

Energy Networks Association

Statement of Works Focus Group

Open Networks

Customer Workshop - 23 March 2018

DNO Transmission Impact Assessment (TIA)

Agenda

- Housekeeping
- Introduction/Objectives
- Overview of Open Networks Progress & Deliverables
- Work & Deliverables to Date
- Overview of the Trials Undertaken
 - SPEN, UKPN, SSEN & WPD
- Overview of the TIA Process
- Customer Discussion Sessions
- Transition to Planning Limits
- Overview of Proposed CUSC Modification
- Panel Q & A

Housekeeping



Objectives

- Introduce the proposed new ‘Transmission Impact Assessment’ process that replaces the ‘Statement of Works’ process.
- Undertake a critical review from stakeholders of the TIA.
 - Utilise the experience of those that have been involved in the different trials that have informed the TIA.
- Clarify and review the transition approaches that will be in place during the phased roll-out of the TIA

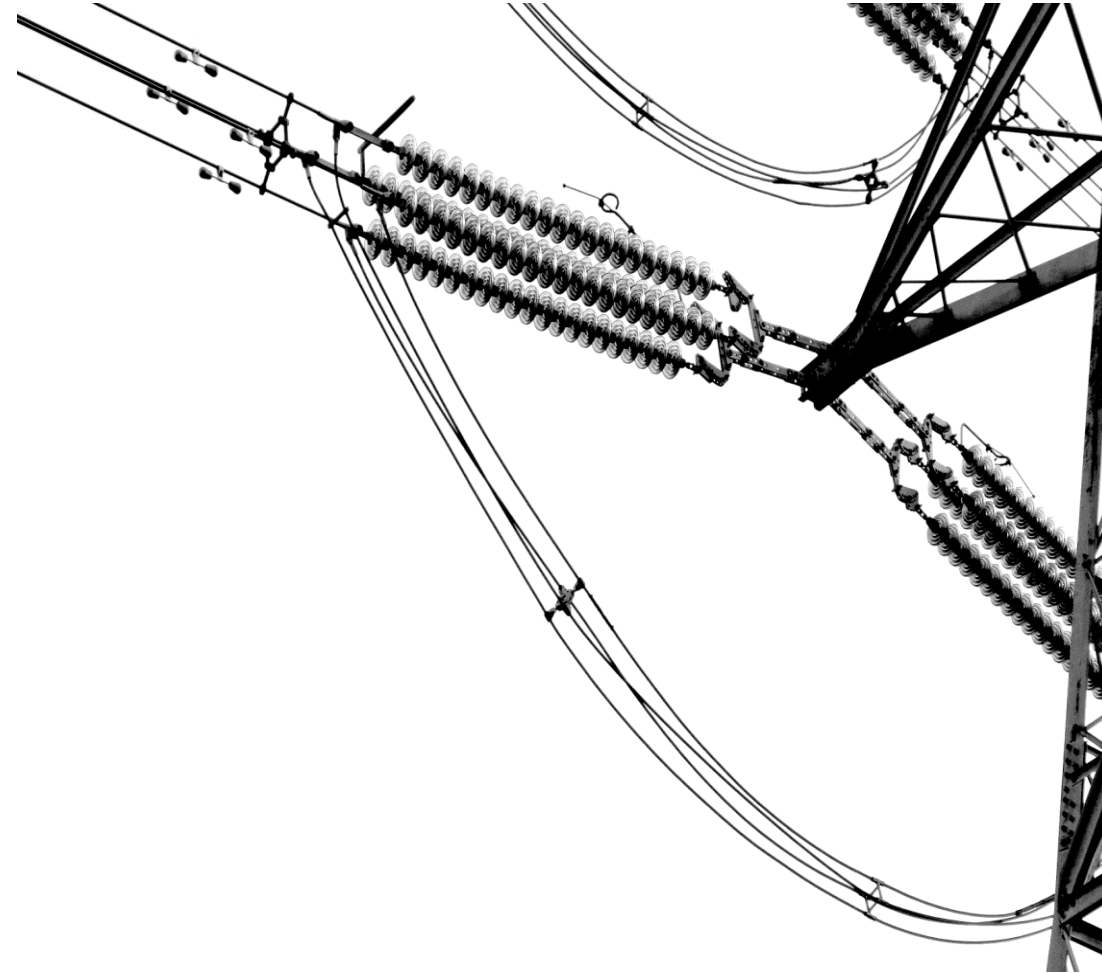
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Overview of Open Networks Progress & Deliverables

Jason Brogden

The size of our Networks

- 29 million electricity customers
- 21.5 million gas customers
- 180,000 miles of gas network
- 519,304 miles of electricity network





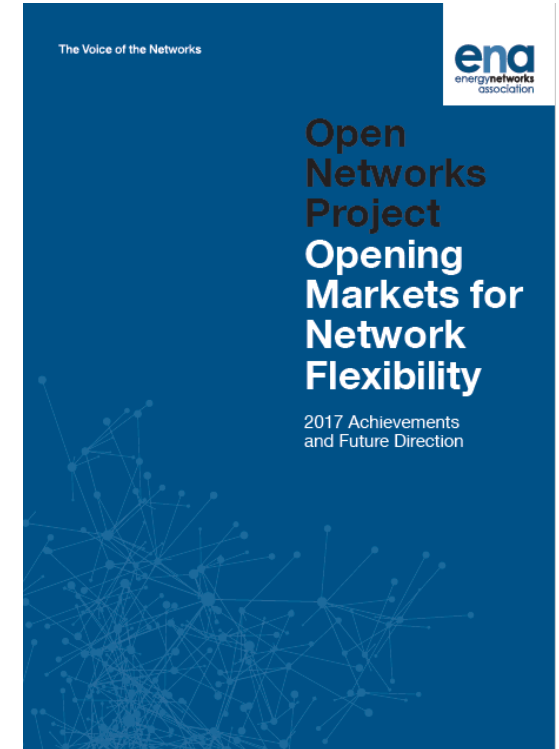
The Open Networks Project is laying the foundations of the smart grid in the UK



The Open Networks Project will help customers connect and realise value; as well as reducing cost for consumers through more cost effective planning



The Open Networks Project is a key initiative to deliver Government policy set out in the Ofgem and BEIS Smart Systems and Flexibility Plan, the Government's Industrial Strategy and the Clean Growth Plan.

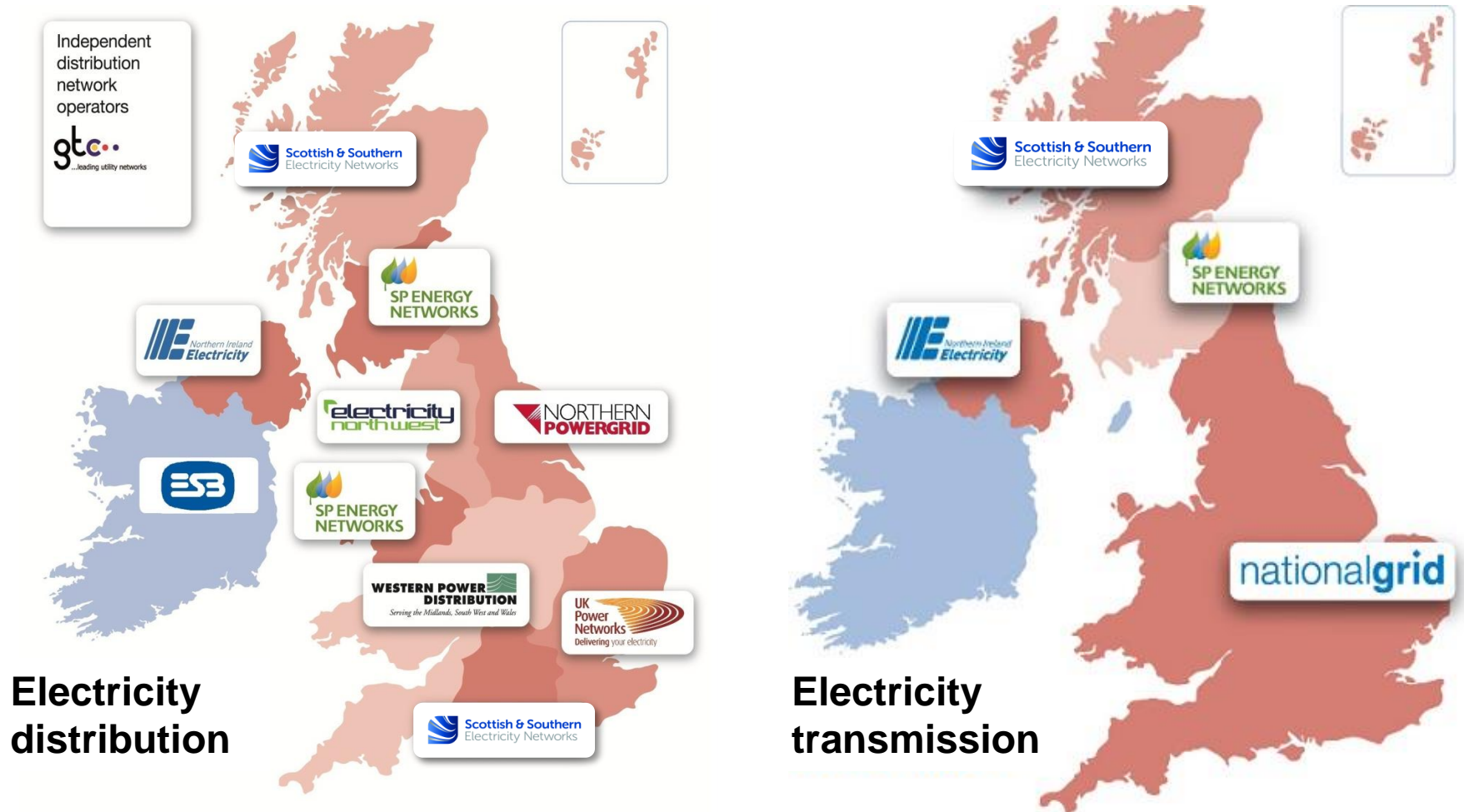


Opening Markets for Network Flexibility published in December 2017

Collaborating ENA Electricity Members

The Open Networks Project is working in collaboration with:

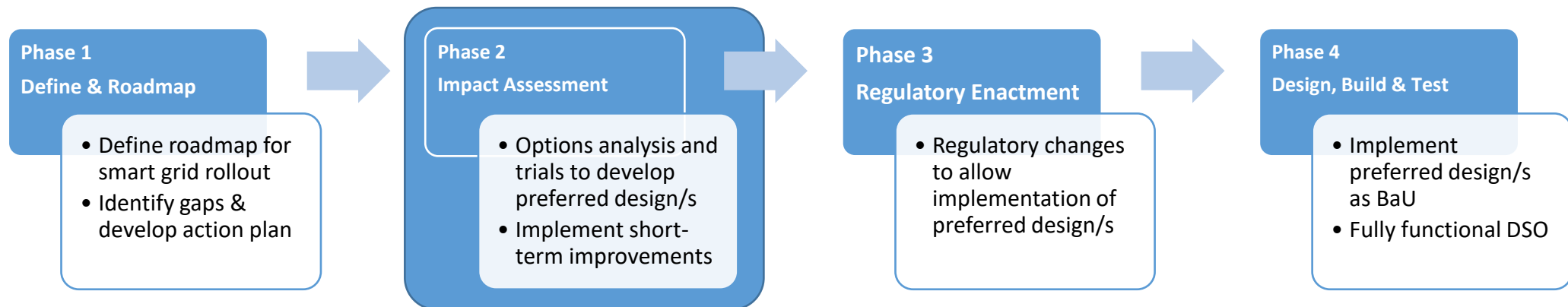
- Ofgem;
- BEIS;
- 10 of UK and Ireland's electricity network operators; and
- key stakeholders



Project Scope & Evolution

The objectives of the Open Networks Project are to:

- Workstream 1: Develop improved **T-D processes** around connections, planning, shared TSO/DSO services and operation
- Workstream 2: Assess the gaps between the **experience our customers** currently receive and what they would like and identify any further changes to close the gaps within the context of 'level playing field' and common T & D approach
- Workstream 3: Develop a more detailed view of the required **transition from DNO to DSO** including the impacts on existing organisation capability
- Workstream 4: Consider the **charging** requirements of enduring electricity transmission/distribution systems



T-D Process & Customer Experience Update

Workstream 1: T-D Process publications (Jan '17):

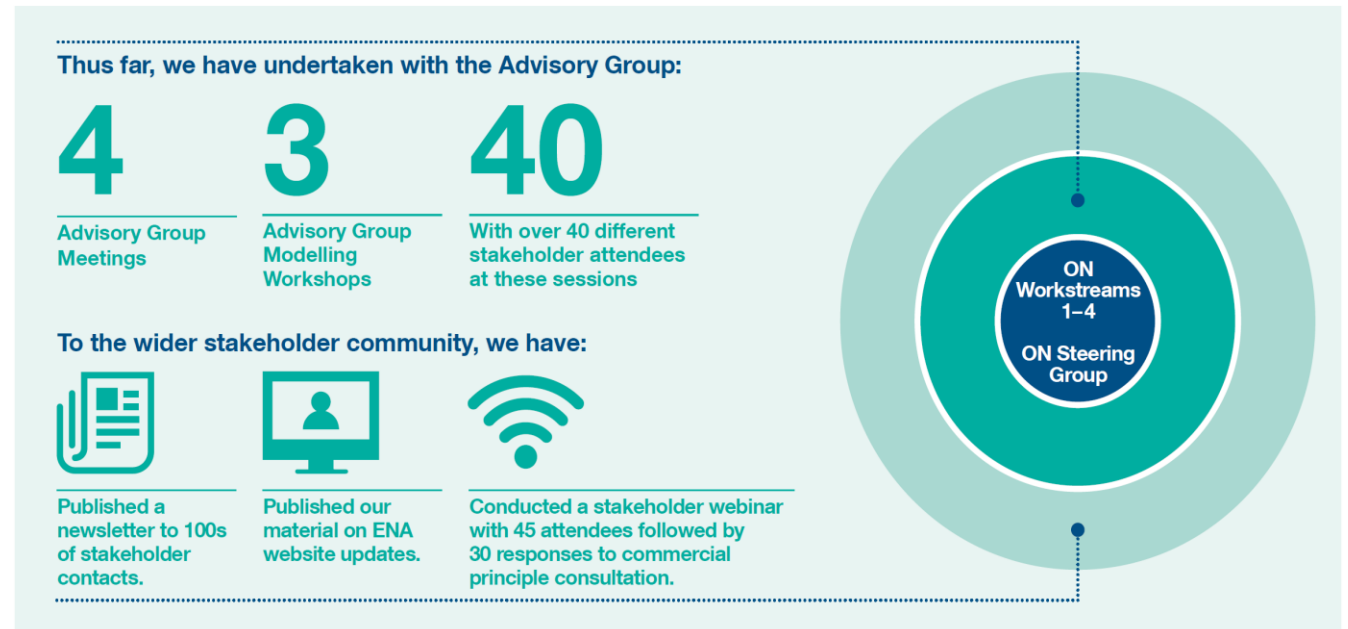
- Whole System Investment Planning (short-term)
- Gap & Issues Report
- Statement of Works/Transmission Impact Assessment roll-out plan (Customer focus group for trial learnings in March)
- Previously: Key Trial Learnings; Issues Analysis and SoW Customer Journey Maps and planning limit template

Workstream 2: Customer Experience publication (Jan '17):

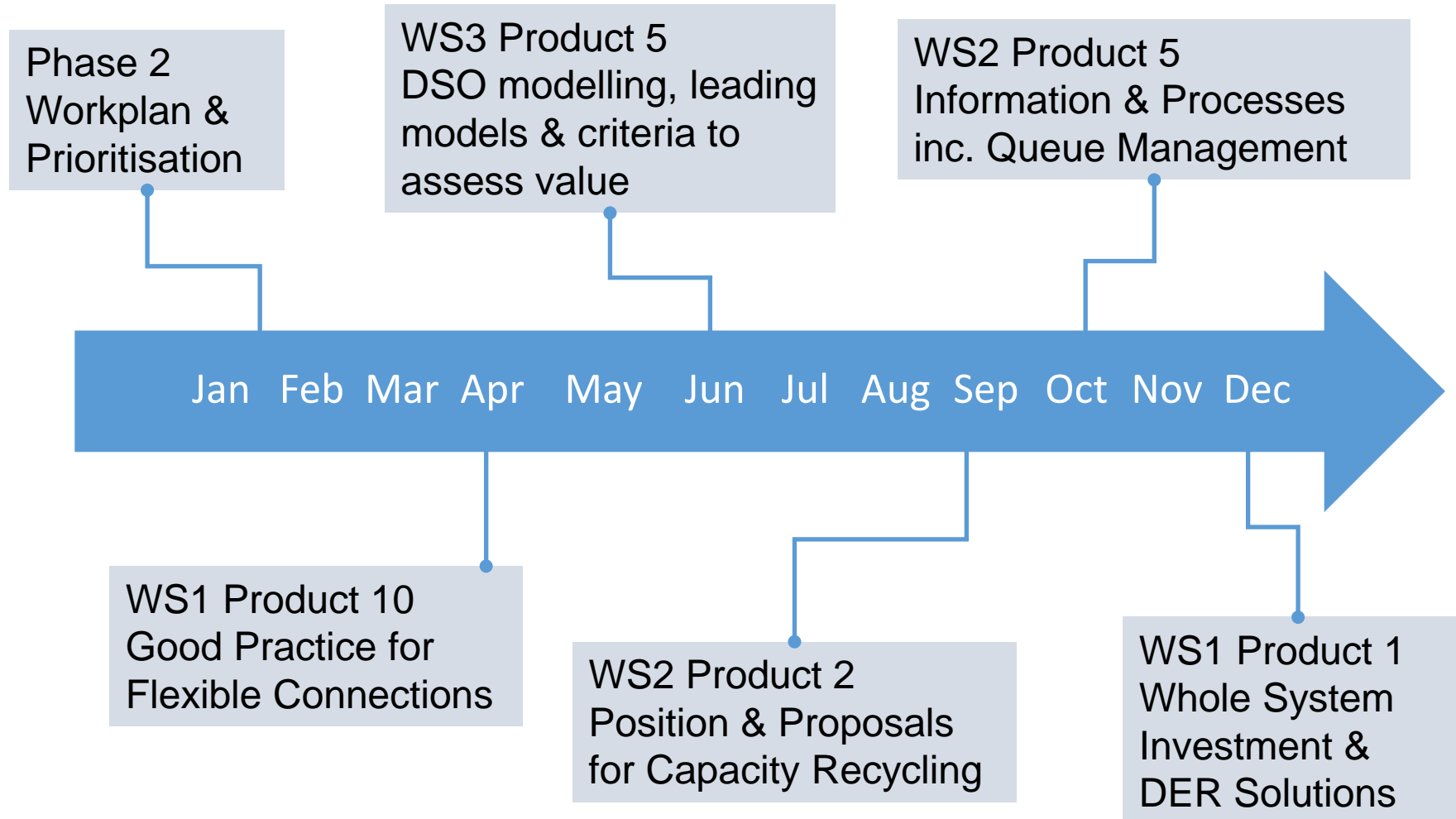
- DNO Connections options and summary tables
- Previously: Customer Categorisation; Customer Journey Maps; & Customer Information Requirements

Stakeholder Input Key

- In 2018, there will be greater emphasis on wider stakeholder community engagement, including:
 - Quarterly newsletter, dissemination events, webinars, external events, media outreach, social media and direct engagement to raise awareness
- Workstream product review continues:
 - collaborative development with the Advisory Group
 - wider consultation on key products (including webinars – plan below)



Planned Consultations 2018



How to get involved?

- Join our mailing list!
 - opennetworks@energynetworks.org
- All outputs and consultations posted online:
 - www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-overview/
- 2017 End of Year Report can be found here:
 - <http://www.energynetworks.org/electricity/futures/open-networks-project/eoy-report-2017.html>
- We welcome your feedback and input



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Work & Deliverables to Date

Deborah MacPherson

The Transition to the DNO Transmission Impact Assessment (TIA)

Work to Date

- ENA SoW Working Group Established – Summer 2015
- SoW improvement proposals developed and presented to DER Connections Forum
- Engagement with NGET, UKPN, WPD & SSEN to develop aggregated SoW
- Engagement with NGET to develop principles of Scottish Trials using SPEN proposals
- Engagement with NGET, UKPN, & WPD to establish Regional Development Plans
- Trials with SPEN (SPD) and UKPN commenced 2016
- Working Group absorbed into the Open Networks Project
- Work Group Established under WS1 – DNO Transmission Impact Assessment (TIA)

2017 Deliverables

- TIA Process Map
- Planning Limits Roll Out Plan
- Implementation of new SO-DNO Commercial Arrangements

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Overview of the Trials Undertaken

Richard Smith, Steve Atkins, Andrew Akani, Zivanayi Musanhi, Deborah MacPherson

Overview Planning Limits Vs Materiality Headroom

- **Planning Limit: What the system is capable of**
 - Split between GSP assets (reverse power flow capability) and wider system - you may not be able to use all the capacity at a GSP if a wider system constraint comes into play
 - Asset capability taken into account
 - An assumption of the type and volume of generation connecting is agreed with the DNO and taken into account
 - Any no build solutions are discussed and agreed with a DNO (e.g. ANM) and are taken into account
 - Any commercial tools available to the SO are taken into account
 - The contracted background and forecast operation of the system are taken into account
 - The resulting 'capacity' is based on all of the above assumptions and can vary if any change. In addition it is available to directly connected transmission customers, adjacent DNOs and so is not contractually 'given away'
- **Materiality Headroom: A value which a DNO can use commercially to make offers**
 - Is usually a portion of the above (but may be the same on a constrained part of the system)
 - May be subject to technical conditions (e.g. technology type of generator)

Transitional Regional Variations – Why and What does this mean for the Customer

Working with Materiality Headroom – Initial Application

- NGET provide a subset of the true capacity at a GSP which a DNO can allocate to customers as part of their offers with knowledge of the specific requirements and securities/liabilities needed by NGET.
- If an application is within the materiality headroom, then the DNO can offer without SoW detailing any specific NGET requirements and securities/liabilities – NGET review these monthly.
- If the materiality headroom is close to being breached, due to the volume of applications and/or size of schemes, then interactivity may apply - offers may contain a caveat advising that unsuccessful schemes may be subject to project progression (see below)
- If the materiality headroom is breached then the offer may be part of a further bulk submission for a project progression to review the materiality headroom – 3 months
- The resulting modification offer will either be a “no works offer” or will propose the necessary transmission reinforcement works to facilitate the connection.

SSEN Appendix G Trials

Scottish & Southern Electricity Networks

- Bulk SoW identified 12 GSPs in the South (19 in total) where NGET had to apply specific requirements on generators
- 8 of the 12 were subject to Transmission infrastructure works – i.e. no cost to customer
- CUSC Offers supplied under an Appendix G format
- Sign-off delayed by negotiation pertaining to existing sites
- Signed Q2 2017
- Materiality Headroom allocated for each GSP
- Connect & manage approach with monthly updates to NGET
- Materiality Headroom breached at a number of GSPs
- Project progression initiated for those sites

WPD Appendix G Trials

- Appendix G trial progressively rolled out across 47 out of 50 GSPs in all 4 Licence areas from May 2016.
- Most GSP Appendix G's had an initial Materiality Headroom of 50MW, a few had much lower headroom, and others were subject to infrastructure works.
- All the GSPs (10) in South Wales were, and still are, subject to transmission infrastructure works for thermal generation **cannot** connect until **2026**.
- The biggest customer benefits have been on GSP's that have DER enquires for capacities within the Materiality Headroom.
- Offers made subject to SoW (Appendix G update), but outlines anticipated transmission works where these are known.
- Customers advised on SoW outcome once they accept offer :
 - Feedback between **2 - 7** weeks, if within the Materiality Headroom.
 - Feedback **immediately** that “Project Progression required”, if outside the Materiality Headroom.

WPD Appendix G Trials

- Summary of Current Appendix G position

Distribution Area	Part 1 [MW]	Part 2 [MW]	Part 3 [MW]	Part 4 [MW]	Currently in/subject to Project Progression	
					No of GSPs	Aggregate Capacity [MW]
East Midlands	1,848	1,049	0	0	5	333
West Midlands	934	1,538	0	134	4	541
South Wales	1,128	1,648	0	114	0	0
South West	1,413	1,190	79	100	2	79

- About **5.8GW** largely signed off through bulk SoW submissions (Project Progression) or the appendix G process

Transitional Regional Variations – Why and What does this mean for the Customer

Working with Planning Limits

- NGET provide details of the physical capability at the GSP & wider network. This may include details of any associated construction works, programme and costs/securities
- Where a change in works is required, or transmission reinforcement works are identified, a Project Progression Modification Application (PP Mod App) is required. A CUSC Offer will be provided to DNO within 3 months.
- DNO starts making offers on the new terms and conditions from the date the CUSC Offer is received, however should have an indication from discussions with the TO as to likely impact on new customer offers
- In the event of a change in circumstances on the transmission system, NGET will advise the DNO and revises the terms and conditions, this will include instances of interactivity.
- Provided the DNO works within the agreed parameters, the DNO continues to make offers under the existing limits and associated terms and conditions. However, if DNO fails to comply any further offers are made subject to SoW and/or PP Mod App.

UKPN Appendix G Trials

UK Power Networks (UKPN)

- SoW kicked off in 2014/15 with 4 South East Coast GSPs which interact
- NGET studies identified the need for reinforcement works. However, DG could connect ahead of completion of these works on a non-firm basis - subject to some interim restrictions.
- 2016 CUSC Offers from NGET introduced Appendix G Process - Materiality Headroom allocated for each of the 4 South East Coast GSPs (*18 months total time from initial SoW to sign-off*)
- 3 additional SPN GSPs have since undergone SoW/Project Progression(s) - Materiality Headroom allocated each time (Appendix G Process)
- A further 3 SPN GSPs in the pipeline (CUSC Offers received from NGET)
- 9 (out of 22) GSPs in EPN currently administered via the Appendix G Process (a further 6 in the pipeline)
- None in LPN (London)

UKPN Appendix G / Planning Limits Trials

UK Power Networks (UKPN)

- Appendix G Process gives DNOs visibility of interacting GSPs allowing Materiality Headroom transfer between such GSPs to facilitate DG connections without triggering a SoW Project Progression
- Materiality Headroom only really works well in areas with low levels of DG activity - a challenge for the 4 South East Coast GSPs
- Project based approach to establish Planning Limits, linked with NGET Regional Development Programmes
- Materiality Headroom concept changed to a Materiality Trigger which does not prevent the DNO offering capacity which would result in the total volume exceeding that trigger *(provided the DNO enters into a time bound process and provides the technical data to have the trigger reassessed by NGET)*
- The 4 South East Coast GSPs (SPN) now under a Planning Limits trial since July 2017
 - 5 scheme acceptances so far (123 MW out of 1 GW offered) - Wider Cancellation Charge 'Liability' in place for the accepted schemes
 - 1 Materiality Trigger breach so far - No effect on customer offers
 - No interactivity applicable at GSP level

SPEN Planning Limits Trials

SP Energy Networks (SPEN) – History of SoW

- Problems our Customers have faced include, Conditional Offers provided by SPD, Transmission Dependency Uncertainty, Increasing Constrained Access at GSPs, SoW Resulting in Delayed Access, BEGA Agreements used as means for Earlier Access & Multiple & Increasingly Complex Commercial Agreements
- In excess 400 individual project SoW applications submitted to NGET since 2007
- Many of the applications are for the same GSP, some have permitted projects to connect without the need for transmission reinforcement works, others have had a local impact resulting in the need for transmission reinforcement works ahead of connection.
- In many instances, the same offer has/will be issued for different projects at the same GSP
- Due to the volume of contracted generation in Scotland across T and D, SPT (TO) system studies have identified the need for transmission reinforcement works across numerous parts of the SPD network area.

SPEN Planning Limits Trials

SP Energy Networks (SPEN) – Our Trials

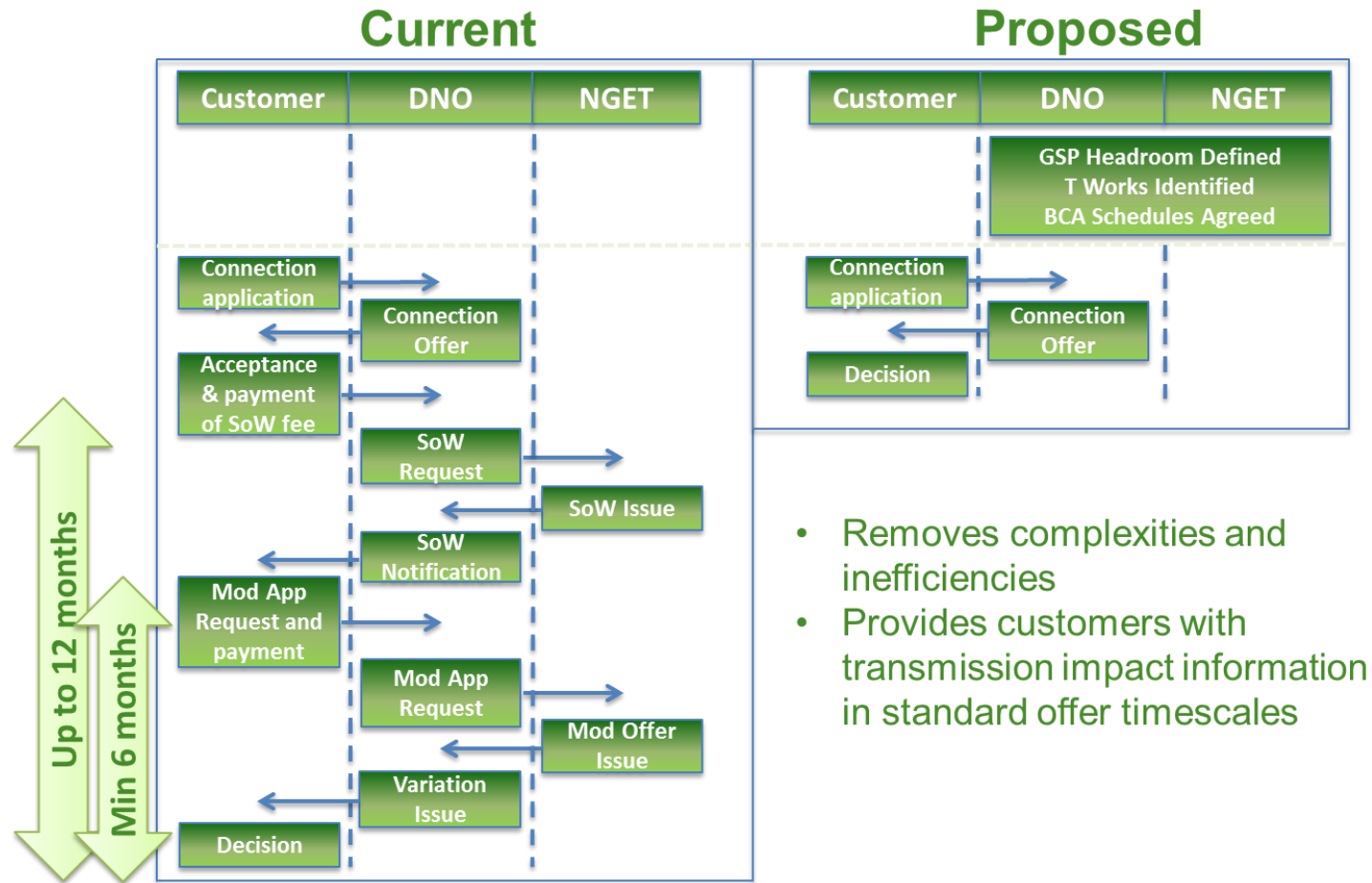
- New proposed process trialled across 4 GSPs – all with varying characteristics
- Visibility and understanding of planning limits and known transmission constraints enabled SPD to provide a comprehensive offer detailing the T&D Impact, removing the need for individual referral to the NGET
- Under the SPD Trial, customer offers detail:
 - known transmission system works,
 - associated charges/securities
 - timescales for completion of transmission system works
- Some offers were issued as interactive against the available Planning Limit
- Under the SPD Trial the T&D Impact was provided within standard DNO Offer timescales
- Findings from the Trial:
 - Ability to discuss transmission implications considerably earlier in process
 - Noticeable reduction in capacity reservation

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Overview of the TIA Process

Deborah MacPherson

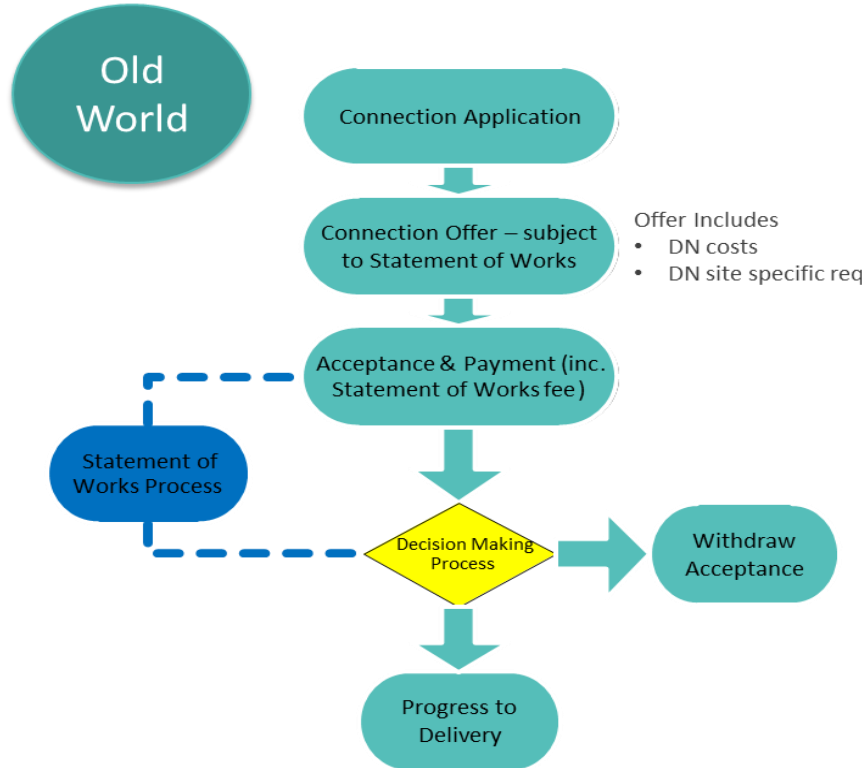
DNO Transmission Impact Assessment (TIA) - how does this improve the process?



- Removes complexities and inefficiencies
- Provides customers with transmission impact information in standard offer timescales

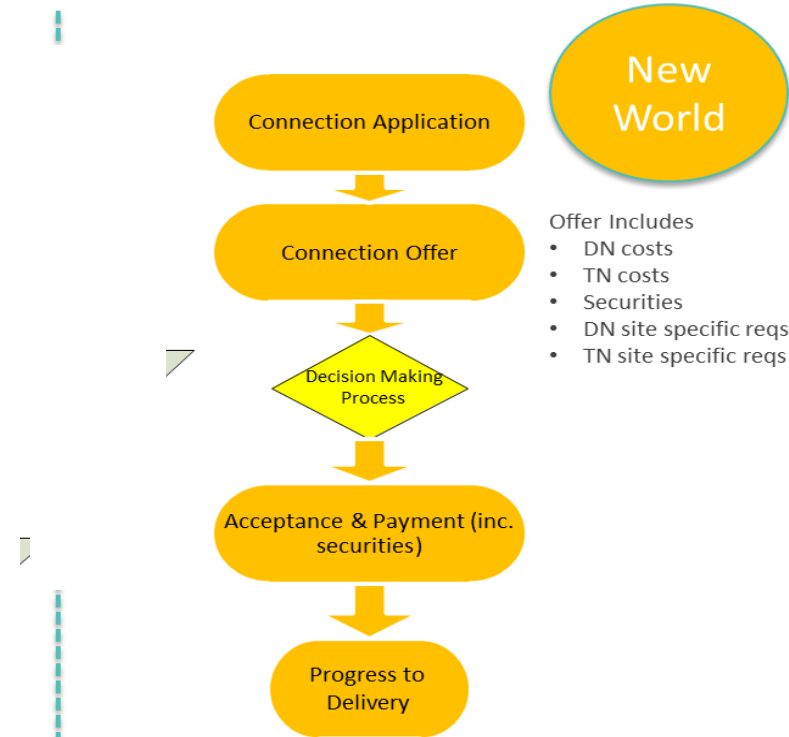
How does this improve the Customer Journey?

Up to 12 months



- Increased certainty and control
- Reduced timescales and costs
- Removal of invoicing issues

Within 65 working days



- Increased visibility of DG to NGET
- T impact included with DNO Offer

10

The Transition to the DNO Transmission Impact Assessment (TIA)

What does this mean for DNOs?

- NGET SO will develop planning limits that will be available to DNOs
- New contract schedule will provide visibility of contracted DG for each GSP
- New process will be established for regular information exchange

What does this mean for Customers?

- DNO can make DG offer without individual application to NGET in most cases
- This gives DG more and better information earlier in the process – greater certainty

DNO Transmission Impact Assessment (TIA) - Customer Outputs

1. To provide customers with an improved, more efficient, timely and cost reflective process, consistent across DNOs.
2. To enable DNOs to provide customers with visibility of the known transmission impact within distribution offers made to their customers within licence/GS timescales. Where applicable, this will include detail of any operational restrictions and requirements, transmission works required, costs, security and liability and impact on timescales to connect.
3. To provide customers with an offer which can be assessed fully in order to make the necessary investment decision.
4. Better Queue Management.

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Customer Discussion Sessions

Facilitators: Steve Atkins, Andrew Akani, Zivanayi Musanhi, Deborah MacPherson

Topics for discussion

- What experience have you had of receiving offers in any of the trial areas?
 - Was it an improvement?
 - Did you encounter any particular problems?
- What are your thoughts on the proposed TIA process?
 - Does it look like an improvement?
 - Does it address any of the issues you encountered during the trials?
 - Is there anything else that could further improve it?

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Transition to Planning Limits

Deborah MacPherson

Workstream Members have agreed that a project based approach to establish DNO Planning Limits, linked with NGET Regional Development Plans, will best benefit customers and achieve overall objectives.

In order to undertake a GB wide assessment, work has taken place to:

- Develop approach to establish planning limits
- Identify areas of priority for roll out
- Develop timescales for roll out
- Identify resource requirements
- Consider funding implications

Benefits of approach will

- Ensure that all DNOs/TOs/SO are committed to the programme and deliverables
- Provide customer visibility of programme roll-out
- Ensure consistent treatment of customer

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Transmission Impact Assessment – CUSC Modification

Rachel Tullis

Statement of Works & Project Progression

- Process to identify impact on the NETS of Distributed Generation (DG), not subject to a BEGA or BELLA, wishing to connect to the Distribution System:
 - On receipt of request for connection to / use of Distribution System DNO to make a request for a Statement of Works to NGET.
 - NGET will respond with a Statement of Works.
 - DNO then to return Confirmation of Project Progression.
- Statement of Works Process & Project Progression Process outlined in CUSC section 6.5 (Obligations of Users Who Own or Operate Distribution Systems)

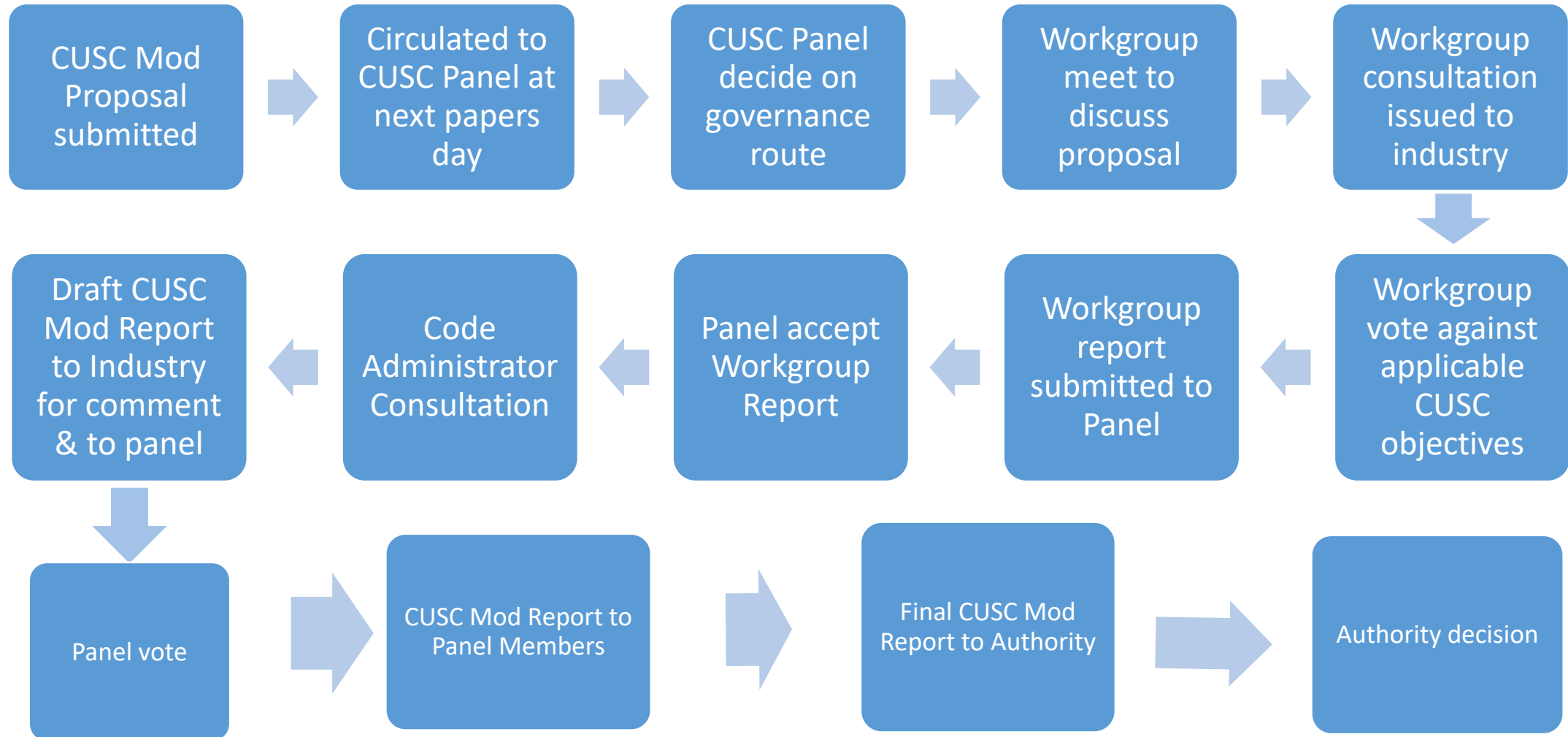
‘Appendix G’ Trial Origin

- Started in response to high volumes of DG applications in South of England
- Initial trials in WPD South West and UKPN South East. Trials based on:
 - Aggregated application from DNO to NGET
 - System studies to understand capability of the network
 - To include ‘no build’ options (e.g. ANM, Power Factor adjustment) where beneficial
 - Revised BCA provides DNO with ‘Materiality Headroom’ to allow DNO to make further offers to Customers.
 - BCA includes connected and contracted DG in Appendix G – grouped to identify relevant technical conditions or works required to connect.
 - BCA includes process for regular update of schedules (Appendix G)
- Later trials in UKPN based on Regional Development Programme (RDP) concept
- Separate trials in Scotland on 4 GSPs in SPD area

Proposing a CUSC Modification

- Need to identify ‘defect’.
- Proposed solution which better meets the CUSC objectives / doesn’t have a detrimental impact.

CUSC Modification Process*



Identifying the Defect

- Section 6.5 of the CUSC gives obligations to User's who operate Distribution Systems when connecting Relevant Embedded Small or Medium Power Stations
- The definition of Relevant currently refers to single connections which is insufficient to manage the current large number of connections and does not facilitate aggregated assessment of embedded generation (Appendix G trials)
- The CUSC also lacks note of such an aggregated process.

Scope of Proposal

- Amendments to CUSC section 6.5 to facilitate Appendix G process
 - Retaining existing Statement of Works process for where single applications are still required
 - Introducing option for aggregated applications as per Appendix G trials
- High level process between National Grid and DNOs for Appendix G updates (currently outlined in BCAs) to be outlined in CUSC
 - Request for assessment
 - Timescales for response
 - Ongoing requirements and timescales for updates and confirmation

Out of Scope for Proposal

- DNO / Distributed Generator Process
 - This is not included in CUSC - the CUSC is the contractual framework for connection to, and use of, the NETS.
- Detailed business processes
 - Appendix G, and therefore the **detailed** business processes associated will continue to evolve. We do not want to include a level of detail in the CUSC that becomes onerous for the industry to maintain / keep up to date.
- Overly prescriptive Appendix G format
 - As above, the Appendix G format is continuing to evolve – we want a format which offers a framework to work within but is flexible enough that it doesn't become onerous to maintain as improvements are identified.

Engagement, Timelines and Input

- Presented to CUSC Issues Steering Group in January
- Presented here today
- Aim to raise modification in April 2018
- Open governance process

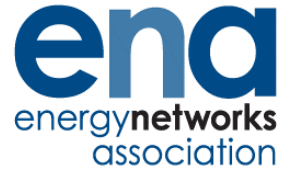
Any questions or feedback



CUSC Relevant Objectives

- a) The efficient discharge by the Licensee of the obligations imposed on it by the Act and the Transmission License;
- b) Facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity;
- c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency; and
- d) Promoting efficiency in the implementation and administration of the CUSC arrangements.

The Voice of the Networks



Energy Networks Association Panel Q&A