Distributed Generation Low Voltage

Incentive on Connections Engagement Workshop

Tuesday 16 October 2018

Stay connected...

www.enwl.co.uk

Agenda

Session	Time
Registration & lunch	12:30 - 13:00
Welcome & Introduction	13:00
The DG LV Landscape	13:05
DG LV ICE Workplan 2018/19 Update	13:15
Community & Local Energy Strategy	13:30
From DNO to DSO	13:50
Getting you Connected – Our Processes	14:05
- Questions & Discussion Session	14:25
Break (20 Minutes)	14:45
Connection Charging Models	15:05
- Questions & Discussion Session	15:25
Panel Question and Answer Session	15:45
Wrap Up & Close	16:00

electricity north west

Bringing energy to your door

The DG LV Landscape

Steffan Jones

Infrastructure Solutions Manager

Stay connected...

www.enwl.co.uk

The DG LV Landscape

Quotes Issued/Year	2015-2016	2016-2017	2017-2018
Nil cost	915	204	167
Up to £5k	145	26	18
Up to £50k	81	23	13
Over £50k	16	2	1
Total:	**1157**	**255**	**199**

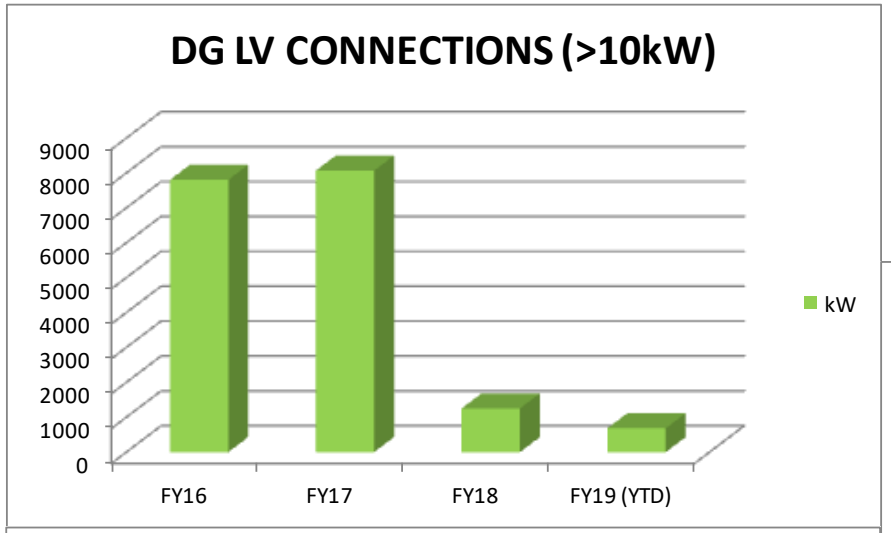
Quotes Issued/Year	2015-2016	2016-2017	2017-2018
Acceptances	409	92	78

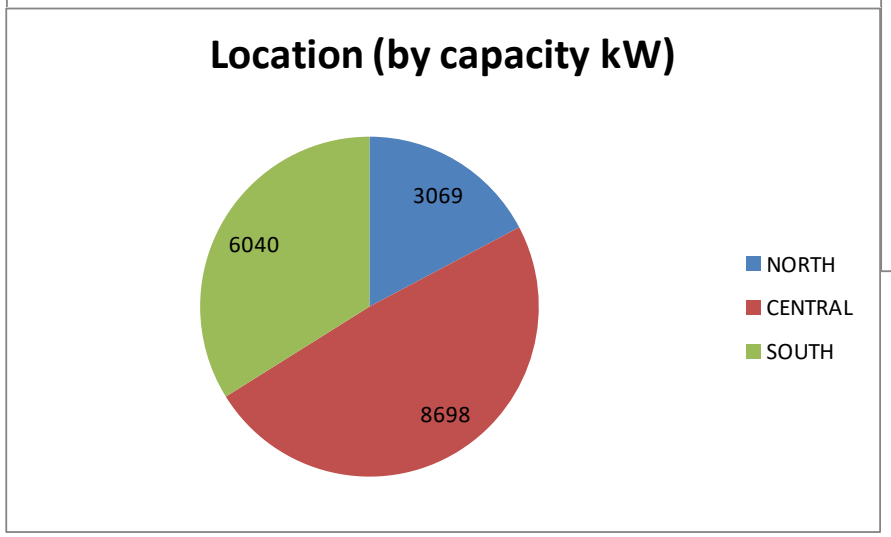
- So far this year (2018/19 financial year to date):

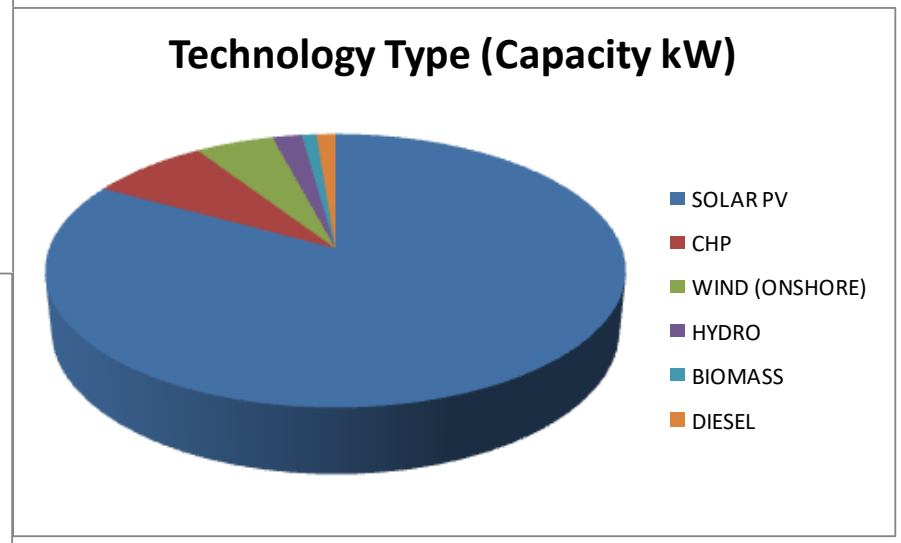
- 122 DG LV Formal Connection Offers (majority at nil cost)
- 63 DG LV Customer Acceptances (majority at nil cost)

The DG LV Landscape

- What are we connecting to the Network....? And Where....?







electricity north west

Bringing energy to your door

ICE Update: Distributed Generation Low Voltage 2018/19 Workplan

Michelle Snowden, ICE Manager

Stay connected...

www.enwl.co.uk

How are we performing against our commitments?

Commitment	Action	Output/KPI	Deadline	Status
Improve connection charging approach to make charging fair for our customers	Conduct an impact assessment and plan implementation of assessment and design fees.	Engage with stakeholders regarding our proposals	Q4	On Target
We will share our vision for the transition of Distribution Network Operators (DNO) to Distribution System Operators (DSO)	Engage with stakeholders on our transition to DSO strategy	Hold an engagement session with our stakeholders	Q4	On Target
Target improved customer satisfaction	Our aim is to target high levels of overall satisfaction	Customers surveyed rate their overall satisfaction at 85% (subject to statistically significant sample sizes)	Q4	YTD Average 76.60%
Target improved Time To Quote for DG LV quotations	We aim to outperform the regulatory standard by providing quotes on average in 28 working days (compared to the guaranteed standard of 45 working days)	We will continue to work towards a 28 day average Time To Quote	Q4	YTD Average 22.5 days

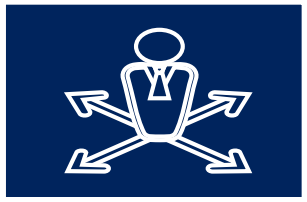
How are we performing against our commitments?

Commitment	Action	Output/KPI	Deadline	Status
We will engage with community energy stakeholders on our network information	We will engage with community energy stakeholders on our network information	• Hold an engagement session with community energy stakeholders • 80% of stakeholders surveyed rate the session as “useful” or “very useful”	Q4	COMPLETE
We will continue to offer opportunities for stakeholders to engage with us	We will facilitate a workshop specifically for our DG LV stakeholders	• Hold a workshop centred around DG LV topics. • 80% of attendees surveyed rate the event as ‘useful’ or “very useful”	Q4	On Target
We will continue to offer pre-application surgery sessions and webinars	Host connection surgeries for DG LV customers	• Offer a minimum of 3 x surgery sessions/webinars • 80% of attendees surveyed rate event as ‘useful’ or ‘very useful’	Q4	On Target
Continue to provide quarterly updates on progress of actions	We will publish quarterly updates on our actions and outputs	Quarterly newsletters distributed to registered stakeholders and published online	Q4	On Target

How we develop our workplans

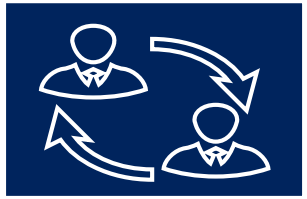
Agree draft ICE actions & measurable KPIs/outputs

(Dec)



Allocate 'owners'

(Dec/ Jan)



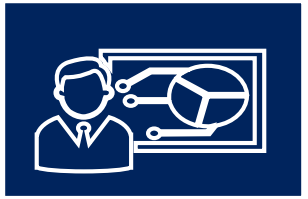
Test draft ideas with stakeholders

(Jan)

Review & update

Respond to feedback

(Feb)



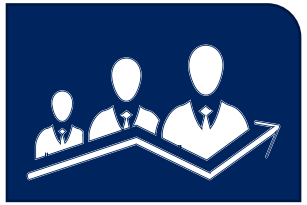
Test updated ideas with stakeholders

(Feb/ Mar)

Finalise

Publish 'non actions'

(Apr)



Assess stakeholder feedback/ consider revisions to Looking Forward section of workplan (Oct)

Internal engagement

External engagement

Act on feedback

Finalise & Issue

Act on feedback

Have your say

- ✓ We want your feedback!
- ✓ Get in touch with us via the website under our Incentive on Connections Engagement page or email us at ICE@enwl.co.uk
- ✓ Don’t forget to sign up to our distribution lists online to keep up to date with upcoming events, policy changes, health and safety bulletins and to receive our quarterly newsletters.

ENWL Community & Local Energy Strategy

Helen Seagrave
Community & Local Energy Manager

electricity north west
Bringing energy to your door

Stay connected...

www.enwl.co.uk

Agenda

What is community and local energy?

Stakeholder-led strategy development

Our strategy

Future plans

What is community and local energy?

To us community energy means community-led projects or initiatives to reduce, manage, generate or purchase energy. Community energy projects focus on engagement and benefits to their local area and communities.

Local energy encompasses community energy projects and also includes activities by a wider set of local partners such as local authorities, housing associations, intermediary or advisory organisations and local businesses. Local energy projects may have a commercial aspect to their delivery but are also likely to benefit their local area and community.

Community and local energy in our region

MORE Morecambe Bay Community Renewables

Stockport Hydro

Lancaster Cohousing

torrshydro NEW MILLS
Generating clean, green electricity since 2008

COMMUNITY ENERGY CUMBRIA

Towards Zero Carbon Cumbria
CAfS Cumbria Action for Sustainability

CarbonCo-op

GREATER MANCHESTER COMMUNITY RENEWABLES

HALTON LUNE HYDRO
COMMUNITY HYDRO PROJECT

GMCA GREATER MANCHESTER COMBINED AUTHORITY

BAYWIND ENERGY
Co-operative Limited

Oldham Council

OLDHAM COMMUNITY POWER

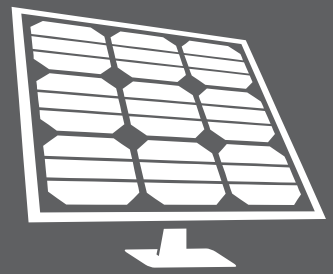
Whalley Community Hydro
A Community Renewable Energy Scheme

Stakeholder led process

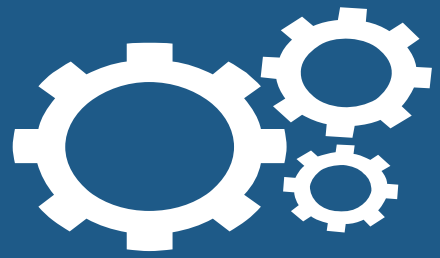
"Build relationships and enhance service to customers"

Eight interviews with community and local energy stakeholders

Two independently facilitated engagement events



Online call for evidence Dec 17 – Feb 18



Further engagement through our stakeholder panels and external events

Where should we take action?

Access to ENWL

Early engagement

More face-to-face time; Dedicated point of contact

Collaboration

Help with understanding where connections could be easier

Finance

Financial support

Help to develop viable business models

Regulation

Regulatory regime doesn't suit community and local energy

Current solutions such as virtual private wires are a "work around" and not a long-term solution

91% of responses agreed or strongly agreed we have understood the main challenges faced by community and local energy groups

Our approach

Electricity North West wants to work closely with community and local energy groups, organisations and developers to support the development of their projects.

We understand that community and local energy projects can be volunteer led and complex and therefore need more time support to engage with Electricity North West services.

We would like to engage early with community and local energy groups to support them with the process of connecting to the network.

We would like to develop our relationships with the communities we support to explore other ways to work together such as on innovation projects and what role they may play in the future.

.

95% of responses to our online consultation strongly agreed or agreed with our approach

Our Community and Local Energy Strategy

Forging links with community and local energy organisations

We will be responsive to customers' needs and deliver a stakeholder engagement plan that enables us to develop those relationships

We will create new mechanisms for community and local energy groups to engage with us

We will search for locations on our network where community and local energy can be deployed for the benefit of the network

Easier to get in touch with

Dedicated point of contact
Contact form / enquiries email address

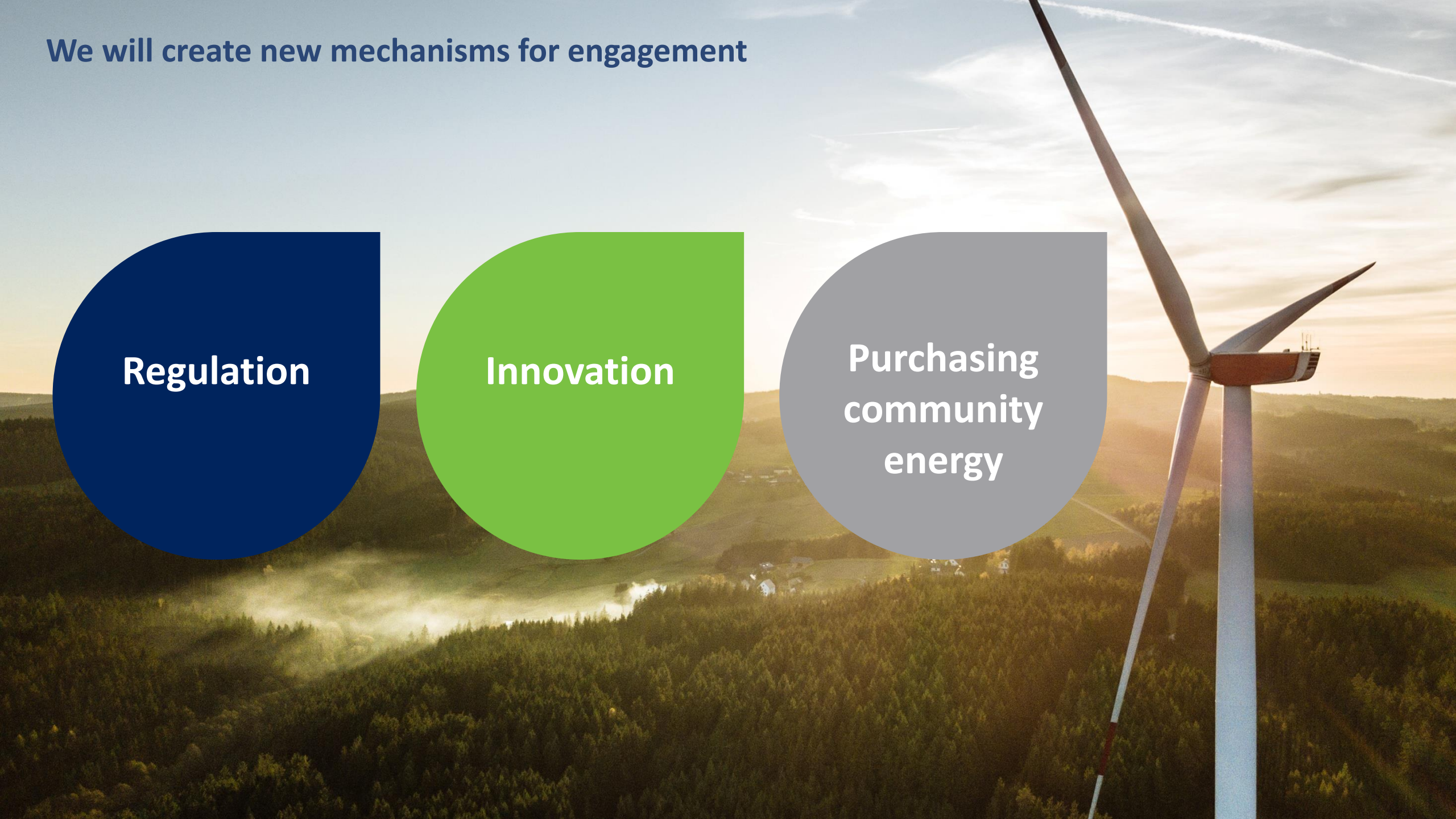
Increased outbound communications

Dedicated web pages
Quarterly newsletter
Strategy / Guides

More opportunities to meet ENWL

Community Connects
Attending / presenting at external events

We will create new mechanisms for engagement



Network – led approach for multiple benefits

Keep up to date

Sign up for our newsletter and view previous editions on our website.

Visit the community and local energy section of our website.

www.enwl.co.uk/communityandlocalenergy

Get in touch

If you have any comments on this strategy or how we should develop our actions please get in touch.

If you are developing a community or local energy project please get in touch to discuss your plans.

Contact details

Helen Seagrave, Community Energy Manager,
Communityandlocalenergy@enwl.co.uk

From DNO to DSO

Keith Evans
Smart Grid Manager

electricity north west
Bringing energy to your door

Stay connected...

www.enwl.co.uk

DSO: definition

"A Distribution System Operator (DSO) securely operates and develops an active distribution system comprising networks, demand, generation and other flexible distributed energy resources (DER). As a neutral facilitator of an open and accessible market it will enable competitive access to markets and the optimal use of DER on distribution networks to deliver security, sustainability and affordability in the support of whole system optimisation. A DSO enables customers to be both producers and consumers, enabling customer access to networks and markets, customer choice and great customer service."

From DNO to DSO

Old Distribution Network Operator model

Low numbers of connections

Relatively easy to connect more demand

Limited customer engagement

Reactive management

Network sized to cope with peak winter demand

Very little renewable generation

New Distribution System Operator model

Energy flows in multiple directions

Huge increase in number of renewable connections

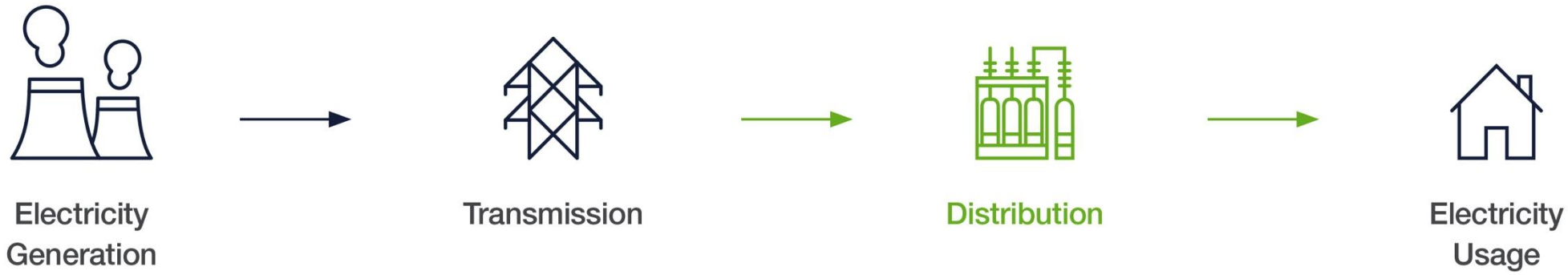
Increasingly complex to manage supply and demand

Need to build relationships, and facilitate competition and innovation

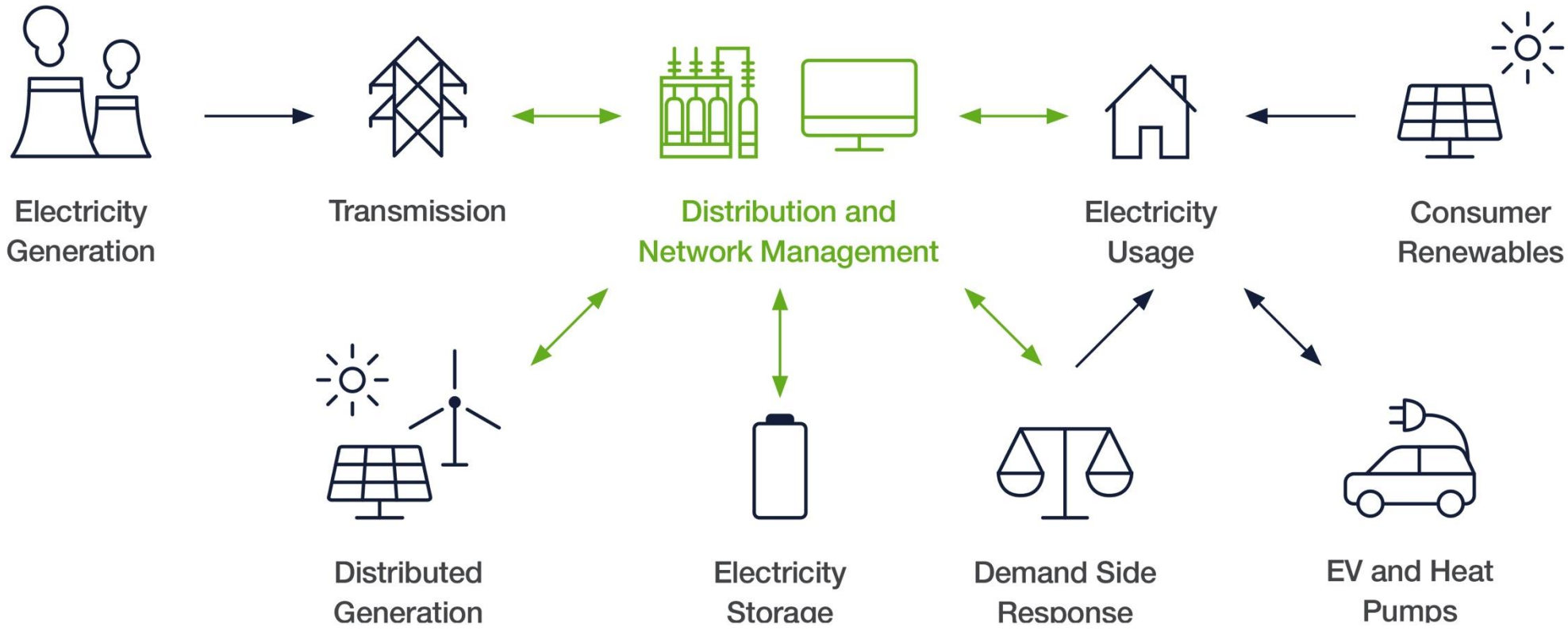
Much higher use of electricity for electric vehicles and heat

Electricity distributors will need to play a more sophisticated role

What used to be relatively simple

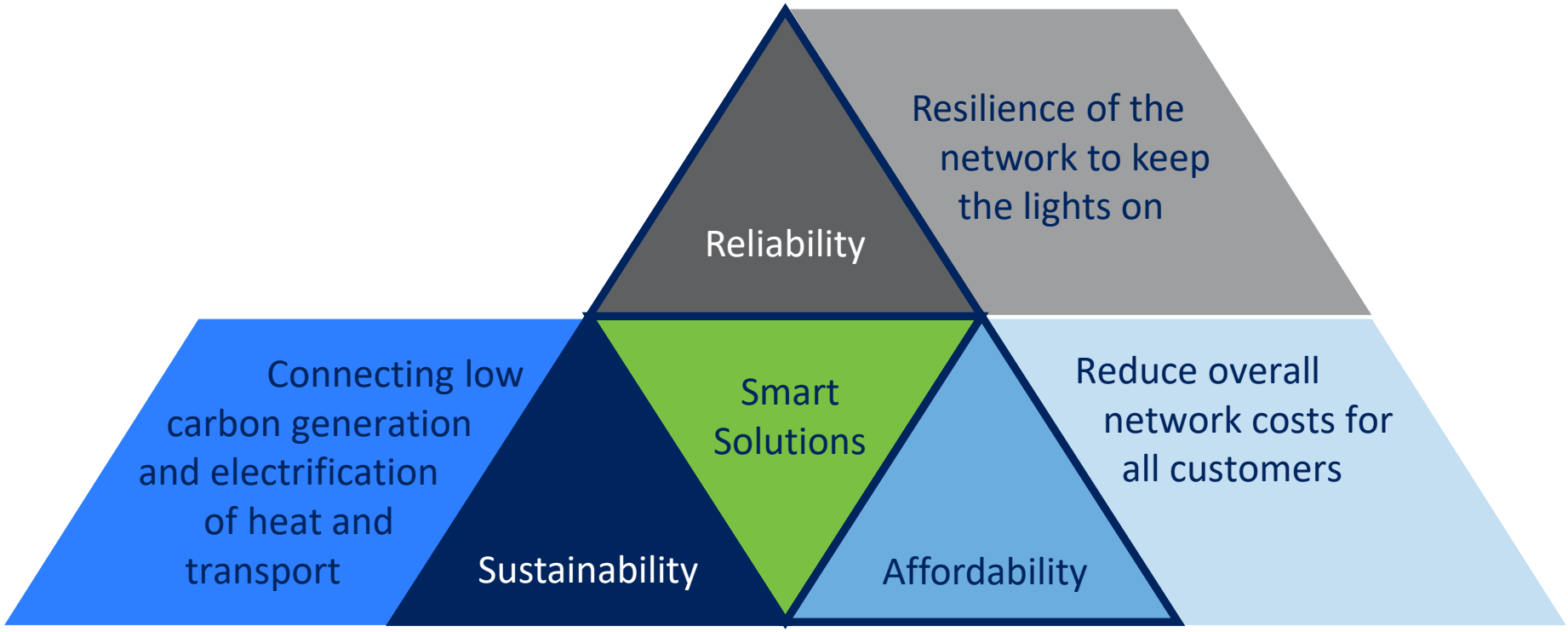


Is now becoming far more complex



Network operator challenges

● The network operator ‘Trilemma’ ●

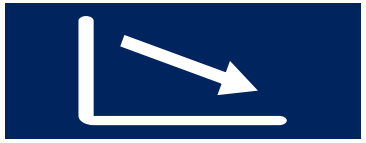
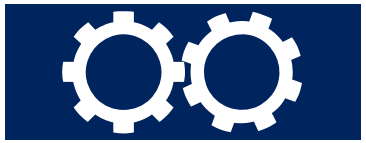


● Customers can help us deliver ●

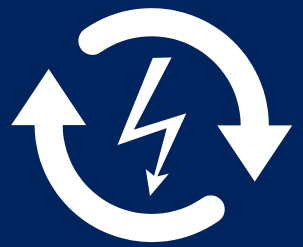
Our guiding principles

Neutral, but not silent	Network automation	Collaboration	No regrets	Everyone's included	Affordable and efficient
We want to be a trusted source of information, helping to demystify the new, complex energy market, while remaining commercially neutral	We will provide sophisticated, automated network services that can meet the needs while keeping costs affordable	We will work with North West stakeholders and collaborate with them to develop local and regional solutions to deliver against devolved and national policy	We will work with stakeholders and customers to plan in a sensible, informed way which will facilitate the development of flexible markets in our region	We are committed to ensuring that the poorest in society are not disadvantaged by energy sector developments and have opportunities to secure benefits	We will continue to focus on value for money and on making efficient investment decisions

What we've already delivered

	Improved data quality and network connectivity	Cleansed network data – reliable network model is key foundation for DSO services
	Better use of network analysis tools	Better understanding of load flow and fault levels
	Flexible connections	Developers benefit with quick, affordable connections
	Control room data integration with customer service	New interface ensures that we're better able to manage impact of network events on customers
	Improved network automation	Automatic Restoration System has significantly improved customer impact of faults on high voltage network
	Enabled Respond	Active fault level management that avoids traditional network reinforcement
	Smart meter integration	Will give better visibility of the performance of the whole system and enhance the decision-making capacity of network operators.

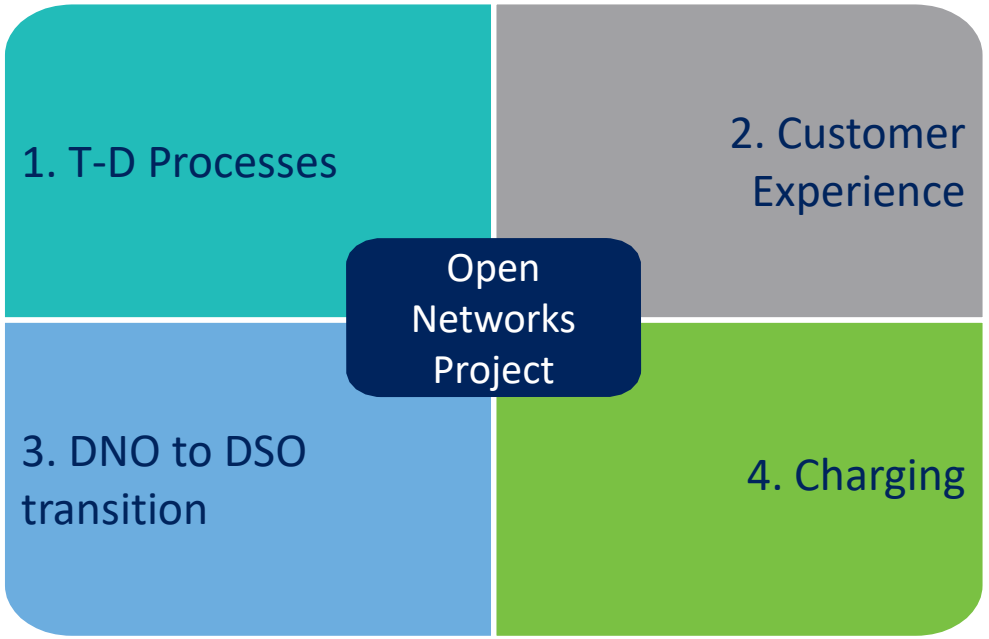
What we are currently working on

				
Active network management (ANM)	Transmission operator interface balancing	Looking ahead capability	Forecasting	Contract management and curtailment index
				
Distributed energy resource management	Capacity mapping	Industry data flows	Automated point of connection	Sentinel integration

ENA Open Networks Project

Whole system investment and operational planning processes

DSO transition roadmap, functional requirements and model for DSO, market model options



Customer journey maps for connections and updated connections agreements

Short: Identify problems of current charging arrangements
Medium: recommend smart tariff, flexible connection and ancillary services pricing
Long: Strategic review/ whole system pricing

Phase 1

Definition of T-D processes, customer experience, DNO to DSO transition and charging

End 2017

Phase 2

Impact assessment of options and preferred design

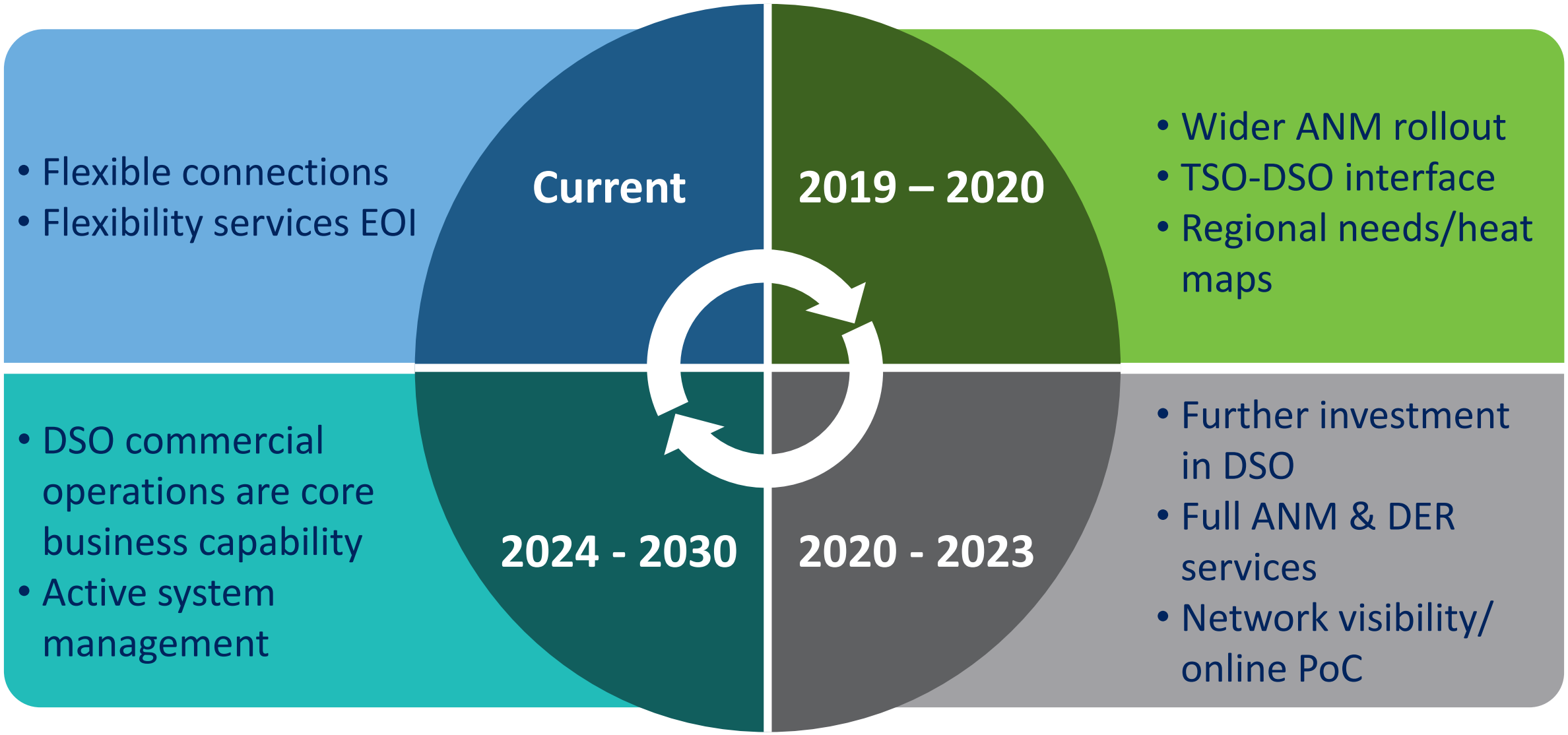
Phase 3

Regulatory enactment

Phase 4

Design, build and test

DSO transition



Getting You Connected – Our Processes

Tracey Taylor
Business Connections (Lakes)

Allen Rawcliffe
Design Engineer

electricity north west
Bringing energy to your door

Stay connected...

www.enwl.co.uk

Introduction – Business Connections

Ian Greenwood
Business Connections Manager

Preston Office

- **Delivery Managers:**
  - Simon Taylor
  - Jonathan Cropper
- **Connections Design Engineers**:
  - **Dave Barlow (LV & LV/HV)**
  - Joe Davis (HV)

Carlisle Office (Lakes)

- **Delivery Manager:**
  - Tracey Taylor
- **Connections Design Engineers:**
  - **Chris Thompson (LV & LVHV & HV)**
  - Allen Rawcliffe (HV)

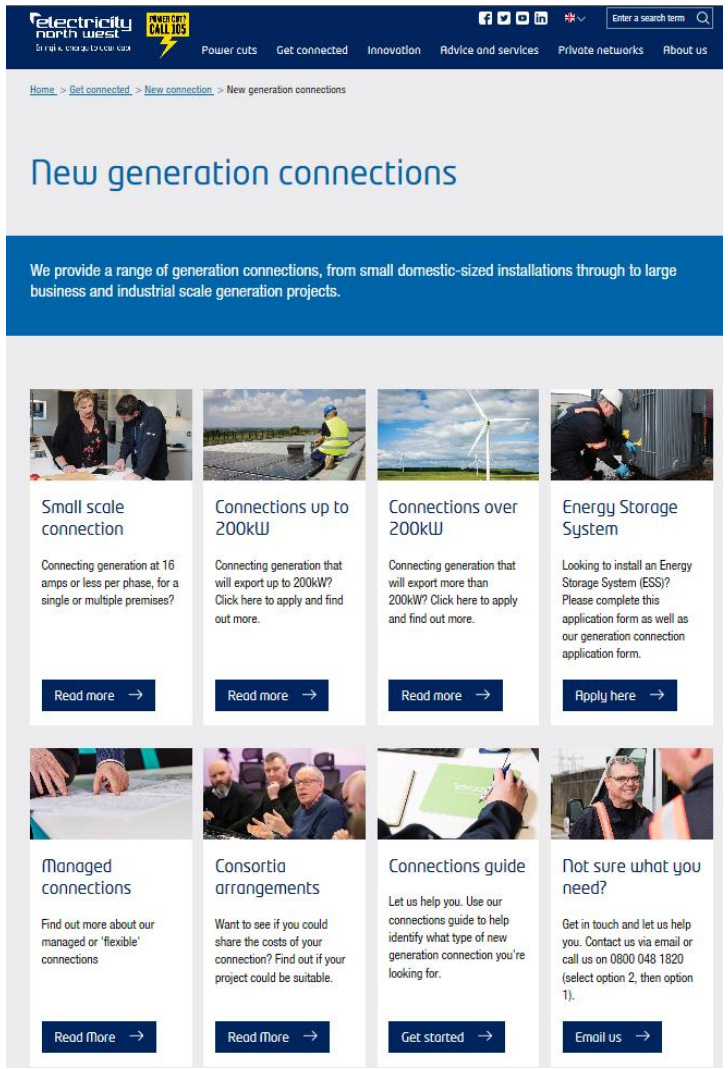
Salford Office

- **Delivery Managers:**
  - Matt Savka
  - Peter McKenzie

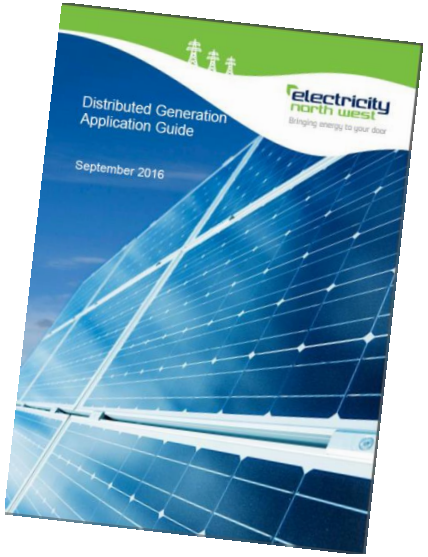
Connections Design Engineers:

- **Dominic Allen (LV & LVHV)**
  - Darren Mycock (HV)

Getting you connected – first steps



- ENWL Website
- Quotation Options
- Minimum information
- Distributed Generation Application Guide



Check what you will need before you apply:

Budget estimate:

- required Maximum Import Capacity (MIC)
- Maximum Import Capacity (MIC)
- required Maximum Export Capacity (MEC)
- site Plan
- size and type of technology
- existing Meter Point Administration Numbers (MPAN), preferable but not mandatory.

Feasibility study:

- site plan
- size and type of technology
- existing Meter Point Administration Numbers (MPAN), preferable but not mandatory.

Gen+:

- site plan
- existing Meter Point Administration Numbers (MPAN) preferable but not mandatory
- technical specification of new and existing generation
- preferred date for connection
- letter of authority

Point of Connection (PoC):

- site Plan
- Existing Meter Point Administration Numbers (preferable, but not mandatory
- Technical specification of new and existing generation
- Preferred date for connection
- letter of authority

Connection (Firm) Offer:

- site plan
- existing Meter Point Administration Numbers (MPAN) preferable but not mandatory
- technical specification of new and existing generation
- preferred date for connection
- letter of authority

Application process

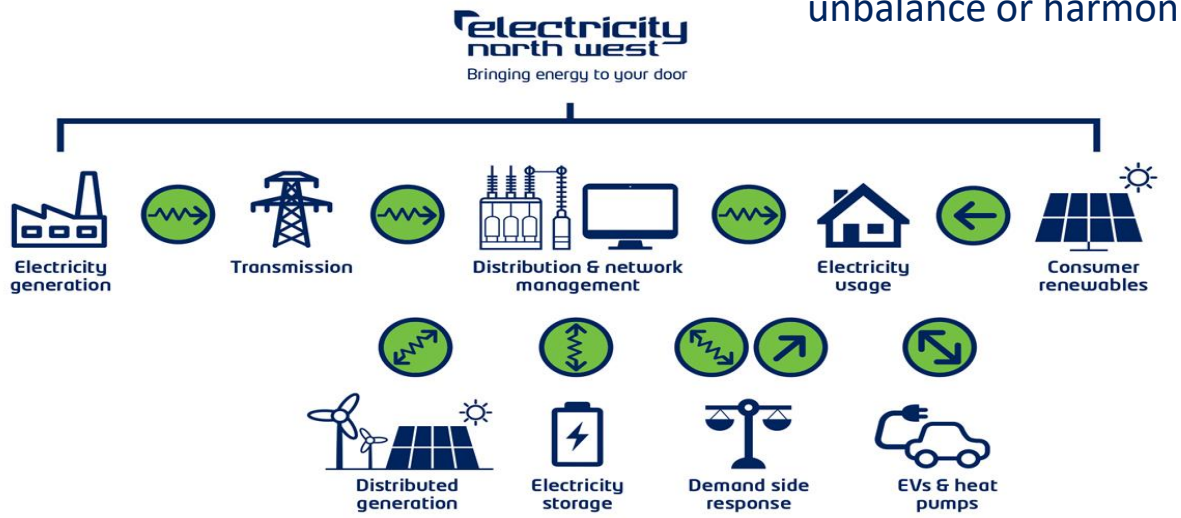
Pre-application research → Application → Registration → Quotation → Acceptance

- Applications forms:-
  - Single SSEG - G83/2 (G98) Installation Commissioning Confirmation form
  - Multiple SSEG – Application for Multiple G83/2 (G98) installations
  - G59 (G99) Application for Connection of generation plant
  - Application for connection of generation plant(s) to distribution networks (site maximum of 200kW)
- Submit complete application to:-
  - SSEG.G831@enwl.co.uk – SSEG G83/2 (G98) commissioning confirmation only
  - connectionapplications@enwl.co.uk
- Sample Application Forms are available on line

The challenges of the network

- The challenge of connecting distributed generation (DG) to the network
- The network was designed for electricity to flow in one direction
- Our network already has DG equal to over 50% of our maximum demand
- Parts of our network, such as North Cumbria and the Fylde Coast, which are rich in renewable resources (such as wind) are already at or approaching their maximum available capacity.

- The connection of DG creates less predictable electricity flows in the network
- Impacts of Distributed Generation:-
  - Thermal ratings being exceeded;
  - System voltage rising beyond the acceptable limits;
  - Reverse power flows, i.e. power flows in the opposite direction to which the system has been designed;
  - Fault level rising above the rating of equipment; and
  - Power quality being affected, e.g. flicker, voltage unbalance or harmonics.



Connecting DG at minimal cost

What happens once you have submitted your connection application.....

- Network Study
- Consideration of connected, committed and proposed DG
- The challenges of rural networks

So what are the options when the costs are prohibitive?

Use of Export Limitation Schemes (G100)

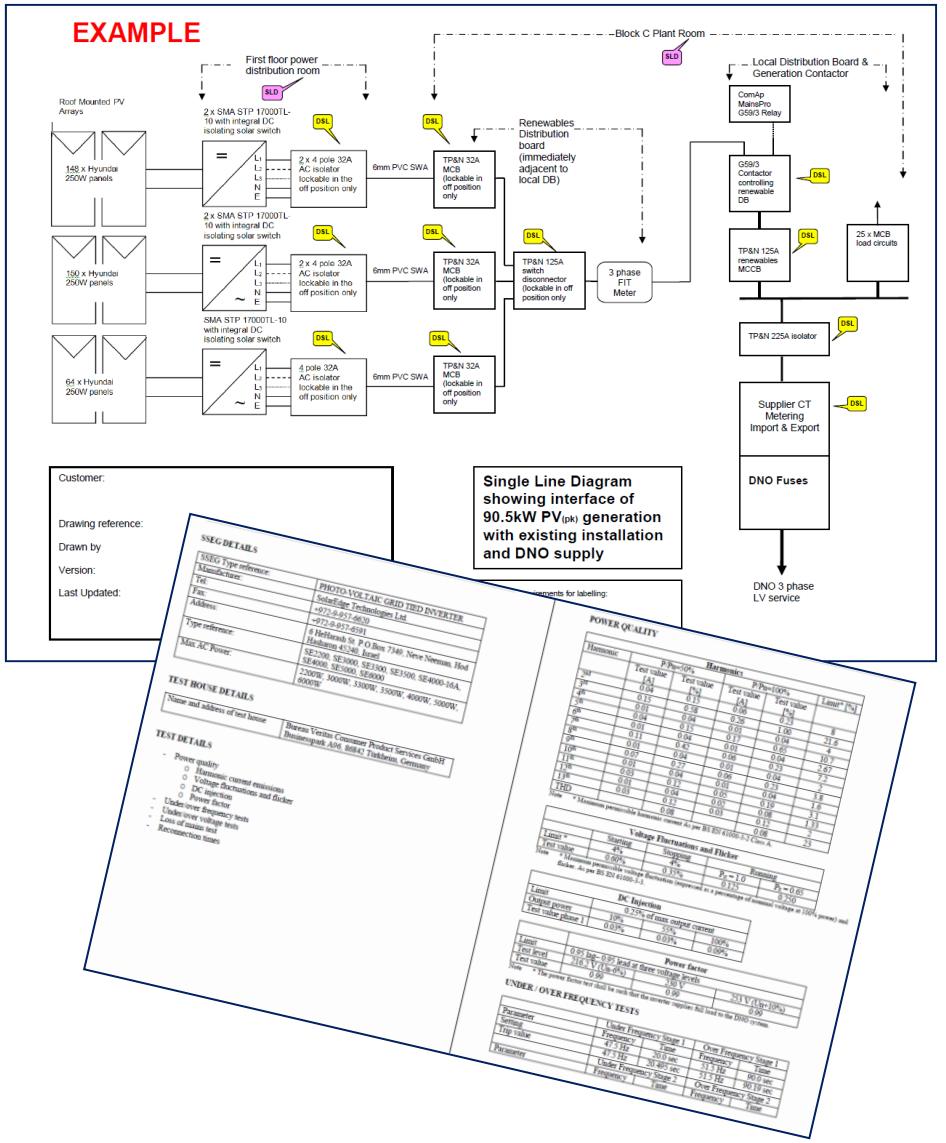
- ENA - Engineering Recommendation G100 (2016) - Guidance on the connection of Customer Export Limiting Schemes (ELS)
- What does it offer:-
  - increase the amount of generation installed to offset import requirements.
  - Where generation export capacity will require costly / timely reinforcement, you may choose to restrict the net export from the connection
- A typical ELS may be used in the following scenarios:
  - Over-sizing the generation and limiting the peak output
  - Increasing flexibility of on-site demand at times of peak output
  - Guaranteeing a defined export limit

Accepting your DG Connection Offer

- To progress your acceptance we require:-
  - Completed Acceptance Form
  - Payment (if applicable)
  - A single Line Diagram (SLD)
  - Full Generator Technical Specifications
  - Export Limitation Protection (ELP)
  - Rotating Machine information (if Applicable)
- Post Acceptance Guidance available – www.enwl.co.uk

What happens next....Post Acceptance Studies

- Review of submitted information
  - A single Line Diagram (SLD)
  - Full Generator Technical Specifications
  - Export Limitation Protection (ELP)
- Several network studies are undertaken, including:
  - Voltage management (flicker study)
  - Fault level
  - Harmonics (G5/4 harmonic study) if applicable
  - Export Limitation Protection (ELP) if applicable



Testing and Commissioning

- ***for LV metered connections (<200kW)***
  - ENWL witnessing of the commissioning tests is not required, except for changeover type connections where the total generator nameplate capacity exceeds 100kVA.
  - You must submit the full results of your commissioning tests to Electricity North West for approval.
  - Upon receipt of satisfactory test results, a 'Formal Permission to Operate Private Generation Plant in Parallel with Electricity North West's Distribution Network' certificate will be provided.
  - Date of the certificate
- ***for LV (>200kW) and HV metered connections***
  - Conduct witness testing for the standard G59/3 (G99) commissioning tests and any other applicable tests (e.g. ELP).
  - Following a successful G59/3 (G99) commissioning procedure we will authorise you to operate the generation in parallel with our network.
  - Electricity North West will issue the signed Connection Agreement (HV).

Testing and Commissioning - when does it apply?

- Generally, we reserve **the right to** in all cases, but predominantly....

When your generator parallels with an High Voltage (HV) metered exit point	✓
When your generator parallels with a Low Voltage (LV) metered exit point and an export limitation scheme is installed.	✓
When your generator parallels with an LV metered exit point and a 'Generation Tripping & Indication Panel' is installed to constrain the generator for system abnormal	✓
Changeover type connections where the total generator nameplate capacity exceeds 100kVA, i.e. standby generators	✓
LV metered exit points with no export limitation protection scheme	✗
LV metered exit points with no system abnormal constraint	✗

For LV Metered Connections

Where ENWL do NOT witness the commissioning tests

Record & report

- Commission documents emailed for approval
- Include photos of signage and labels

Check & Approve

- We check your documents and photos

Permission to parallel

- If approved we give permission to energise/parallel certificate
- If not, we provide defects list

For HV Metered Connections (and LV with ELS)

Pre-site

Visit site

Control centre

Permission to parallel

Where ENWL witness the G59/3 (G99) commissioning tests

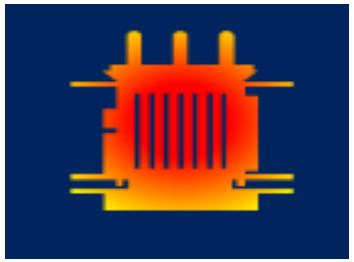
- 20 WD notice
- Generation & supply installation MUST be complete!

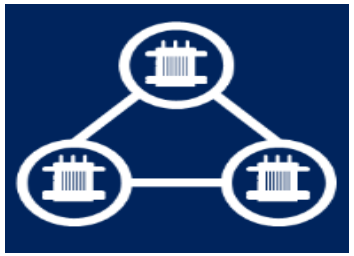
- Test equipment & competent resource to test
- Multiple generators = staged witness tests
- Commissioning documents

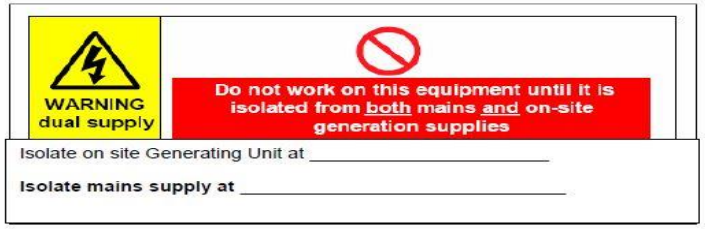
- Conduct various checks
- We contact Control centre to check network is ‘normal’

- If network ‘normal’ we give permission to energise/parallel

What do we do and why?







- On site 'Witness of commissioning tests, under ER G59/3 (G99), includes:
  - Ability to disconnect in abnormal system conditions (i.e. Fault) to avoid exceeding voltage, thermal and fault level design limits
  - Protection settings (over & under voltage and frequency, circuit breakers and stability)
  - Action in case of loss of mains
  - Compliant schematics and (permanent) labelling

- Ensure protection of our network/ security of supply for all our connected customers (licence condition)
- Specific checks (above) are legal requirement

What next?

Application stage

- What are the challenges from a customer perspective?
- A Gen Plus application for <200kW?

Post Acceptance

- Importance of submitting commissioning test results for approval and ‘Permission to Parallel’

Charges

- Zero cost quotes – is this a fair approach?

Connection Charging Models

Brian Hoy
Head of Market Regulation and Compliance

Bringing energy to your door

Stay connected...

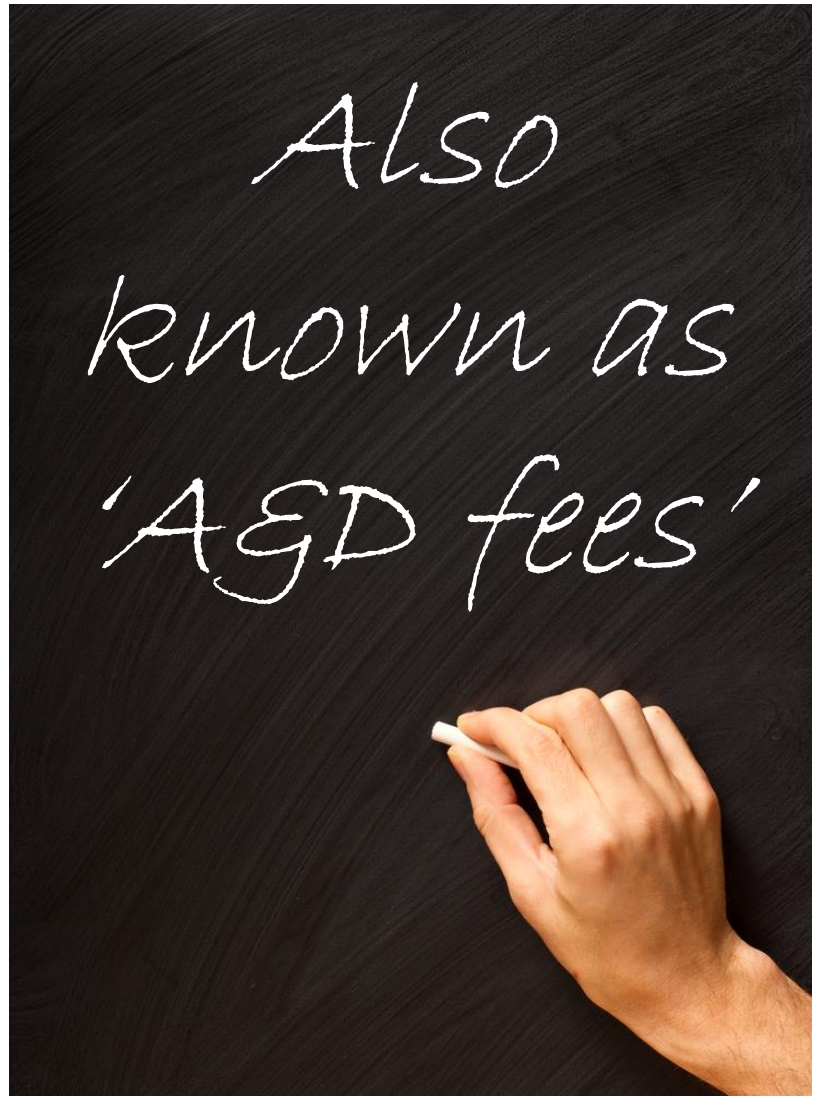
www.enwl.co.uk

Connection Offer Expenses

BEIS introduced new regulations from April 2018

These allow DNOs to charge customers for their connection offer whether it is accepted or not

BEIS intention is to allow a fairer allocation of costs to customers

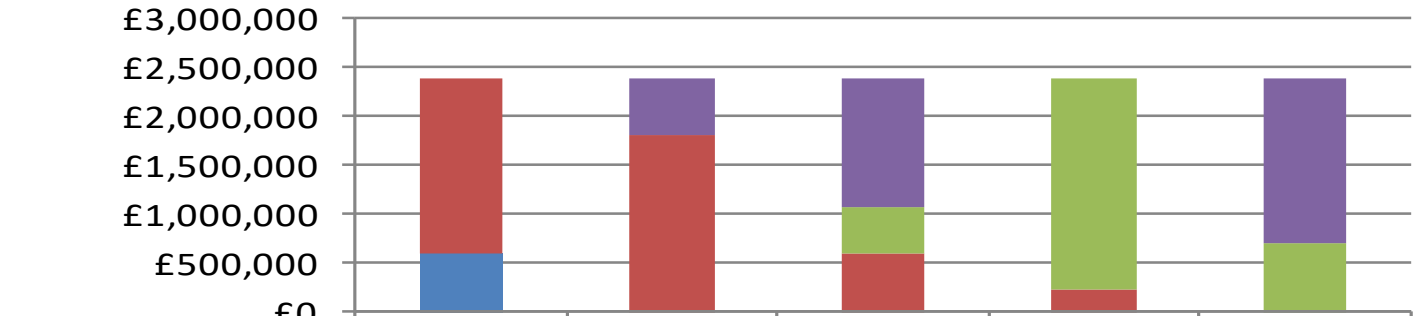


How should we recover our costs?

Options
There are four categories of customers that DNO can recover costs from:
Two associated with enquiries/ applications
Two associated with accepted projects - can be an acceptance charge or recovered as a construction on cost

How do the different recovery mechanisms compare?

	1. Offer & Budget	2. Quote & on cost	3. Split quote/ acceptance	4. Fixed charge	5. No Upfront A&D
Budget	£500	£0	£0	£0	£0
Full Offer	£7,500	£7,500	£2,500	£1,000	£0
On Acceptance	£0	£0	£5,000	£22,500	£7,500
On cost recovery	0.0%	1.03%	2.3%	0.0%	2.9%



	1. Offer & Budget	2. Quote & on cost	3. Split quote/ acceptance	4. Fixed charge	5. No Upfront A&D
On cost recovery	£0	£600,000	£1,320,000	0	£1,680,000
On Acceptance	£0	£0	£480,000	£2,160,000	£720,000
Full Offer	£1,800,000	£1,800,000	£600,000	£240,000	£0
Budget	£600,000	£0	£0	£0	£0

- We have looked at five theoretical options with different combinations of charges
- Whilst the charges for quotes are different, they all recover the same amount of costs
- **Note these values are illustrative only**

Our charging dilemma

Considering impact on customers

How does this impact you?	Fully aligned with BEIS principles
If you don't pay, who should?	Customers pay for what they use
How to we maintain fairness?	Fair recovery of costs

Fully cost reflective

Discussion - Budget Estimates

- There is a number of options as to how the costs relating to Budget Estimates could be recovered.
- Each have different degrees of cost reflectivity and create different incentives on behaviour
  - *Charged for at the point of use*
  - *Recovered from all customers that receive quotes*
  - *Recovered from all customers that accept*
  - *Recovered only from customers that connect*

Discussion - Quote charges

- There is a number of options as to how the costs relating to Quotes could be recovered.
- Each have different degrees of cost reflectivity and create different incentives on behaviour
  - *Charged for in full at the point of use*
  - *A proportion for the quote and the rest from other customers*
  - *Only the non contestable charges recovered for the quote and the contestable costs recovered from jobs won*

Discussion - Other charges

- There is a number of options as to how the costs not recovered for the Quotes/Budget Estimate could be recovered.
- Each have different degrees of cost reflectivity and create different incentives on behaviour
  - *Recovered from all customers that accept irrespective if they build out or not*
  - *Only from those customers that actually connect*

Panel Question & Answer Session

Bringing energy to your door

Stay connected...

www.enwl.co.uk

Wrap Up and Close

Steffan Jones
Infrastructure Solutions Manager

Stay connected...

www.enwl.co.uk

Useful ENWL Website Links

About ICE (including workplans, events, newsletter sign up and wider engagement)
https://www.enwl.co.uk/get-connected/incentive-on-connections-engagement/engaging-with-our-stakeholders/

Community & Local Energy Strategy
https://www.enwl.co.uk/globalassets/community-and-local-energy/documents/enwl-community-and-local-energy strategy.pdf

Community & Local Energy Newsletter/Events
https://www.enwl.co.uk/advice-and-services/community-and-local-energy/newsletters/

Generation connections under 200kW – how to guide/application form
https://www.enwl.co.uk/globalassets/get-connected/new-connections/generation/under-200kw/application-form-for connection-of-generation-plants-under-200kw.pdf

Post acceptance guidance for Distributed Generation
https://www.enwl.co.uk/globalassets/get-connected/new-connections/generation/under-200kw/Post-acceptance-guidance.pdf