilds Electric Vehicle Charging Installation Qualifications Pilot has shown that, with the right support, it's possible to deliver real, positive outcomes on learners, providers and employers, making the case once again for meaningful, considered investment in skills for the energy transition.

The pilot programme

In response to the need, City & Guilds worked with industry associations and employers, with Shell UK playing a key part in the development of a new EV charging industry standard and a set of qualifications aimed at skilled electricians, installers and engineers wishing to upskill to safely install and maintain electric vehicle charging points.

City & Guilds delivered a Shell UK-sponsored skills capacity pilot programme with two aims: to build the trainer and assessor capacity for EV charging training delivery across select UK Colleges, to enable them to deliver EV Charging training independently to eligible learners and build a talent pipeline to work on EVCP installation across the UK from a newly qualified apprentice pool.

The pilot programme had two phases. The first phase included a "Train the Trainer" programme and a capacity-building package that allowed colleges to independently deliver EV charging courses. This phase also provided the colleges with an EV charge point to demonstrate and practice on.

The second phase involved delivering a five-day EV charging installation courses to vetted fourth-year apprentices, with the goal of building a talent pipeline to work on EV charging point installations across the UK. The pilot programme focused on apprentices near the end of their apprenticeships or just on the other side of apprenticeship completion as the intent was to build capacity from the ground-up by enabling 'newly qualified' electricians to enter the job market with this training and qualification under their belt.

This programme will provide insights around the effectiveness of the pilot and its potential for expansion.

To deliver to fourth-year apprentices, we worked with industry stakeholders who helped us recruit and vet the apprentices to ensure they were sufficiently trained and well equipped to undertake this training and assessments. Part of their work was also engaging with the employers who released the apprentices who undertook this additional training and assessments.

We'd like to thank Carolyn Mason from the National Electrotechnical Training (NET) and Anne Galbraith and her team from the Scottish Electrical Charitable Training Trust. We could not have delivered this pilot scheme without their help.

[1] Gov.uk, "Transport and environment statistics: 2023"
[2] Gov.uk, "Tenfold expansion in chargepoints by 2030 as government drives EV revolution"
[3] Bbc.co.uk, "London college says it offers UK's first electric vehicle charger course"
[4] Gov.scot, "Building Scotland (Amendment) Regulations 2022 - electric vehicle charging standard"
[5] London.gov.uk, "Mayor of London and London Councils announce thousands more electric charge points across the capital".
[6] London.gov.uk, "Mayor announces plan to keep London at forefront of the electric vehicle revolution"
[7] Finding based on a 2022 City & Guilds survey of 500 UK-based electricians, conducted by Censuswide

Summary of impact

The three colleges that took part in the pilot programme for capacity building and training for the Electric Vehicle Charging Installations qualification were enthusiastic about the success of the course's development and delivery.

Nine trainers were trained and qualified. 27 apprentices were trained and 17 achieved the qualification.

In particular, the colleges liked how City & Guilds and Shell UK came to them with an industry problem along with a solution that included training material and equipment. Two of the colleges have continued to run the course, expanding the audience it is offered to along with their increased focus on skills that support the energy transition. The pilot has helped raise the profile of the colleges as educators in net zero skills training.

It should be noted that colleges are struggling to recruit and retain staff as the industry is very buoyant.

The apprentices found the course beneficial and finished with a better understanding of the world of work and potential career paths. At the moment, none of the apprentices who responded to the survey are working in EV charging installation, but they would like to in the future.

All of the employers that engaged with the research are working in EV charging installation and would recommend the course to other companies intending to work in this sector.

In total, the pilot engaged:

3

colleges

9

trainers qualified

27

apprentices trained

20

passed and 17 achieved the qualification (as qualified apprentices)

"If you're speaking to Shell, please extend our thanks; we appreciate the opportunity to work together and look forward to more collaborations."

North East Scotland College, Paul Belfour

Methodology

This impact assessment was conducted independently by Bean Research in February and March 2024 to evaluate the effectiveness and legacy of the Shell UK Electric Vehicle Charging Installations Pilot Programme in London, Aberdeen and Inverness.

Bean Research evaluated the course's impact on colleges, students, and trainers. Bean Research is a Social Value International accredited practitioner with significant experience understanding the difference that skills make in progression and the world of work and has worked with City & Guilds for the past five years.

To conduct this research, Bean has held structured interviews with representatives of the London South Bank Technical College, North East Scotland College and UHI Inverness. Three surveys were created to gather feedback from apprentices, trainers and employers; from this, 13 responses were received.

Impact on. . . Colleges

Three colleges took part in the pilot at London South Bank Technical College (LSBTC), the University of the Highlands and Islands Inverness College (UHI) in Inverness and North East Scotland College (NESCol) in Aberdeen.

Following the train the trainer model, nine tutors were trained across the three colleges with 27 apprentices trained.

4 in 5

trainers feel that the course is an excellent example of collaboration between industry and education.

All the colleges were overwhelmingly positive about the pilot. Our evaluation identified three key benefits of the approach and programme for the three colleges involved:

Demand for skills

All of the pilot colleges reported that there is little experience of the EV sector in the education and training sector, and reiterated the the need for more training and investment. It is in this context that the pilot was offered, hence the positive feedback from colleges being able to offer this course as a differentiator.

In fact, given the recent investment in both Scotand and London, this has substantially increased demand for EV qualified people and organisations.

However, the huge demand for skilled professionals in industry has also reduced the training capacity in colleges, as industry roles attract trainers away from teaching by offering more lucrative opportunities.

"It's very difficult to recruit staff at the moment. As the industry is so buoyant, the prospect of coming in as a lecturer or trainer is not their most attractive offer at the moment."

Andrew Mcintosh, UHI Inverness College

Partnership development

The pilot programme demonstrated good collaboration between industry and education.

NESCol has a long-standing partnership with Shell UK, which includes the Shell Engineering Scheme and the Girls in Energy programme, created to boost career pathway options into the energy sector. Given the underfunding of Scotland's colleges, these interventions are most welcome. The pilot was a success because City & Guilds and Shell UK understood the problem facing the industry and developed and funded the solution for the college to implement. LSBTC was also impressed with the speed with which the course was established and delivered while working with City & Guilds and Shell UK.

All of the colleges were grateful that for the Train the Trainer section of the pilot staff were able to train in their own space. For example, the staff at UHI Inverness reported that the trainer travelling to the college was very helpful and the feedback was generally positive. The trainer travelling to the college to train the staff in their space reduced the biggest blockages in launching a course like this. It also gave the staff the opportunity to ask questions related to course delivery in their own facilities. This had benefits for the college, including reduced costs from travel and cover for staff if they were away.

"I think it's been a really positive experience for everyone involved, and I believe it will lead to only good things in the future. We look forward to future collaborations."

Tim Weston, London South Bank Technical College

Creating a legacy

The pilot's legacy has enabled two of the colleges to continue training people on installing EV charging points with the equipment and training provided.

NESCol has developed a new area on campus, the Energy Transition Skills Hub due to open in summer 2025, which is expanding its offering to include training on heat pumps, etc. One of the trainers from the pilot scheme has been promoted to oversee it. Since the pilot, NESCol purchased more EV charging points and expanded with additional courses across its locations to cater to its broad geographical reach of North East Scotland. Part of this is running the course for qualified electricians, too. The college has continued to train staff on the course, and at least four have received their qualification.

"Across London, more qualified electricians will now be installing and maintaining EV charging points; it's a lovely sort of legacy from our point of view."

London South Bank Technical College, Tim Weston, Director Career Pathways

UHI Inverness is keen to do the same but is currently recruiting more trainers to deliver the course and is looking to expand its offerings with a suite of green courses in the future.

"We are taking advantage of the fact that we're running these courses and we're going to upskill two more members of staff on course. So that doubles our capacity and gives us operational flexibility, to provide local training in each campus."

Duncan Abernethy, North East Scotland College

London South Bank Technical College has continued to use the equipment provided by Shell UK by training staff and expanding course delivery to electricians in the local area.

Raising profiles

The pilot has also raised the profile of the colleges and supported their green skills spaces on campus.

The Princess Royal visited London South Bank Technical College in February to meet students, staff and industry partners of the college. Her Royal Highness met apprentices who had just qualified for electric vehicle charging installation, raising awareness of the new Green Skills Workshop.

Tim Weston was invited to represent London South Bank Technical College and the pilot at the EV World Congress 2023 in October in London. At the event, he discussed the scarcity of both skilled EV electricians and qualified EV educators within Further Education and how programmes like this one are helping to reduce the skills gap.

Impact on. . . Trainers

The Train the Trainer programme was a key part of the pilot, giving the colleges the ability to capacity-build, creating a longer-term impact from the course. This left the colleges with the ability to independently deliver EV charging courses.

One of the unexpected benefits was that the course helped keep trainers at colleges. This is particularly interesting, given skills shortages have resulted in higher demand within industry, drawing many talented electricians away from education and into industrial roles.

Nine trainers participated in the programme: two from UHI, three from NESCol, and four from LSBTC. All have gained certification.

Of the trainers who fed into the evaluation, 3 in 5 believed that the course equipped them with the practical skills and tools necessary to teach their students.

The trainers stated that the course has helped to increase their confidence in training and assessing EV charging qualifications.

It should be noted that while the staff at LSBTC and UHI Inverness College found the course challenging, those who found it most difficult scored highly in assessments.

The trainers suggested adding more practical elements to the course, such as earthing or converting TT earthing systems, commissioning EV charging equipment, and conducting functional checks after installation.

"Staff found it intense. It was generally good feedback"

Andrew Mcintosh, UHI Inverness College

"The course is a more theory-based but leaves learners with a strong knowledge of designing an EV charging circuit to the current standards. It also provides learners with a good knowledge of what is required on site."

Trainer on Pilot programme

Additionally, the trainers stated that the course has helped to increase their confidence in training and assessing EV charging qualifications

3 in 5

trainers would highly recommend the course to others

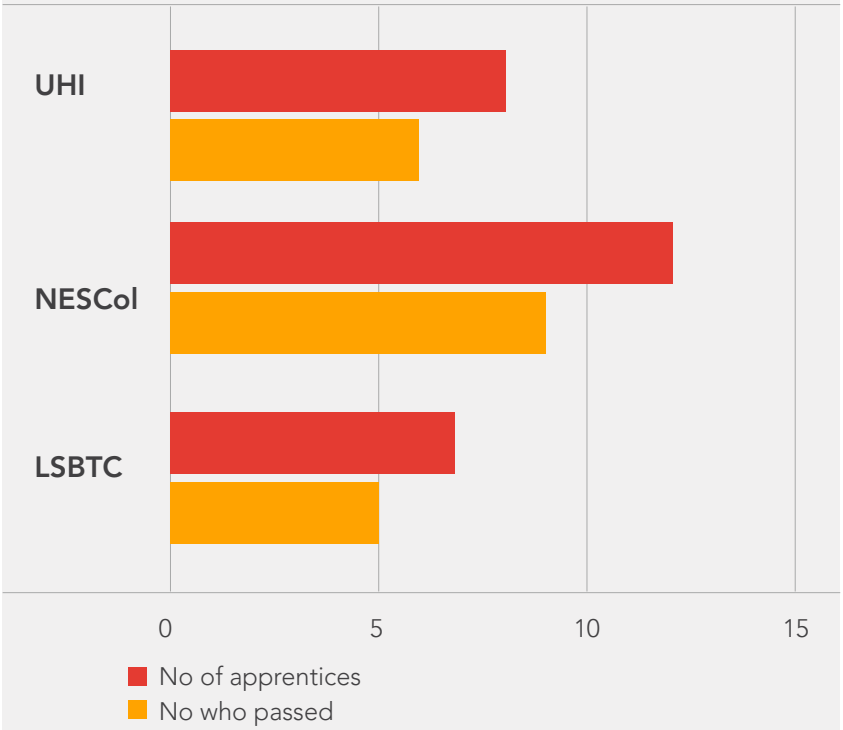
Impact on. . . Apprentices

The first cohort consisted of 27 fourth-year apprentices, split between London South Bank Technical College, North East Scotland College, and UHI Inverness College.

74%

of apprentices have passed, and 63% have received their certifications to date.

Apprentices



What did students gain from the experience

- Improved practical skills
- Greater knowledge of the world of work
- An opportunity to see potential career paths

All of the apprentices we interviewed feel they have improved their practical skills and technical knowledge, and over half feel that this training has increased their confidence in EV charging installation.

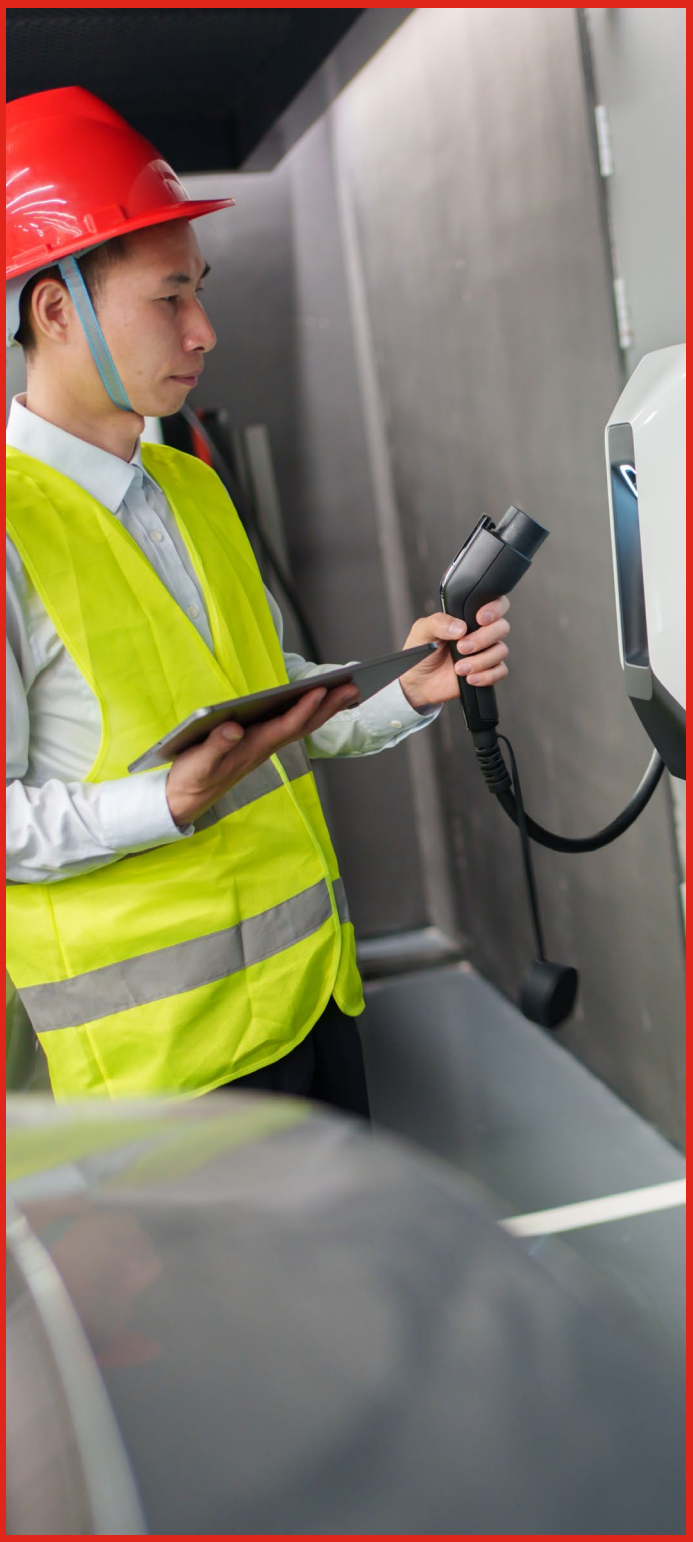
3 in 5 feel they benefitted significantly from the course. And the same proportion (60%) would recommend the course to others.

> **"I think for some of the students, it was a bit of a shock to the system, in terms of the level of calculations."**
>
> UHI Inverness College

None of the apprentices who responded are currently working in installing EV charging points, but 3 in 5 express their interest in working in EV installation in the future.

Impact on. . . Employers

All 27 apprentices had placements with employers, with 16 companies involved in the programme.



"All of the companies were very good, really flexible and allowed their students to have the time to do this course; I think they're very pleased that they've got young people who are upskilled and can help out when these sorts of jobs come along for them. There's value in it for everybody."

London South Bank Technical College

"Companies are keen for students to do the course, but they are fighting against demand and their own deadlines in terms of that, along with the dealing with a wider geography."

North East Scotland College

"The employers were just absolutely delighted that they are getting good quality training for free in these challenging times."

UHI Inverness College

All the colleges were overwhelmingly positive about the pilot. Our evaluation identified three key benefits of the approach and programme for the three colleges involved:

2 in 3 employers involved in the pilot were able to increase their revenue related to EV charging installation.

Moreover, some of the employers have expanded their business and built skills across the workforce.

100% of respondents felt the course helped students prepare for work.

All the employers interviewed felt the course demonstrated a strong collaboration between the industry and education.

All of the employers would recommend EV charging training and qualifications to organisations intending to join this sector.

Recommendations for the Future

While participants enjoyed the experience, student feedback suggests the need for more hands-on experience and training.

Trainers also suggest including more practical elements on earthing, converting to TT, and commissioning the EV charging equipment.

Both teaching staff and employers suggest that the qualification would be particularly effective for those with more experience, given it requires technical knowledge and industry experience. Some colleges recommend a pre-course refresher session.

In fact, employers suggest that the impact of the qualification could be greater if the course was aimed at fully qualified electricians with at least five years of experience, as few apprentice electricians have the background knowledge and practical experience to engage with installations of this nature.

Recommendations on other courses to support net zero transition

Trainers and colleges are clearly aware of the opportunities that the net zero transition economy offers and are enthusiastic about other opportunities for newly qualified apprentices to learn in order to prepare the country for a net zero economy, and collaborate with industry.

Trainers who responded to the research believe apprentices could be offered instruction on the commissioning and repair of heat pumps and solar PV, battery storage systems and wind turbines.

Apprentices who responded to the survey believe apprentices could be offered training on solar installations and low carbon heating options such as heat pumps.

About Shell UK

Shell UK aims to be a major investor in the UK energy system. For example, Shell UK plans to install thousands of Shell EV chargers by 2035, offering drivers more reliable access to EV charging near-home, at work and on the go. During this period, Shell UK also aims to support 15,000 people into jobs with a focus on the energy transition by 2035.

As part of this drive, Shell UK has created the Shell UK SkillsTransition programme, which invests in initiatives led by Further Education Colleges, charities, community groups and skills bodies to help people into employment, develop relevant skills, as well as support entrepreneurs and energy startups. Furthering this agenda involves commissioning pilot studies and industry research to gain insights into the skills landscape. City and Guilds is one of Shell UK's partners and this project is part of that wider objective. Shell UK aims to help as many people as possible benefit from the energy system of the future, so that the transition is an opportunity for everyone.

Note: Shell UK helped fund the Electric Vehicle Charging Installations Qualification pilot and this report. The figures and conclusions set out in this report have not been provided, and are not an any way endorsed, by Shell UK or any other Shell group company.

About City & Guilds

City & Guilds is the global skills partner, empowering people, organisations and economies to develop the skills they need for growth. With almost 150 years of trusted expertise, we support people into work, help them develop on the job and move into the next job.

We work with Governments, employers, training providers, colleges and industry stakeholders to design and deliver high-quality training, qualifications, assessments and credentials that lead to meaningful career progression. We understand the life changing link between skills development, social mobility and success. Our solutions span critical sectors including construction, engineering, transport, energy and electrical, serving over 1 million learners annually.

Through our comprehensive portfolio of brands and trusted global network, we set industry-wide standards for technical, behavioural and commercial skills to improve performance and productivity. We believe you can achieve your potential - and we're here to help make it happen.

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