Competition in Connections Seminar

September 20, 2024

Hilton Leeds

Welcome

EQ Comms

Housekeeping

Select: ‘Hilton Honors’
On the landing page click on ‘Promotional Code’
Password: Leeds2024

slido #CICEvent

Introduction

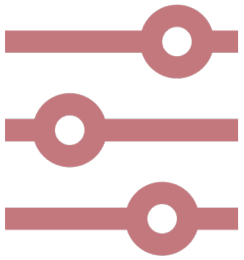
Clare Roberts, Connections Input Services Operations Manager

Agenda

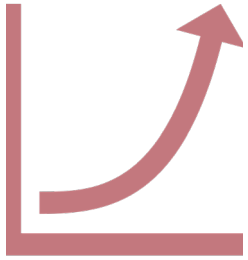
Agenda		
Registration		09:30
Welcome	EQ Comms	10:00
Introduction	Clare Roberts	10:10
Competition in Connections update	Clare Roberts	10:30
Break		10:55
Design	Leo McNeice & Alan MacDonald	11:10
Non-Conformances	Michael Proctor & Russ Tate	11:45
Lunch & Networking		12:15
Authorisations & ICP Nominations	Martin Murphy & Mark Elliott	13:00
Drop in Sessions	All	13:30
Q&A	All	14:30
Closing Remarks	Clare Roberts	15:00

We are committed to promoting Competition in Connections

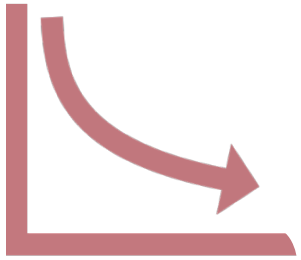
Transparent Competition



Enabling customer options



Driving efficiency



Minimising input services

Discussion: introductions

New format to seminar sessions

- Introductions
- Why are you here today?

Please take ten minutes on your tables to introduce yourselves and discuss the outcomes you wish to get from today's seminar

Competition in Connections update

Clare Roberts, Connections Input Services Operations Manager

Performance

SLC15 Dashboard summary						
	2021	2022	2023	2024 - wk37	Forecast - wk16	Forecast - wk37
Provision of PoCs	1889	2334	2219	1592	2310	2237
Total number of acceptances	474	638	562	429	460	603
Technical Self-Determined	177	116	55	84	70	118
Matrix	439	523	1464	1255	1780	1764
Design Approval requests	1045	1117	1258	985	1300	1384
Self-Approved Design	193	218	174	105	160	148
Designs Rejected	189	296	380	306		

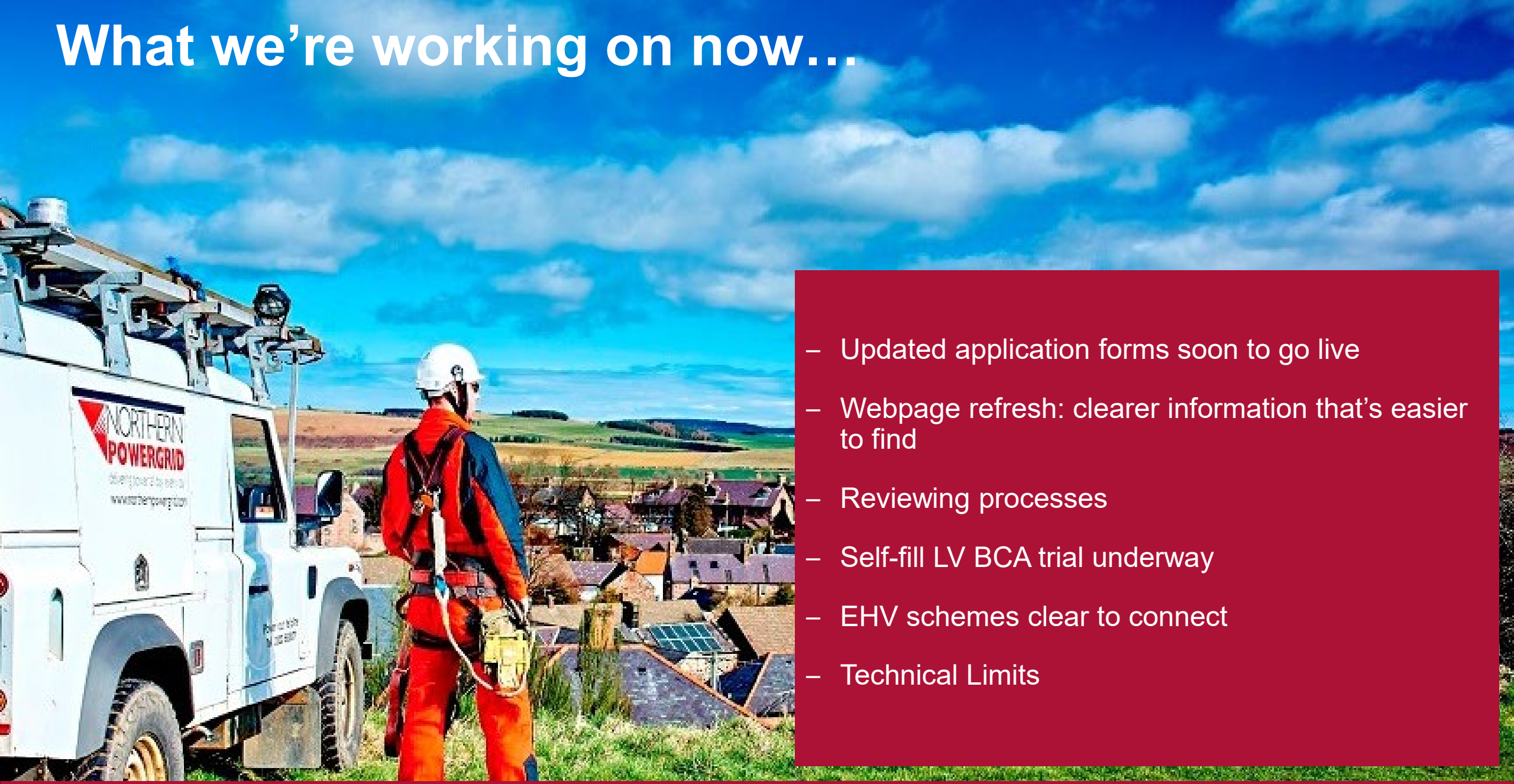
Design Rejections

For the six months January to June 2024, we saw a total of 168 designs which were rejected

Top five reasons for rejection:

- **Cables** – the type of cable proposed for adoption
- **Wayleaves/Land Rights** – proposed design would cross private land
- **Earthing** – incorrect or missing data
- **Substation** – internal layouts of substations
- **Linkbox** – general issues with linkboxes

What we're working on now…



- Updated application forms soon to go live
- Webpage refresh: clearer information that's easier to find
- Reviewing processes
- Self-fill LV BCA trial underway
- EHV schemes clear to connect
- Technical Limits

NORTHERN POWERGRID

Responding to your feedback

What you told us…

What we've done…

- Authorisations – presentation by Martin Murphy and Mark Elliott to follow later in today's agenda
- Design – presentation by Leo McNeice and Alan MacDonald to follow later in today's agenda
- ICP Process – CIS team in attendance for drop in sessions
- Health & Safety

Eco Online

Digitalisation of Hazard & Near Miss Reporting

Instead of calling the ‘159’ number 01977 605 159 to report a Hazard / Near Miss / Stop the Job situation when working **on our network/attending our assets** you can now do this online.

This QR code allows easy access from a mobile device for you to submit a Hazard / Near Miss / Stop the Job situation.

What is staying the same:

You are still expected to call **01977 605 159** for any accidents when working **on our network/attending our assets.**

You are still expected to call the below license area numbers for urgent requests relating to our assets.

Northeast – **0800 668 877**

Yorkshire – **0800 375 675**

Need help:

Email - healthsafetytraining@northernpowergrid.com

Reporting Mechanisms

1. **Urgent requests /emergency situations** – call Northern Powergrid: Northeast – **0800 668 877** / Yorkshire – **0800 375 675** or **105**.
    - **Examples** - substation access/egress or security concerns, cable damage (stressed/fault state), discovery of bypass/illegal tamper (if applicable), stolen earthing in substations, substation roof leak directly over switchgear etc…
2. **Hazards, near miss incidents and stop the job situations** – use ECO Online by scanning barcode.
    - **Examples** – shallow cables, tile tape missing, substation audible discharge, missing switchgear/LV feeder labels, missing trench covers, missing rubber mat, substation lights not working, damaged building fabric, etc
3. **Accidents/Incidents** – call **01977 605 159**
    - **Examples** – when an injury has occurred.

Wayleaves

Feedback from our Wayleaves colleagues since the April seminar is positive overall

Contracts are between Northen Powergrid and ICP; it would be helpful to keep communication channels simple, to avoid delays from dealing with multiple contacts.

Call offs before legals have completed; legals must be completed before a scheme can be connected.

Contact info for Wayleaves

- 0191 229 4604
- wayleaveinstructions@northernpowergrid.com
- Please quote ENQ number

Discussion: topics for the next seminar…

- ICP engagement – what can we do differently?
- Anything else?

Break

10.55 – 11.10

NORTHERN POWERGRID

Design

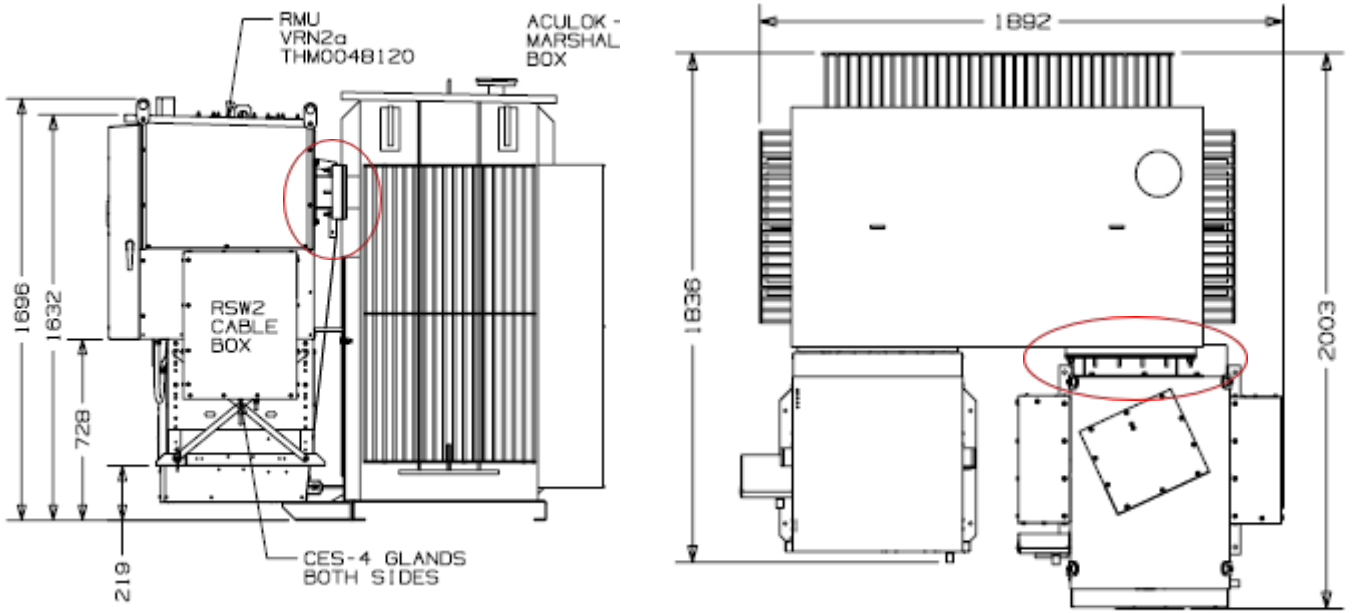
Leo McNeice, Lead Design Engineer
Alan MacDonald, Lead Policy and Standards Engineer

Topics to be covered

- Update on UDE Monoblocks
- Substation enclosure - considerations
- Engineering recommendations for Electric Vehicle Chargers

Monoblocks

Update from webinar held on July 4th



HV RMU Monoblocks

HV Monoblock Manufacturer	Typical Associated Transformer Manufacturer	Type Test Evidence Status	Northern Powergrid current Acceptability under New BCA for New installs	Alternative pathway to acceptance being considered
Mekufa UK Ltd	Multiple – original and at one time only version	NONE available (ceased operating / trading)	NOT ACCEPTED	Transformer type / routine tests with Monoblock included as test subject
Kaizen Swgr Products (India)	Toshiba (Wilsons Power)	Received and accepted	ACCEPTABLE	Not required
Epoxy Terminal and Equipment (ETE) Pvt (India)	Vijai Electricals Ltd (QPS)	Received and accepted	ACCEPTABLE	Not required

NEXT STEPS & CHALLENGES : Undeclared IN-SERVICE sites.

- Need to establish Northern Powergrid network sites with HV monoblock to prepare and protect both in the future with a retrospectively altered agreement.
- Absence of a retrospective BCA change may result in restoration delays in the event of a RMU fault or failure.
- Likelihood of Mekufa UK Ltd existing which we have no test evidence for.
- Preference that information exchange can be collated and managed via the INA

Monoblocks - solution for new connections

- Update wording in BCA to detail

Connection Point	Entry Point	For a monoblock Unit Distribution Equipment connection, the Entry Point shall be at the rear flange of the Company's close-coupled ring main unit where the User's equipment (including any ring main unit copper extension pokers) is connected to the Company's equipment by way of a dry contact monoblock connection, such that User's equipment (including the monoblock system and any ring main unit copper extension pokers) does not form part of the Company's Distribution System.
	Exit Point	Not Applicable
Metering Point (if applicable)		Not Applicable

Monoblocks - solution for new connections

4 Operational boundaries

Drawing [Enter drawing number] is annexed to this appendix and indicates the operational boundaries which shall apply to this network.

In the event that the Company's ring main unit needs to be removed from a package close-coupled arrangement connected via a HV monoblock for any reason, the following shall apply:

i) The Company will disconnect the relevant switchgear from the Company's Distribution System by disconnecting the Company's incoming cables from that switchgear;

ii) The User will remove the close-coupled ring main unit, always provided that the User has been part of a working party under the terms of a safety document approved by the Company in which the boundary between the Company's safety rules and the User's safety rules is established;

iii) The Company will dispose of the ring main unit;

iv) The Company will supply and bring to the Connection Point address a new ring main unit to its standard specification;

v) The User will connect their monoblock dry probes to the Company's ring main unit bushings and mount the Company's ring main unit on the User's transformer, always provided that the User has been part of a working party under the terms of a safety document approved by the Company in which the boundary between the Company's safety rules and the User's safety rules is established;

vi) The Company will witness the pre-energisation tests undertaken on the equipment by the User and, if the User's pre-energisation tests pass the required standards, including that the test voltages specified in the Company's Operational Practice Manual are not exceeded, the Company will connect the Company's incoming cables to the Company's ring main unit, so re-establishing the Connection Point; and

vii) The User will indemnify the Company in full for any costs and/or losses incurred by the Company as a result of or as a consequence of the User undertaking the work specified in this Section 4.

Monoblocks – existing connections

- Please issue list to cinc.connections@northernpowergrid.com
- Let us know if this is a complete list, or subject to additions
- Collective effort to resolve the issue, in the best interest of all parties

Substation Enclosures

- Recent focus on substation enclosures has been raised because of interactions and developments:
  - ENA switchgear panel / publication of ENA TS 41-41 for RMUs replacing 41-36 (5) – *package unit SS IARC test figure omitted*
  - Proposals for designs in commonly available compact GRP enclosures such as TR7 that push IARC clearances to limits of interpretation
  - Larger capacity unit style transformers >1MVA being used for packages in enclosures
  - EU directive on transformer losses tier 1 > tier 2 increasing some dimensions on some transformer designs to comply
  - Development and increased use of OLTC on distribution network transformers increasing heights
  - Update and publication of ENA TS 35-1 part 1- 3 GM transformers.
  - New RMU designs (Ringmaster RxD) and developments in prep for EU F-Gas Regulations changes.
  - Increased requirement / need for distribution network remote control (customer interruptions & minutes lost).

- Northern Powergrid approach and consideration is for safe, secure, reliable network operations.
  - NPS/006/002 – Product Specification for Prefabricated Distribution Substation Enclosures
  - Suite of GA and detailed drawings for a range of different distribution substation arrangements (11kV & 20kV)
  - Consideration for operator safety whilst in substations.
    - Level, unimpeded manual operating position – access and egress.
    - Safety in the event of fault conditions, including internal arc
    - Manufacturers recommendations on requirements for safe operation, testing and maintenance.
  - Adding remote control facilities to switchgear mostly retro-fit to existing sites – this needs wall space for RTU / SCADA.
  - Ongoing work with ENA SAP to add / recover the IARC test layout figure for UK style 11kV “unit” package arrangement
  - Consideration of future maintenance / testing / servicing & replacement of assets

- Working on an internal guidance document to capture the many points and considerations to provide designers and customers the best overall service and information on what is / isn’t acceptable.

Recommendations for Electric Vehicle chargers

Engineering Recommendation G5/5 – Harmonic Distortion

Engineering Recommendation G100/2 - Customer Export and Import Limitation Schemes

Recommendations for Electric Vehicle chargers

G5/5 – Harmonic Distortion

- Network Operator where the technology (EV Charger) is being installed, is responsible for complying with the Eng Rec.
    - Where the EV Charger is to be installed on an IDNO network, or to assets which will be adopted by an IDNO, Northern Powergrid will ask for confirmation that the installation is G5/5 compliant at Design Approval stage or ask for steps that will be taken upon energisation to confirm G5/5 compliance.
    - Where the EV Charger is to be installed on Northern Powergrid's network, or to assets which will be adopted by Northern Powergrid, Northern Powergrid will require information to allow us to undertake Stage 1 / Stage 2A G5/5 checks and may result in the requirement of background harmonic recordings to be taken after energisation, but ahead of the EV Chargers being installed.

Recommendations for Electric Vehicle chargers

G5/5 – Harmonic Distortion

- Information needed
  - Number of EV Chargers being installed.
  - Unrestricted capacity of EV Chargers
    - If a Customer Limiting Scheme (CLS) being installed.
  - Technology type
    - three-phase six-pulse converters;
    - three-phase active-front-end converters;
    - three-phase twelve-pulse converters;
    - single-phase rectifiers.

Recommendations for Electric Vehicle chargers

G5/5 – Harmonic Distortion

Table 19 — Maximum permitted aggregate equipment rated power at reference short-circuit power (1C-1)

PCC voltage	$\sum S_{equ\ permitted\ @\ Ssc\ reference}$ $S_{SC\ reference}$ = 10 MVA three-phase			$\sum S_{equ\ permitted\ @\ Ssc\ reference}$ $S_{SC\ reference}$ = 2 MVA single-phase
	Six-pulse three-phase converter	Active-front-end three-phase converter	Twelve-pulse three-phase converter	Single-phase rectifier
LV	22 kVA	192 kVA	77 kVA	7.9 kVA

NOTE: An explanation of the converter technologies is provided in Annex B.

NOTE: An active filter in combination with six-pulse three-phase converter equipment can be treated as equivalent to active-front-end three-phase converter equipment provided that the resulting harmonic current emission does not exceed the emission profile for active-front-end three-phase converter equipment given in Table B1. The emission from the six-pulse converter may increase due to the action of the active filter on voltage distortion and affect the overall emission of the combination of equipment; consequently this needs consideration in selection of the filter rating. To achieve the required emission profile it will be necessary for the active filter to be configured to target and adequately compensate each of the relevant harmonic orders where the emission from the six pulse converter would otherwise exceed that of Table B1.

Recommendations for Electric Vehicle chargers

Background Harmonic Assessment

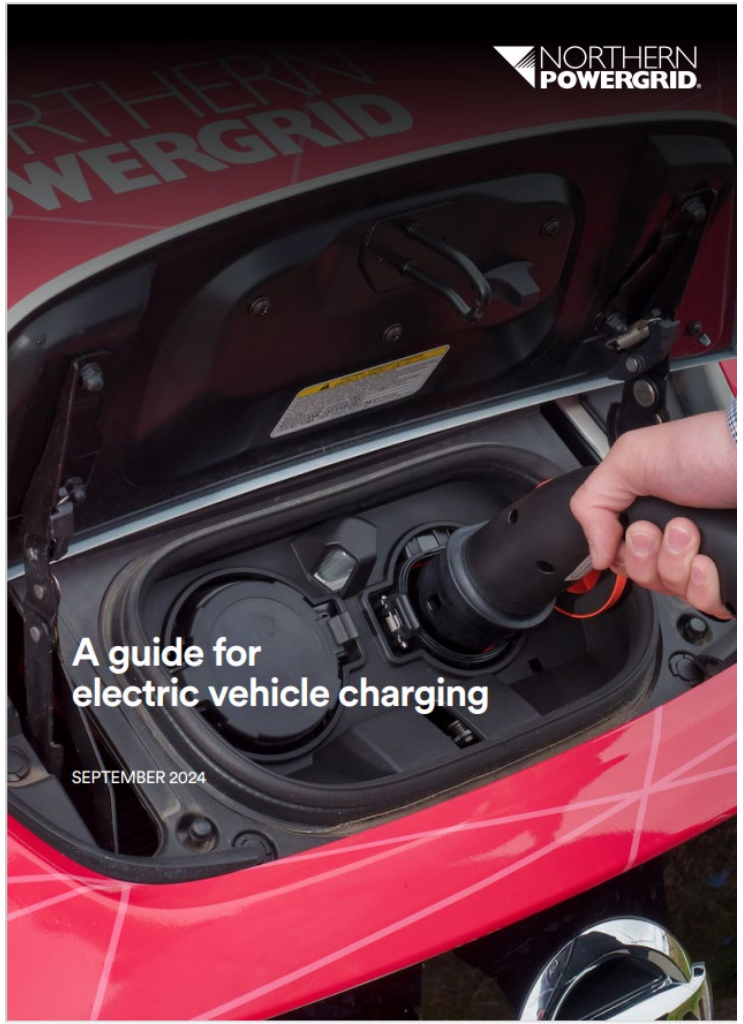
- Minimum of 2-week period required after energisation but prior to EV's being connected for assessment to be undertaken.

- Once completed the Northern Powergrid Project Engineer will provide the ICP/Customer the details of the assessment.
  - The EV Chargers can be turned on at this point.

- The ICP/Customer will review the details and produce a compliance report showing how the installation is G5/5 compliant.
  - If the site is not compliant, mitigation measures must be installed to make it compliant. The ICP/Customer will review the details and produce a compliance report showing how the installation is G5/5 compliant and send it to the Project Engineer.

- Northern Powergrid will review the compliance report, and if satisfactory continue with the finalisation of the scheme.

Guide for Electric Vehicle charging



https://www.northernpowergrid.com/downloads/59858

Non-Conformance

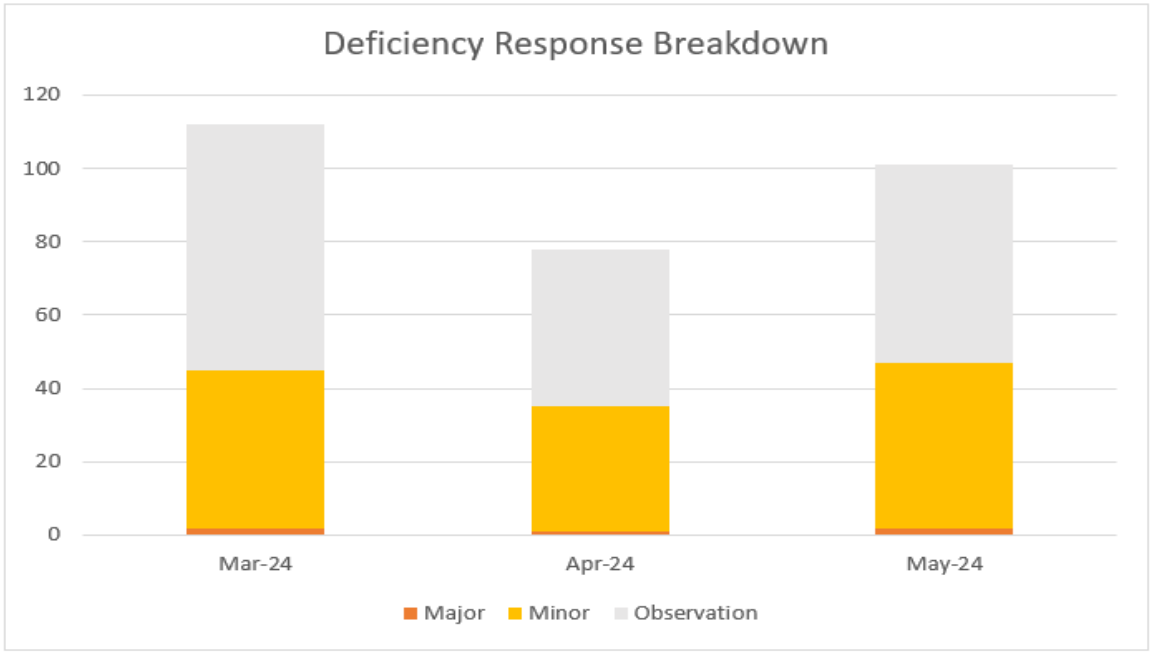
Michael Proctor, External Utilities Senior Assessor
Russ Tate, Field Audit Manager

NERS Registered ICP's

- 429 companies on the NERS Register
- 7 companies are suspended
- 422 active companies

- 61 companies hold full accreditation for all scopes
- 259 companies hold a mix of partial and full accreditation in all scopes
- 102 companies remain at partial only
- 7 companies remain suspended due to lapses in recertification

LRQA Report - Deficiencies



Deficiency Response Breakdown

	Mar-24	Apr-24	May-24		
Major	2	1	2	=	5
Minor	43	34	45	=	122
Observation	67	43	54	=	164
				Total	**291**

LRQA Report - Deficiencies

Frequent Deficiency areas (all deficiency levels)

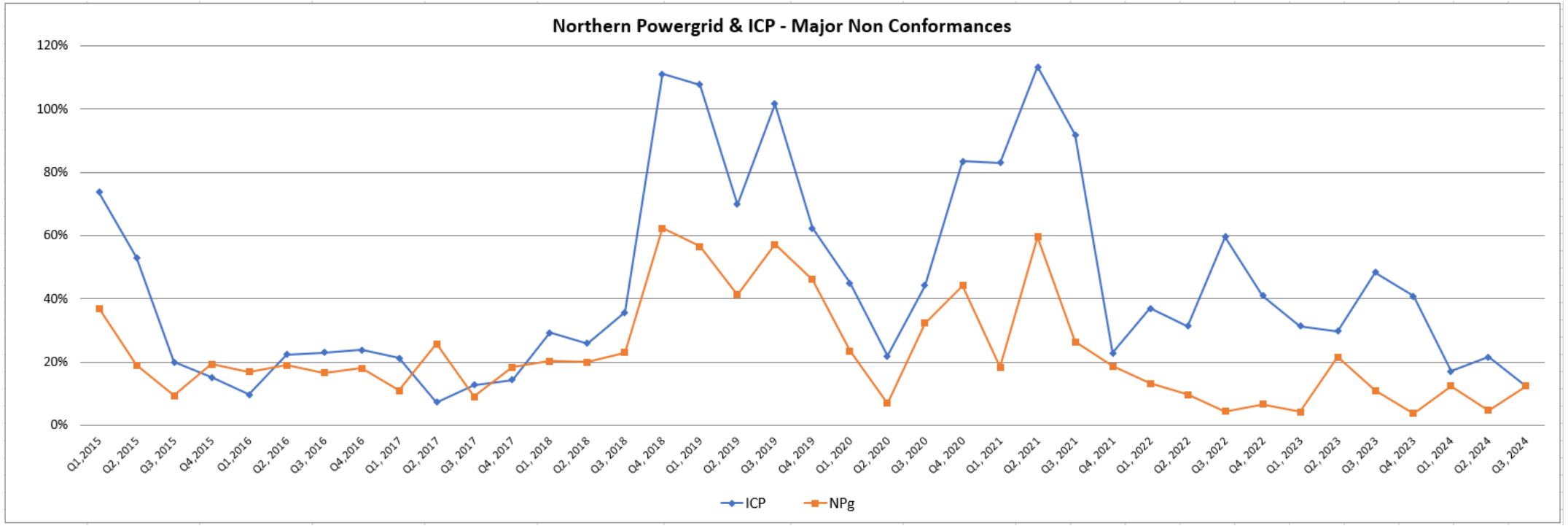
Item	Times Flagged
Passports in place and completed	60
Work instruction, Job Card	27
Certificates Of Competence available and compliant	21
Method Statements	20
Generic Risk assessment / Point Of Work - Site Specific	18
COSHH Assessments (All Substances on Board)/ Data Sheets available	13
Document Control – current review status	11
Is All Safety Equipment In date/ calibrated?	10
Plans, Drawings	9
Are all items of General Plant in date / Servicable	7

ICP’s operating in Northen Powergrid

- 2024 – 53
- 2023 – 33
- 2022 – 31
- 2021 – 30
- 2018 – 15

350% increase in ICP activity since 2018

Major Non-Conformance Trends



Major and Minor Non-Conformances

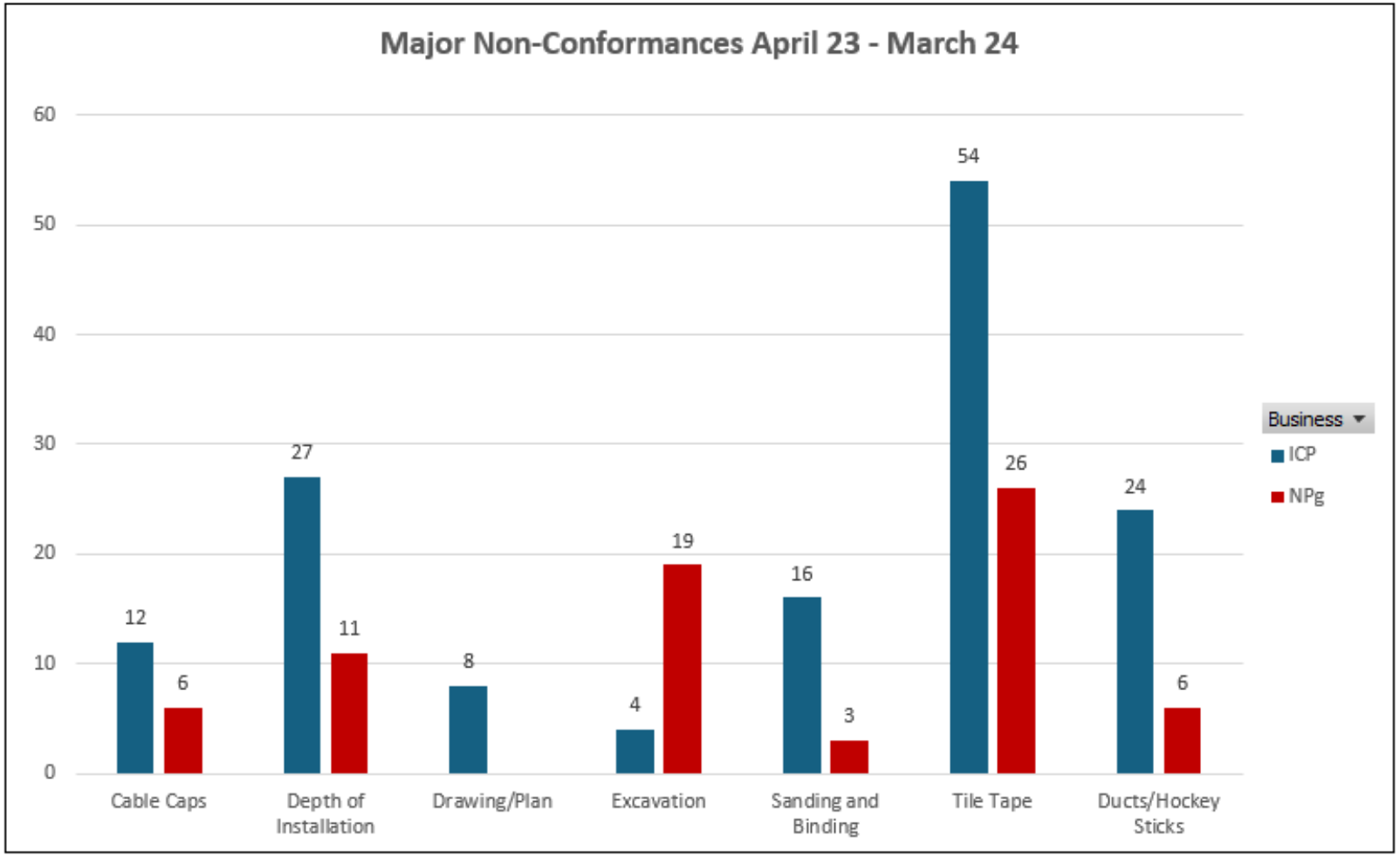
Major non-conformances raised include:

- Sites with shallow or over depth cables or ducts (with no mitigation)
- Sites where tile tape was missing over energised cable
- Incorrect ducts installed NSP/002 – 125mm I/D
- Incorrect tile tape on Northern Powergrid/IDNO cables
- Sites where cables had not been sanded
- Site where line and levels could not be confirmed

Minor non-conformances raised include:

- Minor tile tape installation issues.
- Minor deviation of cable route from approved drawing.
- Sites where rectification issues were carried out at time of visit.
- Sites where no shorting caps fitted

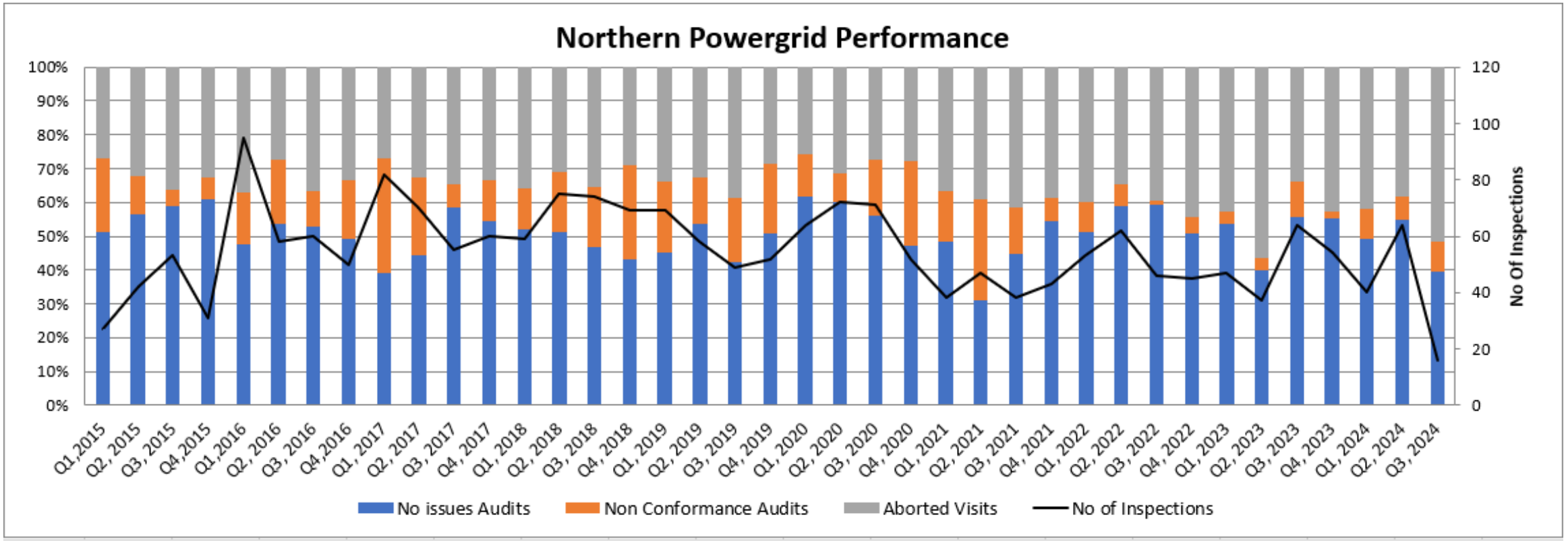
Problem areas



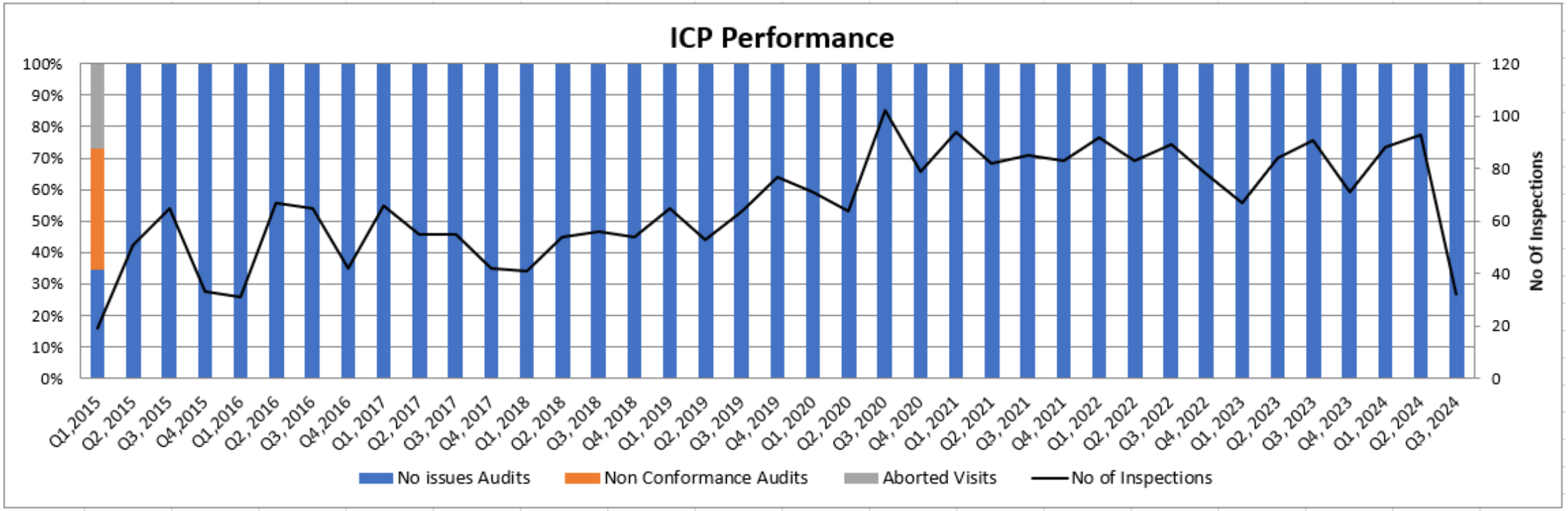
Problem areas

But…it's not all bad

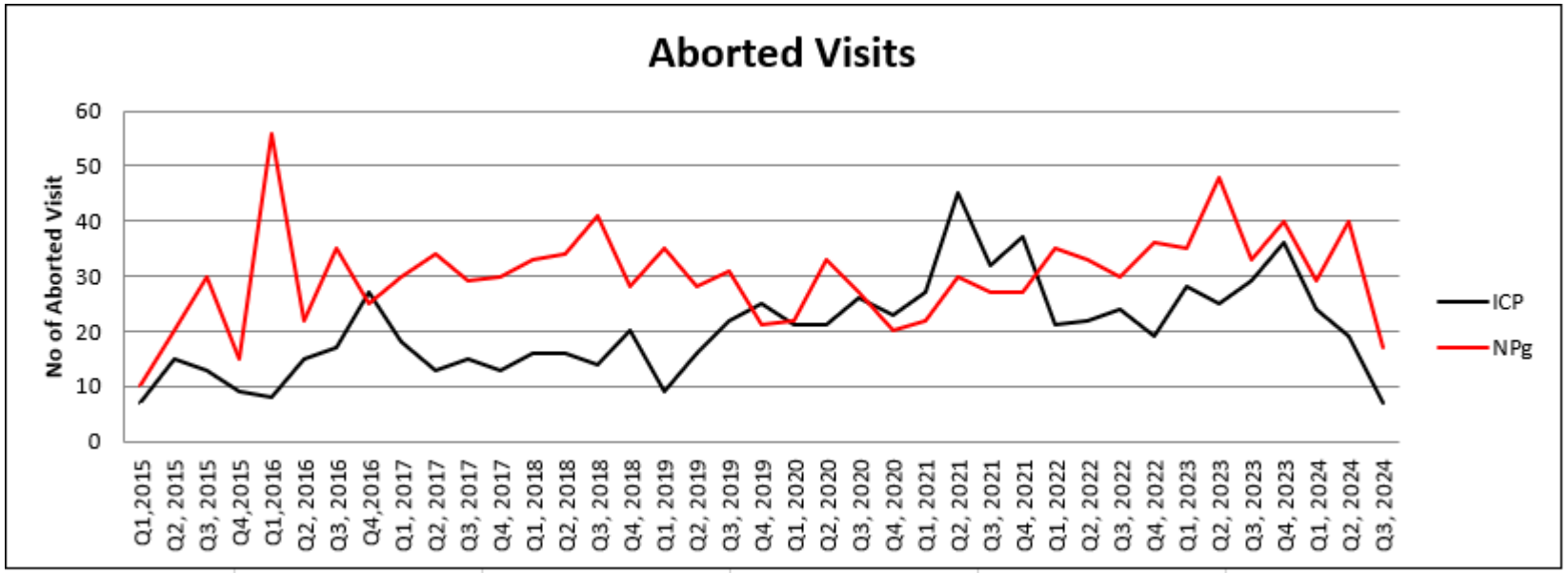
Analysis of Performance



Analysis of Performance



Abortive visits & whereabouts



- Update Whereabouts sheets or pick up the phone
- 07939 970232
- Submitted whereabouts – please be more specific in the scope of works e.g. civils

Inspections - Requirements of the CoP

- 6.2.1. DNOs shall be entitled to inspect ICP works. However, DNOs should be mindful of their obligations in respect of Competition in Connections and should therefore consider appointing independent inspectors to undertake this activity. In any case, such inspection should not unduly restrict or delay the accredited ICP from undertaking work and must be no more onerous than the quality assurance regime used for the DNO's own connection activities
- 6.2.2. To facilitate inspection, ICPs shall provide DNOs with whereabouts sheets advising the DNO of when and where the ICP is undertaking work. The DNO will be entitled to visit the site identified in the whereabouts sheet to inspect the works
- 6.2.3. If the DNO identifies a non-conformance, the DNO shall specify what the non-conformance is and set out the corrective actions that need to be undertaken. On completion of the corrective actions, the ICP shall advise the DNO and the DNO shall be entitled to revisit the site and carry out a further inspection.

Payment for Inspections

Charges made retrospectively and based on actual number of inspections.

- This is what ICP colleagues asked for.

Cost per inspection is £214 (+VAT) from 1 July 2024

- Abortive visits are charged at the same rate.

Review costs

- Look at costs to us
- Other DNO’s

In Summary

- Major non-conformances are decreasing
- We continue to see an enduring role for **independent** inspection services
- Site disputes process is still there…however it's quiet, and that's welcomed

Lunch

12.15 - 13.00

NORTHERN POWERGRID

Authorisations & ICP Nominations

Martin Murphy, Training & Standards Manager
Mark Elliott, Operations Assurance Manager

Requirements

The ICP shall be accredited under the National Electricity Registration Scheme (NERS) for the scope of the work to be undertaken.

The ICP shall enter into a Northern Powergrid Framework Asset Adoption & Access Agreement.

Options

There are two options available for authorisation of ICP employees to operate on Northern Powergrid's LV system;

- Option 1 – ICP Authorisation of ICP employees and contractors
- Option 2 – Northern Powergrid authorisation of ICP employees and contractors

Option 1 – ICP Authorisation of ICP employees and contractors

- Northern Powergrid require the name, trade group and National Insurance number of the ICP employee to be assessed.
- The ICP employee will attend a face-to-face safety induction at either Kepier or Castleford along with carrying out a simple test on low voltage network testing techniques
- On successful completion of the test, Northern Powergrid will notify the ICP that their employee has been inducted and passed the LV testing assessment. The ICP will issue a certificate.

Option 2 – Northern Powergrid authorisation of ICP employees and contractors

- Northern Powergrid require an authorisation nomination form, an in date first aid certificate and an in date manual handling certificate and a copy of an authorisation certificate from another DNO for the ICP employee to be assessed.
- The ICP employee will attend a face-to-face safety induction at either Kepier or Castleford along with carrying out a simple test on low voltage network testing techniques
- On successful completion of the test, the ICP operative will be issued with a Northern Powergrid authorisation certificate.

Option 2 – Northern Powergrid authorisation of ICP employees and contractors

SAP's will attend a half day transfer of information session at Kepier or Castleford. This will be followed by a month to read and understand the information provided.

The SAP will then return for a further discussion to confirm their understanding and assuming there are no issues, an authority certificate will be issued along with DSR's, OPM's and keys.

Option 3 – Transfer of Control

Only available at HV for SAP's where transfer of control will be made available. The process is the same as Option 2.

Key Points

- Ensure all documents required are submitted, the request will not be processed without relevant information and documents.
- Ensure certificates requested (first aid and manual handling) are in date.
- Inductions are held every two weeks alternating between Kepier and Castleford.
- ICP’s are responsible for their own refresher training. For re-issue of certificates every three years, Northern Powergrid require in date copies of first aid and manual handling certificates and copies of two audits.

Key Points

- Linespersons will also be required to submit a MEWP certificate.
- The assessment at HV for craftsperson's will be an assessment on safety documents.
- Northern Powergrid reserve the right in the event of a serious safety or quality issues to either;
- Option 1 – Insist the ICP remove authority pending investigation and suitable remedial action.
- Option 2 – Northern Powergrid will remove authority pending investigation and suitable remedial action.

Key Points

A guidance document is available on the Competition in Connections webpage, which provides further details on authorisation options

Authorisation Options Guidance Document for Independent Connection Providers

Northern Powergrid permits accredited Independent Connections Providers (ICPs) to access its electricity distribution network for the purposes of connecting newly installed extension assets. Access is granted in accordance with the three options set out in section 5.2 of the Competition in Connections Code of Practice and is subject to accredited parties entering into **Northern Powergrid's Framework Asset Adoption Agreement** and **Network Access Agreement**.

	Option 1 (ICP authorisation of ICP employees and contractors)	Option 2 (Northern Powergrid authorisation of ICP employees)	Option 3 (Transfer of control)
General Access Requirements	• **Per section 5.1.2: ICP shall be accredited under the National Electricity Registration Scheme (NERS) for the scope of the work to be undertaken.** • **ICP shall enter into a Northern Powergrid Framework Asset Adoption & Access Agreement.**		
	PLUS THE FOLLOWING SPECIFIC REQUIREMENTS DEPENDENT ON VOLTAGE LEVEL OF THE NETWORK TO BE ACCESSED		
Low Voltage Network Specific Requirements	The ICP must only use operatives who the ICP has determined is suitably competent to carry out the works.	The ICP must only use operatives who NPg has determined is suitably competent to carry out the works.	N/A at LV
	Operatives will attend a Northern Powergrid training centre and receive a face-to-face safety induction briefing.	Operatives will attend a Northern Powergrid training centre and receive a face-to-face safety induction briefing.	
	Craft induction sessions are held twice per month (one at Durham and one at Castleford).	Craft induction sessions are held twice per month (one at Durham and one at Castleford).	
	Safety inductions are free of charge.	Safety inductions are free of charge.	
	As part of the induction, operatives will undertake a simple practical test on low voltage network testing techniques.	As part of the induction, operatives will undertake a simple practical test on low voltage network testing techniques.	
	On successful completion of the test, Northern Powergrid will notify the ICP that their operative has been inducted and passed the test.	On successful completion of the test, operatives will be issued with a Northern Powergrid authorisation certificate specifying the scope of works permitted.	
	Operatives unable to successfully pass the test will be notified to the ICP and authorisation certificates will not be issued by the ICP until the operative is able to demonstrate testing competence	Authorisation certificates are renewed every three years.	
	The ICP is responsible for refresher training and authorisation renewal.	The ICP is responsible for refresher training	
	All work on the distribution network will be carried out under the ICP's own Safety Rules, procedures and safety management system. The ICP's safety management system must have been approved under the National Electricity Registration Scheme and must meets the requirements set out in the CinC Code of Practice	All work on the distribution network will be carried out under Northern Powergrid's Distribution Safety Rules and in accordance with its Operational Practices Manual.	
	Northern Powergrid reserves the right to insist that an ICP suspends an operative's authorisation in the event of serious safety or quality issues until such a time as appropriate remedial action is agreed to ensure compliance.	Northern Powergrid reserves the right to suspend an operative's authorisation in the event of serious safety or quality issues.	

Continued over page…

Drop-in sessions - 13.30-14.30

- Design
- Wayleaves
- Authorisations
- Information Management – as laids
- Connections Delivery
- EHV Connections
- ICP Application Process
- Data Portal – live demo at 14:00


Q&A

Closing Remarks

Clare Roberts, Connections Input Services Operations Manager

Thank you for your time and participation today.