

Project PACE Close Out Report

SP Energy Networks, 6th Floor, ScottishPower House, 320 St Vincent Street, Glasgow G2 5AD Level of confidentiality: For Publication on SP Energy Networks Website





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1. Executive Summary

Project PACE delivered 167 new public EV chargers across 44 EV charging hubs throughout Lanarkshire. This represents an increase of around 10MW of additional charging capacity. An increase of around 200% in Lanarkshire, a 14% increase in Scotland.

The Transport Scotland grant funding was made available in June 2020. Due to the site selection study having been carried out in advance, funded by the SP Energy Networks Green Economy Fund, and SP Energy Network's significant experience in delivering complex infrastructure projects, the construction of the first EV charging hub was commenced in July 2020 and the last EV charging hub went live in August 2021. This equates to a delivery phase of 52 weeks for all 44 EV charging hubs.

By carrying out a site selection study up front, complex sites that could have created unforseen costs or delays were eliminated early in the process. This site selection study combined with an efficient programme approach to delivery has allowed savings of £1.4m - £2.9m to be achieved across the 44 EV charging hubs.

The EV charging hubs have been extremely popular with EV drivers in Lanarkshire with over 91,000 charging events taking place between the first site going live in August 2020 and the site ownership being transferred to the Local Authorities in December 2021. Over 7,500 discrete users have used the chargers and the total number of charging events have supplied over 3520 MWh of energy, enough to drive over 13.7 million miles or 552 times round the Earth. If these miles were driven by petrol or diesel cars, over 2380 tonnes of CO2 would have been released requiring over 113,000 mature trees to absorb.

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2. Introduction

2.1 Purpose of the document

The purpose of this document is to summarise the outcome of the Project PACE delivery phase.

2.2 Strategic Partnership

A strategic partnership between the Scottish Government, Transport Scotland, SP Energy Networks and Scottish and Southern Energy Networks was established in 2019 with the aim of coordinating the decarbonisation of transport with the strategic development of the electricity networks. This is critical to ensuring both a common understanding of the challenges and to enable the achievement of the Scottish Government's ambition.



Figure 1: Strategic Partnership for the Decarbonisation of Transport Goals

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Figure 2: Launch of Strategic Partnership for the Decarbonisation of Transport with First Minister Nicola Sturgeon in August 2019

2.3 Project PACE

Project PACE is the first major project delivered by SP Energy Networks on behalf of the Strategic Partnership. The project explores the roles a DNO can play in the process of planning and delivering a public EV charging network for areas of high electricity and transport energy demand. It will pilot a new model for delivering both EV charging and electricity network infrastructure which can more effectively satisfy Scotland's ambitions, including delivering inclusive universal access to the benefits of the decarbonisation of transport.

2.4 Project Objectives

The high-level outputs targeted by Project PACE are:

Efficiency

- Optimised locations to minimise connections costs
- Priming the market by creating a critical mass of EV chargers to encourage customer uptake of EVs and provision of additional EV chargers by other providers



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Pace / Scalability (vs December 2019 baseline)

- Increase the number of public chargers in Lanarkshire by around 200% in 12 months¹
- Delivering around **14%** increase in public chargers in Scotland within a 12-month period ²

Enable Universal strategic access to EV charging

- Supporting a 'Just Transition' in the decarbonisation of transport, ensuring no one is left behind
 - \circ $\,$ Case studies in rural, suburban, and urban corridor locations $\,$
 - \circ $\;$ Delivering solutions where commercial market will not deliver
 - supporting local community transport groups in the transition to electric vehicles

2.5 Project Schedule

The key phases of Project PACE are illustrated in Figure 3 below:



Figure 3: Project PACE key phases

The number of EV chargers in Scotland at August 2020 when the first Project PACE hub went live was around 1400.



¹ The increase in charger numbers is compared to the number of chargers installed on the ChargePlace Scotland Network at December 2019 as detailed in Table 13.11 of the Scottish Transport Statistics 2019 (<u>https://www.transport.gov.scot/publication/scottish-transport-statistics-no-38-2019-edition/chapter-13-</u>

environment-and-emissions/).

² The increase in charger numbers is compared to the number of chargers installed on the ChargePlace Scotland Network at December 2019 as detailed in Tables 13.11 of the Scottish Transport Statistics 2019 (https://www.transport.gov.scot/publication/scottish-transport-statistics-no-38-2019-edition/chapter-13environment-and-emissions/) and does not take into account chargers installed in 2020 via other programmes.



3. Site Selection Study

At the beginning of Project PACE, £500k of SP Energy Networks Green Economy Fund grant funding was used to carry out a sophisticated site selection process involving electricity network analysis as well as assessment of land ownership, environmental restrictions and potential community use.

The site selection process was carried out between September 2019 and March 2020 and involved a long list of 110 local authority owned car parks being short listed to 44 sites selected for development of EV charging hubs.

The site selection process is illustrated in Figure 1 below:



Figure 4: Project PACE site selection process

The site selection study estimated a saving of $\pm 30,000$ to $\pm 60,000$ per EV charging hub, a total saving of $\pm 1.4m - \pm 2.9m$ across the 44 EV charging hubs developed by the project³.

4. Infrastructure delivered by Project PACE

The first Project PACE EV charging hub at Strathclyde Park, consisting of 6 EV chargers (3 x 50kW rapid chargers & 3 x 22kW fast chargers) was launched on 5th August 2020 by Transport Secretary Michael Matheson. Since then, a further 43 EV charging hubs have been installed across Lanarkshire.





³ Further information on the Project PACE Site Selection Study, including the full report, can be found here <u>https://www.spenergynetworks.co.uk/pages/pace.aspx</u>





Figure 5: Launch of first Project PACE EV charging hub at Strathclyde Park by Transport Secretary Michael Matheson

Project PACE has delivered 167 chargers across 44 EV charging hubs in Lanarkshire in 52 weeks, broken down into

- 46 new 7kW chargers
- 59 new 22kW chargers
- 62 new 50kW chargers

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Key project statistics are illustrated in Figure 6 below:

167 New chargers provided	44 New EV Chargin Hubs, delivered in weeks	ng 52	Estim saving £1.4 £2.9	ated total gs of 4m - 9m ⁴
 > 46 new 7 > 59 new 2 > 62 new 2 	ca.10MW of additional charging capacity, an increase of ①340% across Lanarkshire (17% across Scotland		Carbon savings of 6,030 tonnes per year across Scotland	
Capacity f EVs, an in Lanarkshi	<u>L50</u> oss	>300 numbe avai res	% = Increase in the er of public chargers lable in Lanarkshire sulting from Project PACE	

Figure 6: Project PACE key statistics

The chargers have been installed at 44 EV charging hubs throughout Lanarkshire spanning suburban areas, urban commuter areas and rural areas. An overview of the locations of the charging hubs in North Lanarkshire with the number of each type of charger can be found in Figure 7. A similar overview for South Lanarkshire can be found in

Figure 8.

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Based on savings from connections costs + permitted development savings of $\pounds 100,800$





Figure 7: Overview of PACE EV charging hubs in North Lanarkshire







Figure 8: Overview of PACE EV charging hubs in South Lanarkshire

A list of the number of each type of charger at each individual charging hub is given in

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Table 1 below:

Table 1: Numbers of each type of charger at each charging hub

Local EV charging hub location		Number of	Number of	Number	Total number
Authority		SUKW	chargers	of /KW	or chargers
North	Strathclyde Park	3	3		6
Lanarkshire	Drumgelloch Train Station	2	2	1	5
	Time Capsule Leisure Centre	2	2	1	5
	Drumpellier Country Park	1	1	1	3
	Hallcraig Street, Airdrie		2	0	3
	Broadwood Stadium	2	2	2	6
	The Wynd, Cumbernauld	1	0	2	3
	Burngreen Park, Kilsyth	0	0	2	2
	Pivot Centre, Moodiesburn	1	2	1	4
	Aquatec, Motherwell	1	0	4	5
	Shotts Library	1	2	0	3
	Burnhead Street, Viewpark	2	2	0	4
	Glebe Street, Bellshill	2	0	0	2
	Cairnhill Road, Airdrie	3	2	3	8
	Wishaw Sports Centre	1	2	2	5
	King Street, Coatbridge	1	2	0	3
	Getting Better Together Shotts	0	2	0	2
	Muirfield Community Centre, Cumbernauld	2	1	0	3
	Harthill Park & Ride	1	1	3	5
	Ravenswood Sports Pitches, Cumbernauld	2	1	0	3
	Blenheim Avenue, Stepps	1	1	2	4
	Newhouse Park & Ride	2	1	0	3
	Total across 22 North Lanarkshire Hubs	24	31	32	87
South	Carlisle Road, Abington	2	1	0	3
Lanarkshire	Carstairs Park & Ride	0	0	2	2
	Belstane Avenue, Crawford	2	2	0	4
	Smugglers Brig Road, Crossford	1	1	0	2
	Calderglen Country Park	1	2	0	3
	Calderwood Community Hall	0	0	2	2
	John Wright Sports Centre	2	1	2	5
	Alistair McCoist Complex	0	0	2	2
	Main Street, Forth	1	1	0	2
	Low Parks Museum	1	0	1	2
	Chatelherault Country Park	4	2	3	9
	Kildare Road, Lanark	2	2	0	4
	McNeil Street, Larkhall	1	2	1	4
	Regent Drive, Rutherglen	2	2	0	4
	Strathaven Park	3	1	1	5
	Station Road, Strathaven	0	2	0	2
	Bridge Street, Cambuslang	2	4	4	10
	Carnwath Road, Carluke	1	2	0	3
	John Mann Park	1	0	2	3
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	Lanark Lifestyles	1	2	0	3
	Coatshill Avenue, Blantyre	1	1	1	3
	Coalburn Lifestyles	1	1	1	3
	Total across 22 South Lanarkshire Charging Hubs	22	28	30	80
Total	44 EV Charging Hubs	62	59	46	167

Table 2 below gives an overview of each charging hub in North Lanarkshire including a photograph, number of each type of charger and local amenities. Table 3 provides a similar overview for EV charging hubs in South Lanarkshire.

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Table 2: North Lanarkshire EV Charging Hubs

North Lanarkshire EV Charging Sites

- Strathclyde Park 3 x 22kW chargers 3 x 50kW
- Off the M74, these chargers sit by the shores of Strathclyde

chargers

Loch at the Foreshore Play Park and Picnicarea. Nearby lies a collection of Ancient Roman structures, including a

bridge, bath house, and fort. The site has seen 153 charges a week on average so far.

Time Capsule Leisure Centre

- 1 x 7kW
- charger
- 2 x 22kW chargers
- 2 x 50kW chargers



Next to both the Leisure Centre and

time Capsule Gym, they are walking distance to Coatbridge town centre. St Augustine's Catholic Church and Primary School are similarly nearby, as well as the Coatbridge Outdoor Sports Centre.

Hallcraig Street, Airdrie

- 2 x 22kW
- charger 1 x 50kW charger

Close to a variety of shops, bars and cafes, and

opposite the Crazy Castle Soft Play Area. Airdrie town centre is only a brief walk away.



chargers

These hubs are one turn



off from Forrest St., which offers a selection of shops and options for coffee, food and takeaways, they are part of the park & ride scheme and are less than 1 mile from Airdrie Leisure Centre, skatepark, and St Margaret's High School.

Drumpellier **Country Park**

1 x 7kW charger 1 x 22kW

charger 1 x 50kW charger



Situated on the shores of Lochend

Loch and walking distance from The Crannog or the Country Park Playground, Lochview Family Golf Centre is less than a mile away.

Broadwood <u>Stadium</u>

- 2 x 7kW
- chargers 2 x 22kW chargers
- 2 x 50kW chargers

Home of the Cumbernauld Colts Football Club and Cumbernauld Centurions BMX Race Club.

Opposite the Cumbernauld retail park, including an Aldi, M&S Foodhall, Matalan, and Tim Hortons coffee shop.

This site also allows for charging of larger vehicles such as minibuses, but usage has been low due to its recent role as a COVID test site, shortly after commissioning.







The Wynd,

- **Cumbernauld** 2 x 7kW
- chargers
- 1 x 50kW charger

Situated in Cumbernauld Village just off Junction 6 of the

M80 and close to Cumbernauld Glen wildlife Reserve, Cumbernauld House Park, and Cumbernauld United FC.

Pivot Centre, **Moodiesburn**

- 1 x 7kW
- charger 2 x 22kW
- chargers 1 x 50kW
- charger
- Outside the library,
- these hubs serve Moodiesburn.
- St Michael's Catholic Church, the Glenmanor Primary School and Keep Calm Driving School are all within close proximity, with the Auchengeich Miners Club and Miners Memorial likewise only a short distance away.

Shotts Library

- 2 x 22kW
- chargers 1 x 50kW charger

The nearby Shotts Library, Leisure Centre, and Henderson Theatre provide a

variety of activities, and Shotts Golf Club is only a short drive away on the B717. They are conveniently located off the M8 between Glasgow and Edinburgh.

Glebe Street, **Bellshill**

2 x 50kW chargers

The Sir Matt **Busby Sports** Complex and **Bellshill Skate** Park are both





chargers Burngreen Park,

Kilsyth Library, and the High Street are all only a short walk away.



Aquatec, **Motherwell** 4 x 7kW

chargers 1 x 50kW charger

Part of the Leisure Centre parking, these chargers are located close to Motherwell



railway station and Motherwell Shopping Centre. The North Lanarkshire Heritage Centre is also nearby, as are multiple options for coffee and food.

2 x 22kW chargers 2 x 50kW chargers

Viewpark Library

and Community Centre, and Burnhead Bowling Club. These hubs are within walking distance of local shops and are close to both the M8 and M74.

Cairnhill Road, Airdrie

- 3 x 7kW chargers
- 2 x 22kW chargers
- 3 x 50kW chargers

This charging station is ideally located next to both Airdrie Station, as



part of park & ride, and the Airdrie Retail Park. It is the largest site in North Lanarkshire.

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Viewpark

Beside the

Burnhead Street,





Wishaw Sports Centre 2 x 7kW

- chargers 2 x 22kW
- chargers
- 1 x 50kW charger

The Wishaw Sports Centre is well equipped for those

who enjoy a range sports, gym, leisure, and athletic activities. Beltane Park and Wishaw Juniors FC are likewise close by.

Getting Better Together Shotts 2 x 22kW chargers

These chargers provide charging facilities for visitors and community transport vehicles

at Getting Better Together Shotts. Similar to the Shotts Library charging station, these spaces benefit from proximity to the Leisure Centre and Henderson Theatre, among other amenities

They are close to both the town centre, and the M8 between Glasgow and Edinburgh.

Harthill Park & Ride

- 3 x 7kW chargers
- 1 x 22kW charger
- 1 x 50kW charger

Sitting Westbound on the M8 between Glasgow and Edinburgh they are conveniently placed within Harthill



Services which also serves bus links.

King Street, Coatbridge

- 2 x 22kW chargers
- 1 x 50kW charger

Not far from the charging hub at Time Capsule Leisure Centre, King St. is itself close to the West End Park and a selection of shops, restaurants, and takeaways.



These chargers will provide additional benefit to residents who do not have available off-street parking.

Muirfield Community Centre, **Cumbernauld** 1 x

22kW charger 2 x 50kW



chargers

Outside Muirfield Community Centre and close to Cumbernauld Shopping Centre, these charging points are ideally located near a variety of shops and amenities.

Ravenswood Sports Pitches, Cumbernauld 1 x 22kW charger 2 x 50kW chargers

Beside Ravenswood **Playing Field and Our** Lady's High School,



there is plenty of space to walk and play football, and Cumbernauld Shopping Centre is less than 1km away.

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Blenheim Avenue, **Stepps**

- 2 x 7kW chargers
- 1 x 22kW charger
- 1 x 50kW charger

Located centrally,



off from Cumbernauld Rd., the site benefits from its close proximity to Blue bell Park, Stepps Bowling Club, Stepps Lawn Tennis Club, Bannatyne Health Club, and Stepps Primary School.

This site will also help provide additional parking for the local community.

Newhouse Park &

<u>Ride</u> 1 x 22kW

charger 2 x 50kW chargers

To the East of Maxim Park on Edinburgh Rd., this



charging station is part of a well-used park & ride between Glasgow and Edinburgh.

They sit opposite the Premier Inn (Motherwell), the Newhouse Beefeater, and are across the road from Newhouse Fishery.

Table 3: South Lanarkshire EV Charging Hubs

Carlisle Road car park, **Abington**

1 x 22kW charger 2 x 50kW chargers

The rural location of Abington makes it ideal for tourists and hillwalkers, with sights such as Arbory Hill, Tewsgill Hill and Crawford Castle populating the surrounding countryside.



2 x 7kW charger

South Lanarkshire EV Charging Sites

This site lies opposite the Strawfrank Play Area and is across the road from Carstairs Railway Station.

Carstairs Park & Ride



A key commuting site off the M74 between England and Scotland, they will serve locals in this community well.

Belstane Avenue car park

- 2 x 22kW chargers
- 2 x 50kW chargers



Located in the small village of Crawford

beside the A74(M) and the River Clyde, Crawford Castle lies to the North and offers excellent views of the surrounding landscape.

Smugglers Brig Road <u>car park</u> 1 x 22kW

1 x 7kW charger

In the village of Crossford, this point will serve local



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charger





<u>Calderglen</u>

- 2 x 22kW chargers
- 1 x 50kW charger

This charging station benefits from its proximity to Calderglen Country Park, Zoo, the Torrance House Golf

Club, and the East Kilbride Football, Tennis, and Cricket clubs.

The location is undergoing significant development and will thus serve future residents well.

John Wright

- 2 x 7kW chargers
- 1 x 22kW charger
- 2 x 50kW chargers



This station sits beside the well-

equipped John Wright Sports Centre which boasts a gym, various sports halls and courts, and a running track.

It has proved popular with 85 average charges per week.

Main Street car park

- 1 x 22kW charger
 1 x 50kW
- charger

These charge points are located very near the Primary School in the village of Forth, off the M8

between Glasgow and Edinburgh.

They are a short distance from the Willie Waddell Sports and Community Centre and Forth Wanderers FC.



2 x 7kW chargers

Sitting just off the East Kilbride expressway, these chargers will help serve the local community.

Close to shops and



beside Calderwood Community Hall, Brancumhall Recreation Area, Kingsgate Shopping Park, and East Kilbride Golf Club are all also located nearby.

Alister McCoist Complex • 2 x 7kW

chargers Part of the large Ally McCoist Leisure Centre, these chargers will conveniently serve local

residents.



Low Parks • 1 x 7kW charger • 1 x 50kW charger

Low Parks charging station benefits from its proximity to



Hamilton town centre and various amenities and attractions, including: the Cameronians Scottish Rifles Museum, Hamilton Ice Rink, and Hamilton Palace Sports Grounds, play park, and a retail park, among others.



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Chatelherault

- 3 x 7kW
- chargers2 x 22kW
- chargers
 4 x 50kW chargers



Beside Chatelherault play

park, this site is located close to the Railway Station, Chatelherault Country Park, Hamilton Golf Club, and the 16th-century Cadzow Castle.

McNeil Street • 1 x 7kW

- charger
- 2 x 22kW chargers
- 1 x 50kW charger



Situated close to Larkhall

railway station, Larkhall Leisure Centre and Robert Smillie Memorial Park. This hub will help serve the local community.

Strathaven Park

- 1 x 7kW charger
- 1 x 22kW charger
- 3 x 50kW chargers

Nearby attractions to this site include Strathaven Miniature Railway, George Allan Park and Strathaven Golf Club.



Kildare Road 1 x 22kW charger 3 x 50kW chargers

Close to the High Street and across from Lanark Railway Station, there are a



wide selection of shops and amenities nearby, as well as the Lanark Memorial Hall performing arts theatre.

<u>Regent Drive car</u> park

 2 x 22kW chargers
 2 x 50kW chargers

This site benefits from the proximity of Rutherglen Town Hall, the old Parish Church, railway



station, and a selection of bars, restaurants and takeaways.

Station Road car park • 2 x 22kW chargers

Located centrally within Strathaven, this site benefits from its proximity to multiple restaurants and cafes and is a

short distance away from a Sainsbury's superstore.

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Bridge Street • 4 x 7kW

- chargers4 x 22kW
- chargers • 2 x 50kW
- 2 x 50kw chargers



The largest site in South

Lanarkshire and part of Cambuslang park & ride, this hub is beside Somervell Park and is a short distance from Cambuslang station.

E-bike chargers have also been incorporated into this site.

John Mann Park

- 2 x 7kW chargers
 1 x 50kW
- 1 x 50kw charger

These charging points are in the village of Carnwath, rurally located 30 miles South of both



Edinburgh and Glasgow. The village has many surrounding nature trails, a Golf Course, and is well situated on the edge of the Pentland Hills.

Coatshill Avenue, Blantyre

- 1 x 7kW
- charger1 x
- 22kW charger
- 1 x 50kW charger

Opposite the David Livingstone Memorial Primary School, these points are similarly close to a number of convenience stores, with the West End Bar nearby on Glasgow Road.

It is currently the only available site in Blantyre.



Next to Lifestyles Carluke and St Athansius' Primary School, and a short walk from many restaurants, cafes and takeaways.



Lanark Baths 2 x 22kW chargers 1 x 50kW charger

Beside the Leisure Centre and Harry Smith Complex, this charging station is also close to both Lana



close to both Lanark Health Centre and Lanark railway station.

<u>Coalburn</u>

1 x 7kW charger 1 x 22kW charger 1 x 50kW charger



In the small village of Coalburn, the charging points themselves are within the Coalburn Leisure Complex, providing convenient access to the facilities, including a sports court, gym, and a 20metre swimming pool. Netherfield Alpaca Farm is just over a mile to the East, offering a variety of Alpaca related activities and services.

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5. Sites eliminated and replaced

Of the 44 sites identified in the site selection report, 8 sites were deemed non-viable following detailed technical review at the start of the construction phase.

The sites eliminated are listed in Table 4 below:

Table 4:	EV charging	hubs selected	l in Site	Selection	phase that	were eliminated	in Deliverv	phase
					Print of the			Pintov

Site Reference Number	Site Name	Connections quote (ex VAT)	Reason for elimination
J1	Strathclyde Park Watersports Centre	£50.263.00	Insufficient space for substation
N10	Sir Matt Busby Centre	£56,677.00	NLC requested site works to be cancelled and the site relocated
N50	Chryston Cultural Centre	£15,351.00	NLC requested site works to be cancelled and the site relocated
N61	Caledonian Road car park, Wishaw	£7,530.00	Very busy car park, too busy for construction works – HSE risk SLC didn't want to reduce parking bay numbers in such a busy town centre car park
S27	Lanark Loch	£91,483.00	Connections costs, alternative location identified at Lanark Lifestyles
S42	Larkhall Development Trust		Land ownership – during detailed checks, land was determined not to be owned by SLC
S37	Uddingston Grammar	£9,718.00	SLC requested site works to be cancelled and the site relocated
N67	Glenboig		Land ownership – during detailed checks, land was determined not to be owned by NLC
Total	8	£180,759.00	

Using the methodology developed during the site selection process, alternative sites were quickly selected and progressed without causing delay to the delivery programme. The replacements were as geographically close to the original site as possible and agreed upon by the respective Local Authority and Transport Scotland. These sites were selected to be as similar as possible with capacity to the original site to maintain charger numbers by type. The alternative sites are listed in





Table 5 below:





Site Reference Number	Site Name	Connections quote (ex VAT)	Reason for selection
N65	Muirfield Community Centre	£8,717.74	Supports CACE community transport vehicles as well as public charging
N68	Harthill Park & Ride	£2,908.17	Additional NLC site to replace Strathclyde Park Watersports Centre,
S39	Lanark Lifestyles	£5,192.76	Replacement site for Lanark Loch
S40	Coatshill Avenue, Blantyre	£9,210.29	Replacement site for SLC, location was selected to fill a geographical gap in sites at the request of SLC
S41	Coalburn	£5,813.82	Replacement site for SLC, location was selected to fill a geographical gap
N71	Ravenswood	£2648.82	Additional site close to Cumbernauld town centre which provided charging opportunities for larger vehicles.
N69	Stepps	£3,540.68	Replacement site for Chryston Cultural Centre
N70	Newhouse	£2,421.97	Replacement site for Sir Matt Busby Centre
Total	8	£40,454.25	

Table 5: EV charging hubs added to replace eliminated sites

6. Connections Costs

2.6 Estimated Connections Costs from Site Selection Study

The Project PACE site selection study estimated that the connections costs for the 44 EV charging hubs developed by the project would be £1,510,129. This represented an average saving of £30,000 to £60,000 per site, a total saving of £1.3m to £2.6m across the 44 sites when compared to the most expensive 44 sites and 44 mid-range sites from the viable long list of 89 potential sites⁵.

2.7 Delivery Phase connections costs

Of the 44 shortlisted sites, 8 sites were eliminated due to various factors as highlighted above. The total estimated connections cost for the 36 sites remaining shortlisted sites, featured in the site selection study that were delivered by the project was

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^{5 5} Further information on the Project PACE Site Selection Study, including the full report, can be found here <u>https://www.spenergynetworks.co.uk/pages/pace.aspx</u>



£1,017,320.22 (ex VAT). The total actual connections cost for these 36 sites was £1,020,248.64 (ex VAT), making the actual connections cost £2,928.42 (ex VAT) higher than originally estimated.

For the 8 replacement sites, total estimated connections costs of £40,454.25 (ex VAT) were quoted at the beginning of the delivery phase. The total actual connections cost for these sites was £63.448.14 (ex VAT). This is £22,993.89 (ex VAT) higher than originally estimated.

There are many reasons for the actual cost being higher than the estimated cost for these sites, including:

- Material costs were higher than estimated due to global shortages as a result of the pandemic
- Additional road resurfacing activities were required at Abington as SP Energy Networks were not informed of new road surface being laid during the project timescales but prior to the Abington connection works being carried out.
- At several sites, cable routes specified and estimated for in the site selection phase were deemed unsuitable in the delivery phase and slightly longer, higher cost cable routes were required
- The retrospective requirement for accessible spaces at each hub, which led to retrospective works at some sites and an increased cost for all sites.
- Sites changing, particularly HV sites that had substantial sunken costs including planning costs and drawing costs.

2.8 Actual connections savings resulting from site selection phase

The site selection methodology used within PACE meant that there was a long list of sites to use as the basis for the optioneering process. By having surplus sites, it meant that the sites could all be assessed with connections costs quoted, allowing an informed decision to be made ahead of commitment to install. By focussing on the cheaper sites from the list, it meant that the total connections costs came in at £1,083,696.78 (Exc Vat) compared to £2,178,560.23 (Exc Vat) if the 44 sites had been selected from the mid-range sites and £ 3,446,351.99 (Exc Vat) if the sites selected were the 44 with the highest connections costs, meaning that the connections cost savings

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realised were between £1,094,863 and £2,362,655 respectively as shown in the graph below⁶:



Figure 9: Connections comparisons between selected sites, median cost sites and most expensive sites.

2.9 Overall Project Cost Review

The breakdown of how each type of cost actually incurred compares with the original estimate is given in Table 1Table 6 below:

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⁶ It should be noted that there is a comparison between actual costs for 44 selected sites against a quoted cost for median and most expensive 44 sites. Some of the 44 median sites include sites that were developed and will includes a combination of actual and quoted costs. There was a 2.5% increase in costs for the developed 44 sites from quote, so a similar uplift could be expected for other quote ranges.



Cost Category	Original estimated cost (inc VAT)	% of total cost	Actual incurred cost (inc VAT)	% of total cost
Staff Costs	£449,064.00	8%	£203,280.00	3.77%
Equipment costs – Low voltage pillars	£629,814.00	12%	£694,658.40	12.87%
Electricity grid connection costs ⁷	£1,538,666.70	29%	£1,366,351.54	25.32%
Equipment costs – EV charge points	£1,992,918.00	38%	£1,517,404.00	28.12%
Installation costs	£590,400.00	11%	£1,444,679.13	26.77%
Finishing costs (parking bay painting)	£100,000.00	2%	£31,662.47	0.59%
Miscellaneous costs	0	0%	£38,477.85	0.71%
Total	£5,300,862.70	100%	£5,296,513.39	99.92%

Table 6: Comparison between estimated delivery costs and actual delivery costs

The reasons for differences in each cost category are given below:

Staff Costs

By maximising the work done in the site selection study, funded by SP Energy Network's Green Economy Fund, we were able to reduce the project staff costs significantly below the original estimate.

Low Voltage Pillars

There are three different sizes of low voltage pillar – 200A, 400A and 800A. When the site selection study was carried out, the number of each size of low voltage pillar was

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⁷ Connection costs include the actual connection cost in addition to other legal, planning, and environmental survey & drawing costs also associated with the connection.



different to the original estimate. This resulted in an increased equipment cost. In addition, two additional items that were not accounted for in the original estimate – a performance bond and an earthing study were required to be procured from the manufacturer.

Electricity Grid Connection Costs

The actual electricity grid connection costs are similar to the original estimate.

To keep the electricity grid connection cost close to the original estimate, where sites were eliminated, experience gained in the site selection study was used to select replacement sites with low electricity grid connection costs. For further information, refer to section 6.2.

EV Charge Points

As the installation and finishing costs (see below) were higher than anticipated in the original estimate, the number of EV chargers purchased had to be reduced.

Installation & Finishing Costs

Before Project PACE, the majority of EV charging hubs in Scotland consisted of two small chargers. There were few larger hubs on which to base an estimate for installation costs for larger hubs. In addition, some of the industry wide factors affecting the electricity grid connection costs including availability of materials and labour had a similar impact on installation costs.

In addition, there were some additional unforeseen installation costs to be accounted for, including:

- Incorporation of at least one accessible charging space at each site
- Remediation of contractor errors
- Repair of vandalised equipment

Miscellaneous Costs

The project had to deal with several unforeseen costs in the delivery phase, including:

- Relocation of council lamp posts
- Resurfacing of council car park
- Wooden fences to provide earthing protection
- Legal costs incurred due to Ofgem mandated change in date of transfer of assets to the Local Authorities

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7. Benefits realised by Optioneering Study

The optioneering study allowed for many benefits that were both realised up front and throughout the installation programme including;

- Problematic sites were able to be eliminated quickly with minimal costs, leading to less complications in delivery phase and in turn a quicker delivery programme.
- For sites that were eliminated, site selection process developed allowed replacement sites to be selected efficiently without causing delay to the programme
- By having the long-list of sites for consideration up-front, an evaluation was able to be made to ensure a comprehensive geographical spread of sites across the local authorities which is paramount to a just transition.
 Accurate procurement could be progressed in advance, as connection costs were determined, and project allowance assigned early-on for this element.
- -

For further information refer to Project PACE optioneering report⁸

8. Benefits of a large scale DNO led delivery programme

As a DNO, SP Energy Networks brought significant experience of delivering complex infrastructure projects to Project PACE. In addition, carrying out a large-scale delivery model had benefits in ensuring

6.1 Pace of EV Charger Deployment

Project PACE has delivered 44 EV charging hubs containing a mix of 7kW, 22kW and 50kW chargers. These chargers have significantly increased the number of EV chargers (particularly 22kW and 50kW chargers) in North & South Lanarkshire, and in Scotland in just one year.

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⁸ Further information on the Project PACE Site Selection Study, including the full report, can be found here <u>https://www.spenergynetworks.co.uk/pages/pace.aspx</u>



North Lanarkshire

- The number of EV chargers in North Lanarkshire will more than triple, from 37 to 124
- The number of electric vehicles that can be accommodated by ChargePlace Scotland chargers in North Lanarkshire will increase by more than 4 times from 690 electric vehicles to 2,840 electric vehicles
- This facilitates a potential carbon reduction of 3,109 tonnes CO₂/year
- The number of EV chargers per household in North Lanarkshire will increase from 1 charger per 4170 households to 1 charger per 1,244 households

South Lanarkshire

- The number of EV chargers in South Lanarkshire will more than double, from 50 to 130
- The number of electric vehicles that can be accommodated by ChargePlace Scotland chargers in South Lanarkshire will very nearly quadruple, from 700 electric vehicles to 2,700 electric vehicles
- This facilitates a potential carbon reduction of 2,906 tonnes CO₂/year
- The number of EV chargers per household in South Lanarkshire will increase from 1 charger per 2999 households to 1 charger per 1,154 households

Scotland

- The number of EV chargers in Scotland will increase from 1226 to 1393, an increase of 14%
- The number of electric vehicles that can be accommodated by ChargePlace Scotland chargers in Scotland will increase from 23,260 electric vehicles to 27,410 electric vehicles, an increase of 18%
- This facilitates a potential carbon reduction in Scotland of over 6,030 tonnes CO₂/year

Figure 10 below illustrates the effect of Project PACE on the number of EV chargers installed in North & South Lanarkshire and in Scotland and the increase in number of EVs that can be accommodated by ChargePlace Scotland EV chargers:

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Figure 10: Effect of Project PACE on number of Chargers installed and number of EVs accommodated

Local Authority	Case	Number of 7kW chargers	Number of 22kW chargers	Number of 50kW chargers	Total number of EV chargers	Number of households per charger	Number of EVs catered for
North Lanarkshire	Before Project PACE	20	9	8	37	4170	690
	After Project PACE	44	40	40	124	1244	2840
South Lanarkshire	Before Project PACE	39	6	5	50	2999	700
	After Project PACE	61	34	35	130	1154	2700
Scotland	Before Project PACE	485	466	275	1226	Note 1	23260
	After Project PACE	531	525	337	1393	Note 1	27410
authority a	areas before	and after	the cha	rgers ider	ntified by	the Proje	ct PACE

below summarises the number of electric vehicle chargers in each of the two local

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optioneering study are installed and the number of electric vehicles that these chargers can accommodate.





Table 7: numbers of EV chargers installed before and after Project PACE

Local Authority	Case	Number of 7kW chargers	Number of 22kW chargers	Number of 50kW chargers	Total number of EV chargers	Number of households per charger	Number of EVs catered for
North Lanarkshire	Before Project PACE	20	9	8	37	4170	690
	After Project PACE	44	40	40	124	1244	2840
South Lanarkshire	Before Project PACE	39	6	5	50	2999	700
	After Project PACE	61	34	35	130	1154	2700
Scotland	Before Project PACE	485	466	275	1226	Note 1	23260
	After Project PACE	531	525	337	1393	Note 1	27410

Note 1: number of households not applicable as the chargers will mainly service the Lanarkshire area

Project PACE has installed EV chargers in 44 more public locations in Lanarkshire, extending the ChargePlace Scotland network in this area and increasing the chances of the public finding an EV charging location that would be convenient for them. It is hoped that in the years that follow the project, this will encourage more people in Lanarkshire to make the switch from a petrol or diesel vehicle to an electric vehicle.

6.1 Public Awareness

Project PACE delivered 44 EV charging hubs across 2 neighbouring local authorities in under 1 year.

By installing the charging hubs in prominent locations such as country parks and busy town centre car parks, the project has increased the visibility of EV chargers across Lanarkshire. In addition, this pioneering project has been mentioned regularly in the local press and on social media.

It is hoped that the presence of the chargers is noticed by the community and helps to make the prospect of owning an EV seem more achievable, particularly to those who do not have off-street parking.

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Figure 101: Selection of Project PACE press coverage

6.2 Accessibility

The Project PACE trial site at Strathclyde Park had no designated spaces for drivers requiring increased accessibility. The project received feedback from the public on this and took steps to address this in all 44 EV charging hubs.

In order to ensure an acceptable approach, SP Energy Networks engaged with the Mobility and Access Committee for Scotland (MACS) via Transport Scotland.

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Sites of different types including a large hub in a country park, a busy hub in a town centre and a small hub in a rural area were visited by representatives from SP Energy Networks, the local authorities and MACS. The group assessed the sites based on a range of factors and agreed that at least one accessible space should be provided at all sites, ensuring at least 8% of the EV charging spaces are accessible. The accessible spaces should have an additional 1200mm between shared spaces and the accessible spaces should be identified with hatching or signage. This recommendation was incorporated at all 44 sites without causing delay to the project timescales.

The process for incorporating accessible spaces into the EV charging hub design and delivery is illustrated in



Figure 112: Process for incorporating accessible spaces into EV charging hub design

The close working relationship between SP Energy Networks, the Local Authorities, Transport Scotland and the delivery contractors allowed this issue to be identified at the first EV charging hub and resolved quickly for all sites, causing minimum impact to EV drivers.

An example of accessible spaces at Hallcraig Street car park, Airdrie is shown in Figure 3 below:

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Figure 13: Example of EV charging hub with accessible spaces

As Project PACE has delivered 44 EV charging hubs with at least 1 accessible space per hub, this creates a good example for future EV charging projects.

6.3 Common Standards

As Project PACE delivered 44 EV charging hubs in a short space of time, common standards were used across all sites.

The common standards used for EV charging hub design included:

- At least 1 accessible charging space per hub (>8% of charging spaces)
- No green paint covering EV charging spaces
- No shelters erected over EV chargers

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• Standard control pillar

These common standards allowed many sites to be designed and installed quickly and form the basis of a repeatable model that can be implemented at other EV charging hubs.

In addition, as 44 sites were delivered in short space of time, there was an opportunity to gauge public feedback on the design of the EV charging hubs.

6.4 LV Control Pillars

For many existing EV charging hubs, bespoke control pillars have been manufactured. These are typically large pillars that require a protective housing and as such, require planning permission and have a large footprint. As the pillars are bespoke, there is no standard design that can be referenced for each new project.

Project PACE has drawn on the experience of the SP Energy Networks Engineering Standards team in specifying electricity network equipment to develop a specification for LV control pillars to safely connect each EV charger to the electricity network individually.

These LV pillars have multiple advantages:

- As each charger is isolated separately, in the case of a charger fault, the faulty charger can be isolated and the rest of the chargers in the hub can be left online and remain available to the public
- As the LV pillars are smaller than the bespoke alternatives, they can be installed under permitted development so lengthy planning applications can be avoided and they take up less space in the car parks
- A specification for the LV pillars has been developed and approved by SP Energy Network's Engineering Standards team and a relationship has been developed with a leading LV pillar manufacturer to manufacture the LV pillars in accordance with the project schedule. This specification can be used to procure standard LV control pillars for future EV charging hubs across Scotland.





Figure 124: typical EV hub LV pillar with external housing



Figure 15: Project PACE LV pillar

6.5 Planning

A close working relationship developed between the SP Energy Networks planning manager and the Local Authority planners, as well as distribution pillars that fall below permitted development height resulted in:

- A £2,400 per site saving in avoided planning applications
- A total cost saving of **£100,800** in avoided planning applications
- **8-week time saving** per site for 42 sites of the 44 proposed sites, as only 2 sites required to go through full planning permission

Typically, medium and large EV charging hubs require planning permission. On Project PACE, the SP Energy Networks planning manager engaged with the Local Authority planners at the start of the project to determine if the planning process could be

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expedited for EV charging infrastructure. It was agreed that, where HV substations were required, they would undergo the same planning process as usual as they would be in situ for a long time (99-year lease) and would always be owned by SP Energy Networks.

As the ownership of the EV chargers will be transferred to the Local Authorities soon after commissioning and the LV pillars are only being installed to service the EV chargers, it was agreed that the EV chargers and LV pillars could be installed under permitted development. This approach was taken for all but two of the proposed sites that required to go through the planning process for other reasons. Installing the EV chargers and LV pillars under permitted development saved both the cost of planning application and the 8-week associated time delay for 42 of the 44 sites.

A pragmatic approach to planning and early discussions with Local Authority planners has resulted in both cost and time efficiencies.

6.6 Land Rights & Legal Agreements

A co-ordinated approach to land rights and legal agreements allowed sites to be approved for development more quickly.

Land rights are normally requested from the local authority for each site individually. The time taken for land rights to be granted can be extremely lengthy (up to one year for sites requiring substations).

The Project PACE Land and Legal teams drew on their previous experience and worked closely with the local authorities to develop a more efficient process to get land rights approved in line with the project schedule.

This process included:

- Developing a framework agreement including terms and conditions for all sites
- Using standard licenses and wayleaves for each individual site
- For all sites requiring substations, ensuring all documents were submitted to the local authorities before the deadline for the earliest possible land approval committee

Instead of developing terms and conditions for each site individually, the Project PACE Land and Legal teams agreed with the local authorities at the beginning of the project to develop a framework agreement for all sites. This allowed general terms and

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conditions for all sites to be confirmed and agreed at the beginning of the project and following this, only standard licenses and wayleaves would be required for each individual site. This saved time and effort on both sides as complex legal agreements only needed to be negotiated once, rather than for all sites individually.

This efficient coordination between the DNO and the local authority can be used as a model approach for future electric vehicle infrastructure projects.

6.7 Supplier Coordination

Having the DNO involved in the project helped significantly with coordination of the construction phase of the project. Not having the DNO involved in the planning of EV charging infrastructure projects can often lead to delays as the DNO have large volumes of other planned connections work to deliver.

SP Energy Networks incorporated the delivery of the electricity network connections scope for each site into their wider delivery programme and provided start dates and durations of their work to the charger installation contractor who scheduled their works accordingly.

Having the DNO and the EV charger installation contractor working closely together allowed council road opening notices and electricity meter applications to be made efficiently.

The project required 44 LV control pillars from a separate supplier. To avoid delay, these were delivered in batches to SP Energy Networks stores for storage where they could be collected by the installation contractor as required.

6.1 Stakeholder Coordination

Delivering 44 EV charging hubs in a short space of time required the focus of all the key stakeholders. The project appointed a dedicated point of contact from each key party to ensure communication was maintained and issues were dealt with quickly.

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A diagram showing the frequency of interactions between the stakeholders is shown in figure 16 below:



Figure 16: Stakeholder interactions

Weekly working level meetings between SP Energy Networks and the local authorities allowed efficient progress to be maintained. Senior level meetings were held fortnightly between SP Energy Networks, the local authorities and Transport Scotland to ensure issues to be resolved quickly

6.2 Assurance Processes

SP Energy Networks used established assurance processes to ensure high standards were adhered to on Project PACE.

HSE audits

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Regular site visits were carried out by SP Energy Networks operations staff to ensure high levels of health and safety were being maintained throughout the project. Recommendations such as increasing the standard of fencing surrounding sites under construction were suggested and implemented by the installation contractor.

Due Diligence

When each site was completed, the SP Energy Networks Quantity Surveyor carried out a site visit to ensure the work had been carried out to a high standard and matched the scope set out in the work order.

Earthing

A working group was established between the installation partners (Boyd Brothers), the charger supplier (Swarco) and SP Energy Networks. From within SP Energy Networks, there were representatives from the Engineering Services department, earthing policy experts and network design specialists. This proactive and diligent approach was present from the early concept stages through to post-installation, where an external consultancy firm completed earthing studies on select sites to validate the approach taken.

Industry Expertise & Best Practise

SP Energy Networks have representatives on many forums and working groups, with specific objectives and agendas including electric vehicles, policies & standards which meant that a wider working knowledge can be ustilised to support the development & delivery of projects like this.







6.3 Benefits enabled by large scale programme approach

Pace of delivery - By being involved in the optioneering and planning process, SP Energy Networks were able to programme the connections activities in advance to ensure efficiency of hub installations and offered flexibility with rescheduling works when required.

Bulk procurement - Knowing the volume of chargers anticipated for install up-front allowed a bulk procurement exercise to take place, utilising the Iberdrola global procurement platform to drive cost savings within the procurement of chargers and LV pillars.

Time savings - The central position that SP Energy Networks had throughout the process across the installation programme enabled the early engagement for metering activity, allowing each hub to go live as close to site completion as possible, a common delay seen within EV charger installations.

Efficiencies – There were many efficiencies seen throughout the programme, from planning and co-ordination through to delivery due to the way in which the project was delivered. By covering multiple sites and locations in the planning and legal stages, it meant that both time and cost savings could be realised by maximising the efficiency in each process. This same principle was applied across the project, including contracts, legal agreements, road opening versus one site at a time.

Awareness - Due to the coverage and presence that the project had, awareness at a local level and a higher national level increased. This was down to a combination of the volume of sites appearing locally in such a short window and the media coverage that was co-ordinated around the sites going live.

Issue Resolution – By having a single point of contact in each party and regular working meetings allowed issues to be resolved quickly, and the ability to cover off multiple sites & issues per meeting.

Consistent approach - Common project philosophy meant that all the sites were designed and delivered to the same standards, including accessible spaces. This repeat methodology meant that there was consistency in the sites delivered.

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Accessibility - Accessibility of the sites was highlighted early in the programme, and had these sites been independent of each other unlikely to have been brought to light. The programme approach as well as the close working relationships between the stakeholders allowed for a policy to be defined and implemented across the programme.

Interest from other councils - The publicity that PACE received meant that other local authorities were made aware of the project, the working relationship between the stakeholders and the efficiencies that it brought. This led to an increased level of engagement between the other local authorities and SP Energy Networks, facilitating quicker installations of EV chargers across Scotland helping enable the transition to Net-Zero.

6.4 Time savings

SP Energy Networks worked closely with the delivery contractors, local authorities and electricity meter provider, utilising a programme approach for delivery of the EV charging hubs. This approach allowed multiple hubs to be worked on at the same time, minimising the delivery phase.

The timeframe for the installation of all hubs was 52 weeks, from August 2020 to July 2021. If the same work was carried out using a serial approach (one hub after the other) it would have taken over 4 times as long.

For example, in September 2020, 6 EV charging hubs were started. As illustrated in Figure, using a programme approach to delivery, all 6 hubs started in September 2020 were completed in just 7 weeks by mid-October 2020.

In comparison, had a programme approach not been taken and each site had been delivered piecemeal, it would have taken over 3 months to deliver the same 6 EV charging hubs.









Figure 17: Delivery time for EV charging hubs started in September 2020

6.5 Programme Efficiency

As a result of efficient site selection in the optioneering study, SP Energy Networks will deliver 44 EV charging hubs in just double the normal time taken to deliver one EV charging hub.

Efficiency of deployment from a programme management view is a key benefit targeted by Project PACE. Demonstrable increased efficiencies in the rolling out of EV charging infrastructure compared with the local authority led model are being targeted. Efficiencies are expected to be achieved due to the ability to 'mass' produce sites as opposed to the lower numbers which are characteristically delivered by local authorities as bespoke projects.

An example of a typical timescale for the local authority led roll out model to deliver a large EV charging hub (>8 EV chargers) is approximately 38 weeks, but this can take up to 2 years. Project PACE will target delivery of 44 EV charging hubs in just 69 weeks.

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By carrying out the optioneering phase, where optimum sites were identified, problematic sites were eliminated and legal, planning and land rights agreements were agreed up front, significant time savings can be achieved in the end-to-end delivery of the EV charging hubs. The table below provides information on how the following time savings will be made compared to the local authority led roll out model:

	Deploymer		
Process	Local Authority	Project PACE	Impact
Planning & Land rights	Each site requires a circa 8 week period for approvals to be granted	Pre-agreement for 95% of sites as part of permitted developments removed approval process	Improved – better efficiency through removal of timely processes and approval chains
Connection Requests	Connection request on average can take up to 6 weeks	Through a 'batch planning' approach –requests can be achieved in 3 weeks	Improved - Up to 50% improvements in connection times
Equipment Procurement	Lead times are normally 12 weeks due to smaller numbers	Through improved efficiencies and agreed frameworks this is 4 weeks	Improved - Lead times reduced by circa 66%
Construction and Installation	Construction and installation work can take up to 13 weeks for each site	Reduced time through a 'bulk' production approach - 44 sites in 37 weeks	Improved – from a ratio of 1:13 to 44:37 (site: time in weeks)

Figure 138: Deployment Approach

A key measure of successful programme management efficiency is achieved by reducing wasteful and bespoke processes, eliminating unproductive duplication and increasing commercially beneficial procurement. This ensures improving delivery time whilst achieving quality and cost requisites. The Project PACE optioneering study has provided a strong basis upon which to deliver significant programme benefits and as the scale increases, the benefits achieved would be linear to investment.





9. EV Charger Usage

PACE charging hubs have facilitated over **91,000 charging events** during Aug 2020 to Dec 2021. These events have supplied over **3520 MWh** of energy, enough to drive over **13.7 million miles** or **552 times round the Earth**. If these miles were driven by petrol or diesel cars, over **2380 tonnes of CO₂** would have been released requiring over **113,000 mature trees** to absorb.



Some location types have more charging hubs than other location types. The above graph shows the average weekly events by location type for a single hub, i.e. total events for each location type divided by the number of hubs of that location type.



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During the pandemic charging hubs in town centres, at sports facilities and town centres facilitated fewer charging events than expected due to closures. Additionally, with work from home orders in place, park & rides also facilitated fewer events. The above graph shows that as restrictions were removed the total monthly events of all hub types except for parks increased. Town centres facilitate the most charging events overall, but there are double the number of hubs at town centres compared to the next most popular hub type, parks.

EV drivers preferred charging with a rapid charger, with 3 in 4 events occurring on this charger type despite only accounting for 37% of total chargers.

Drivers typically used PACE hubs for short top up charges with almost 70% of events supplying 25kWh or less (typical EV's have a battery capacity between 40 to 60kWh) 85% of events lasting less than 2 hours. There was no time that users

preferred for charging their EVs. Events were spread evenly throughout the day between 9am and 7pm.



Over 7500 unique users charged their EV at a PACE hub with over a 1000 charging at least once a month. Over 450 users regularly charged their vehicle at least once a fortnight.





A factor considered during the site selection study was the number of properties with no off-street parking within a 5-minute walk of the hub. These areas are likely to face challenges in obtaining EV charging infrastructure without the installation of public chargepoints. It was thought that sites in areas with a low amount of off-street parking would be more popular than sites in areas with a lot of off-street parking.



The trendline shows that in areas with the lowest amount of off-street parking available there is a higher usage of PACE hubs.

Comparing both ends of the trend, the hubs in areas with the lowest amount of offstreet parking facilitates up to **12 more** charging events compared to the hub with the highest amount of off-street parking. Over a year this would scale up to around **620 additional** charging events.

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10.Community Transport

Through the SP Energy Networks Green Economy Fund, Project PACE supported 6 community transport groups across Lanarkshire – Glenboig Development Trust, Cumbernauld Action on Care of the Elderly, WATIF, Rural Development Trust, Larkhall and Getting Better Together Shotts - allowing them to purchase 13 100% electric vehicles – 6 electric mini-buses, 6 electric people carriers and 1 electric car.

The vehicles are low floor accessible – which ensures the fleet provides transport solutions to assist vulnerable communities throughout North and South Lanarkshire, while helping to improve the air quality in the region.

In the long-term, the new vehicles will enable Getting Better Together Shotts, Cumbernauld Action on Care of the Elderly and Glenboig Development Trust to reduce their carbon footprints with an expected 32 tonnes reduction in CO₂ emissions in the next year.



Figure 149: North Lanarkshire Community Transport Vehicles

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Paul Bridges, Head of Transport at Getting Better Together Shotts, said: "Getting Better Together Shotts is delighted that it is able to begin the move to an electric fleet that will reduce our CO_2 emissions. We are extremely grateful to SP Energy Networks' Green Economy Fund as without them this would not have been possible."

In the first month since receiving the electric vehicles, Getting Better Together Shotts have driven 6,433 miles, avoiding £1,949 in fuel costs and saving 3,628kg CO_2 compared with driving one of their old diesel vehicles. They now use electric vehicles for all of their short local journeys, keeping the remainder of their diesel vehicles for long journeys. They predict that in the long term, the electric vehicles will reduce their fuel bill by more than 50%.

Eddie Dunlop, at Cumbernauld Action on Care of the Elderly, said: "We are thrilled with our new all electric minibuses thanks to funding from SP Energy Networks' Green Economy Fund. This will be transformational, not only in terms of the environment, but also for the social impact it will have as it assists with our long-term plan to provide vital transport services to the vulnerable communities of North Lanarkshire." Cumbernauld Action on Care of the Elderly predict that the new electric minibuses will save 11,800kg CO_2 per year.

Teresa Aitken from Glenboig Development Trust said: "This investment will benefit all aspects of our service users lives, including their health. To future proof our service, whilst also expanding our green fleet, is something we are delighted to be able to do. The vehicles really are a lifeline for so many of our service users, so we couldn't be more grateful for the support we have received from SP Energy Networks." Glenboig Development trust predict that using the new electric vehicle will save 2.403kg CO₂ per year.

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The Project PACE optioneering study has developed a framework of key documents and activities that can be used to increase efficiency in future EV charging infrastructure projects.

1. Specifications

Specifications for the supply and installation of electric vehicle chargers and the supply of LV control pillars were developed during Project PACE. These specifications can be used in their current form to specify electric vehicle charging infrastructure for future ChargePlace Scotland EV charging hubs in the SP Distribution license area. The specifications can also be used as a basis for specifications for electric vehicle charging infrastructure in other areas or for other charge point operators.

Electric Vehicle Charger Equipment Specification

The ChargePlace Scotland specification for EV chargers was reviews by Atkins, to ensure that it was as comprehensive and robust enough to meet the requirements of Transport Scotland, the local authorities and the DNO. As this apparatus is what we would typically class as "beyond the meter", this additional level of third-party verification was essential to confirming the expectations and requirements from this apparatus. A definitive specification was crucial in allowing a competitive tender process to be used effectively. The specification allowed us to approach a long list of potential suppliers from across Europe with a comprehensive list of criteria to ensure that all apparatus to be considered for this project was technically compliant.

Electric Vehicle Charger Installation Specification

A specification for the installation of electric vehicle chargers was developed to ensure the installation of electric vehicle chargers was carried out in compliance with all relevant codes and standards and met the requirements of Transport Scotland, the local authorities and the DNO.

LV Control Pillar Specification

A specification for an LV control pillar to safely connect EV chargers to the electricity network was developed. This specification ensures the LV pillar used by Project PACE conforms to all relevant codes and standards and meets the requirements of the DNO, the meter operator and the local authority. Before Project PACE, a specification for LV

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control pillars for connection of EV chargers to the electricity network did not exist and as a result, large, bespoke LV pillars with no commonality and requiring planning permission were installed. The SP Energy Networks LV pillar specification allows a standard pillar to be specified for future projects with dimensions that allow installation under permitted development.

Collaboration Agreement

A collaboration agreement for the whole project was implemented between SP Energy Networks and each local authority. Agreeing terms and conditions for all sites up front allowed standard licenses and wayleaves to be used and allowed sites to be approved for development more quickly. We would look to implement this approach in future EV infrastructure projects with Local Authorities.

Optioneering Process

SP Energy Networks developed a systematic process using electricity network analysis to determine a short list of viable sites for development.

This process is already being used by SP Energy Networks to carry out feasibility studies for other local authorities to assist them in site selection for EV charging hubs.

Practical experience designing and delivering EV charging hubs

Whilst SP Energy Networks design engineers process electric vehicle charger connections applications on a regular basis, hubs of the size seen in this project are rare. SP Energy Networks' Lanarkshire District are now well versed in the designing of these hubs, and cross district meetings have allowed the sharing of this experience.

As a DNO, SP Energy Networks had no prior experience in the installation or operation of beyond the meter EV charging apparatus. Working with the installation contractor and the equipment manufacturers has allowed us to fully understand the delivery of these projects, including timescales, common issues and required interventions. This experience will be invaluable in future EV charging infrastructure projects.

Lessons learned

Project PACE's innovative optioneering study identified several lessons that could be useful for future EV infrastructure projects:

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- Site visits to existing EV charging hubs across Dundee allowed the design team insight into the detailed design of exemplary EV charging hubs and allowed lessons to be learned from previous similar projects.
- A close working relationship with the local authorities was key to the success of the optioneering study. Regular update meetings, workshops and site visits ensured each local authority was highly involved and always had the chance to contribute. Having one point of contact per local authority was very useful when communicating at a working level and regular meetings with senior local authority stakeholders ensured all issues were dealt with quickly.
- Engaging specialist consultant Urban Foresight brought unique experience of EV charging hub site selection from a customer perspective to the project. Their input helped to identify site locations that would be well used by customers. Urban Foresight's knowledge will be invaluable for community engagement in the construction phase.

9. Appendices

Further information on the Project PACE Site Selection Study, including the full report and fact card can be found here; <u>https://www.spenergynetworks.co.uk/pages/pace.aspx</u>



