

The Voice of the Networks



**Energy
Networks
Association**

**Open Networks
Project – Advisory
Group
19th July 2017**

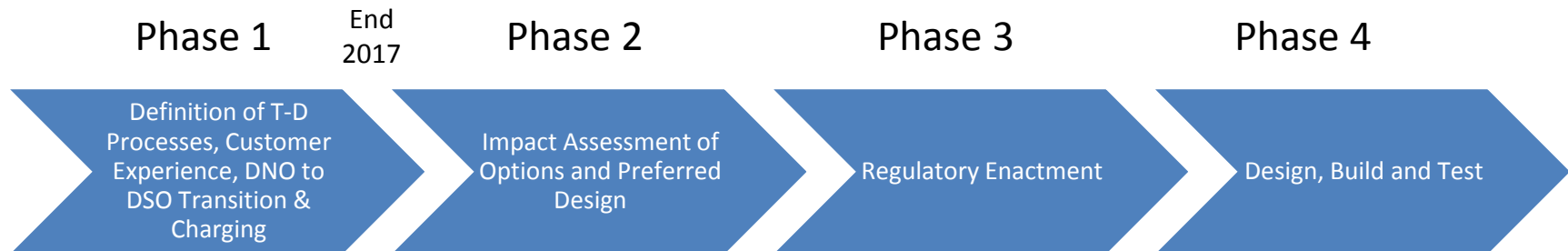
Welcome & Introductions

**Nigel Turvey – ENA Open Networks Project
Steering Group and Advisory Group Chair**

Open Networks Project

New Name – Same Objectives & Timing

- First Phase to deliver in 2017
- Expect Second Phase in 2018 and then beyond to RIIO ED2/T2 (2023)



Workstreams aligned with 2017 objectives:

1. Develop improved **T-D processes** around connections, planning, shared TSO/DSO services and operation
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
3. Develop a more detailed view of the required **transition from DNO to DSO** including the impacts on existing organisation capability
4. Consider the **charging** requirements of enduring electricity transmission/distribution systems
5. **Communicate** and engage on Open Networks developments

Advisory Group ToR Reminder

The Advisory Group is essential to our project to:

- Ensure stakeholders are aware and taking the Project into account
Request input from stakeholders to improve the quality of our products
- Increase awareness about project risks & issues, ask for views on risks & issues and collaboratively resolve where appropriate

It will provide input to:

- Steering Group on project scope, progress, risks & issues
- Workstreams with deliverable comments/feedback

We will seek to send information in advance of meetings to ensure that views can be sought by trade associations in advance

Publications, Progress & Objective for Today

Thank you for the feedback from last time, we have incorporated that into our published products:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-workstream-products.html>

We have shown how we have incorporated your feedback here:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-stakeholder-engagement.html>

Today is next step in sharing/reviewing our output across all workstreams

Our objective is to encourage open feedback from you all across all of our work

Today's Agenda & Approach

We will split the Advisory Group into 4 break-out groups to discuss the materials.

Each break-out group will discuss one of the workstreams for an hour, then the facilitators will move on to discuss their workstream with another break-out group.

We will have 4 of these sessions so each break-out group will discuss all of the material in turn.

The materials to be presented will be:

Workstream 1 - Sotiris Georgiopoulos (UKPN WS Lead)

- Investment Planning Gaps & Issues Analysis
- Statement of Works Proposals

Workstream 2 - Mark Drye (NPG WS Lead); Peter Aston (WPD WS Member)

- Customer Journey Maps & Issues

Workstream 3 – Stewart Reid (SSEN WS Lead); Randolph Brazier (ENA WS Member)

- DSO Functional Requirements
- Potential DSO Market Models

Workstream 4 – Tony McEntee (ENWL WS Member); Andy Wainwright (NG WS Member)

- Charging Recommendations & supporting materials

T-D Processes Workstream 1: Gaps & Issues

Sotiris Georgiopoulos – Workstream Lead

T-D Processes Workstream 1: Commercial Principles

Sotiris Georgiopoulos – Workstream Lead

**T-D Processes Workstream 1:
Statement of Works Update
Sotiris Georgiopoulos – Workstream Lead**

DNO Transmission Impact Assessment (TIA) SoW Improvements Journey

- ENA SoW Working Group Established – Summer 2015
- SoW improvement proposals developed and presented to DG For a 2015
- Engagement with NGET to develop principles of Scottish Trials using SPEN proposals
- Engagement with NGET, UKPN, SSEN & WPD to establish Regional Development Plans
- Trials with SPEN (SPD) and UKPN commence 2016
- 2016 DG Fora – Update of Work
- Working Group report published
- Working Group absorbed into the Open Networks Project, Workstream 1
- Product 7 Work Group Established – DNO Transmission Impact Assessment (TIA)

DNO Transmission Impact Assessment (TIA) Recap of the SoW Working Group Proposal

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?

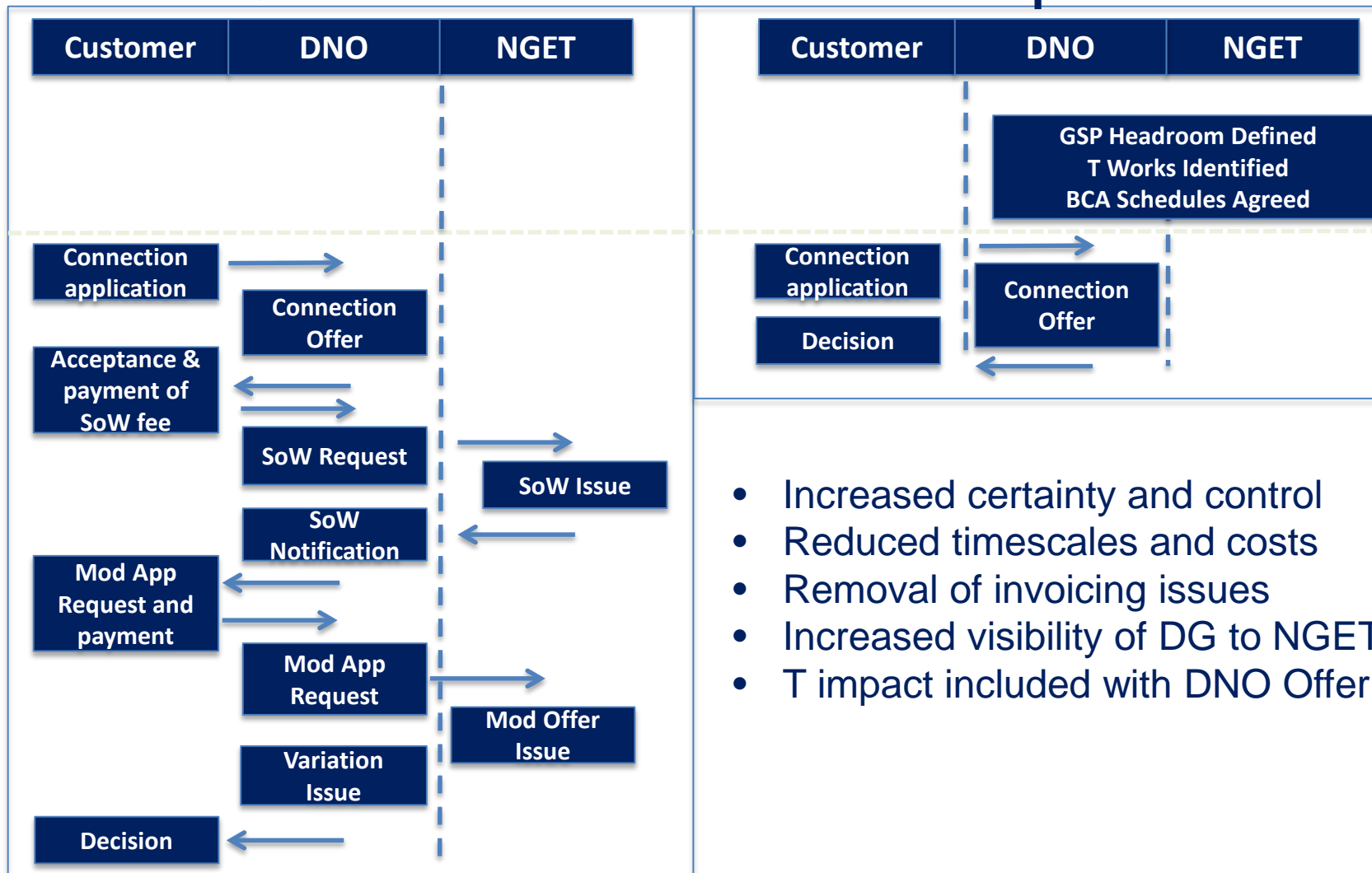
- DNO can make DG offer without individual application to NGET in many cases
- This gives DG more and better information earlier in the process – greater certainty

DNO Transmission Impact Assessment (TIA)

How does this improve the process?

Current

Proposed



- Increased certainty and control
- Reduced timescales and costs
- Removal of invoicing issues
- Increased visibility of DG to NGET
- T impact included with DNO Offer

DNO Transmission Impact Assessment (TIA)

Product 7 - Customer Outputs

1. To provide customers with an improved, more efficient, timely and cost reflective process; and 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. To establish planning limits with DNOs
5. Better Queue Management

DNO Transmission Impact Assessment (TIA)

Product 7 – Key Deliverables

Establish Data Requirements between SO, TO and DNOs required for:

- DNO System Modelling
- TO System Modelling
- Calculation of DNO Planning Limit
- Calculation of DNO Materiality Threshold

Develop Process Map for DNO Transmission Impact Assessment (TIA) detailing:

- Data exchange requirements
- Roles, Responsibilities & Obligations
- Timings/SLAs

All DNOs, TOs and SO have reached agreement in principle regarding the above deliverables

DNO Transmission Impact Assessment (TIA) Establishing Planning Limits - Programme

Workstream Members have agreed that a project based approach to establish DNO Planning, linked in with NGET Regional Development Plans, will best benefit customers and achieve the overall objective of Product 7.

In order to undertake a GB wide assessment, work is currently underway to:

- Identify areas of priority for roll out
- Develop project plan
- 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 custom

SO and TOs will develop more detailed proposals for the programme in the coming weeks

Customer Experience Workstream 2: Customer Journey Maps & Issues Mark Drye – Workstream Lead

Progress to date

- Customer Categories published with explanatory notes and shared across project workstreams
- Customer Journey mapping drafted to identify current processes pre & post connection
- Key issues identified within the processes

Next steps

- Review maps and issues with Advisory Group
- Identify and plan activities to resolve identified issues (in Open Networks Project workstreams and/or elsewhere)

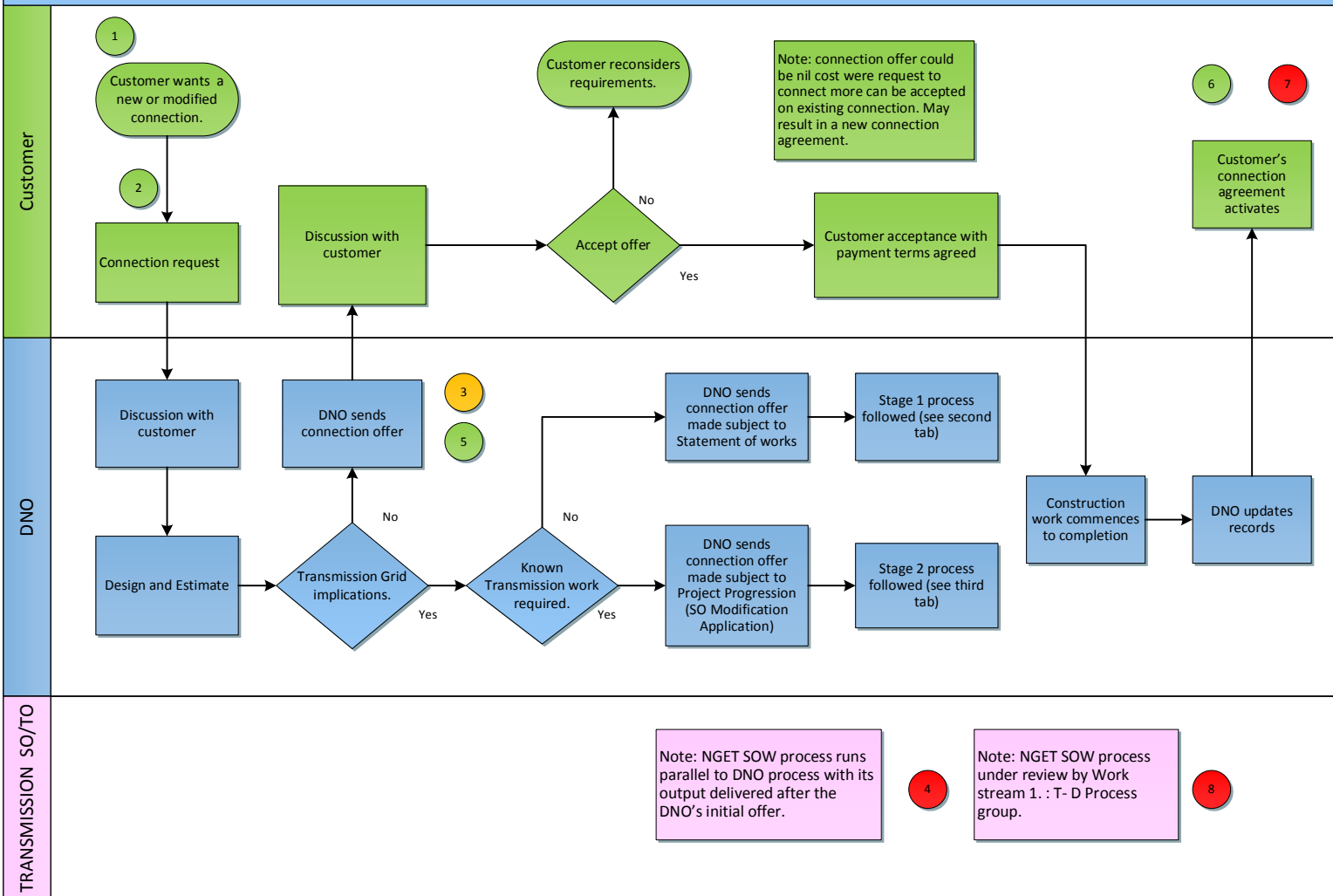
Key Questions for Today

- *Are the journey maps clear enough?*
- *Do you believe that we have captured the journey for customers accurately?*
- *Have we captured the key issues in the process from a customer perspective?*
- *Are there any key issues missing from the maps?*
- *Do you have a view on the best way to resolve these issues?*
- *Are there any other processes that we should be mapping and capturing issues from a customer perspective?*
- *Are there any other comments on the journey maps?*

Customer Experience Workstream Connections Processes

As is connections process for system service providers, including demand, storage and Non G83 DG. New and modified connections.

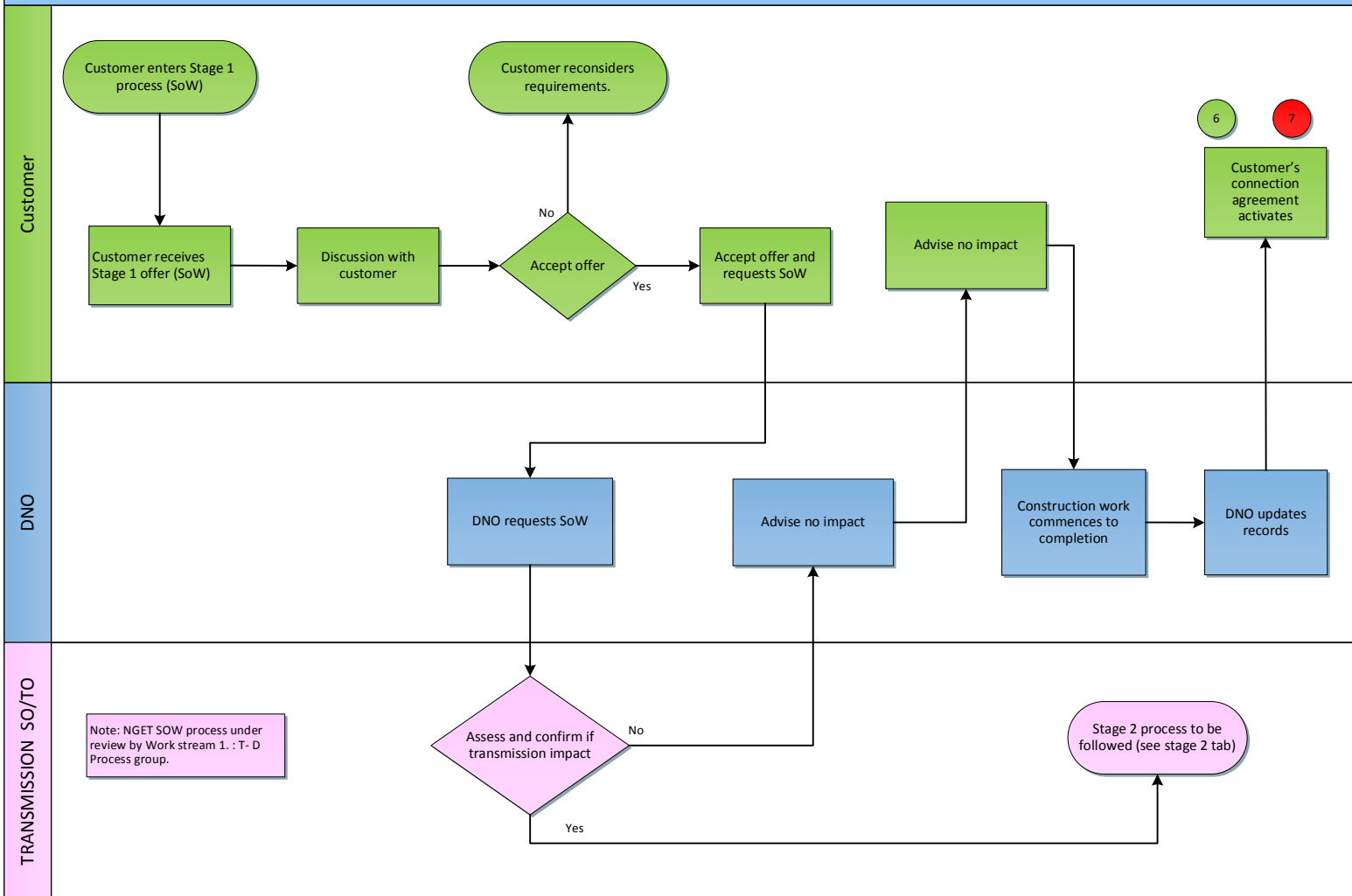
Phase



Customer Experience Workstream Connections Processes

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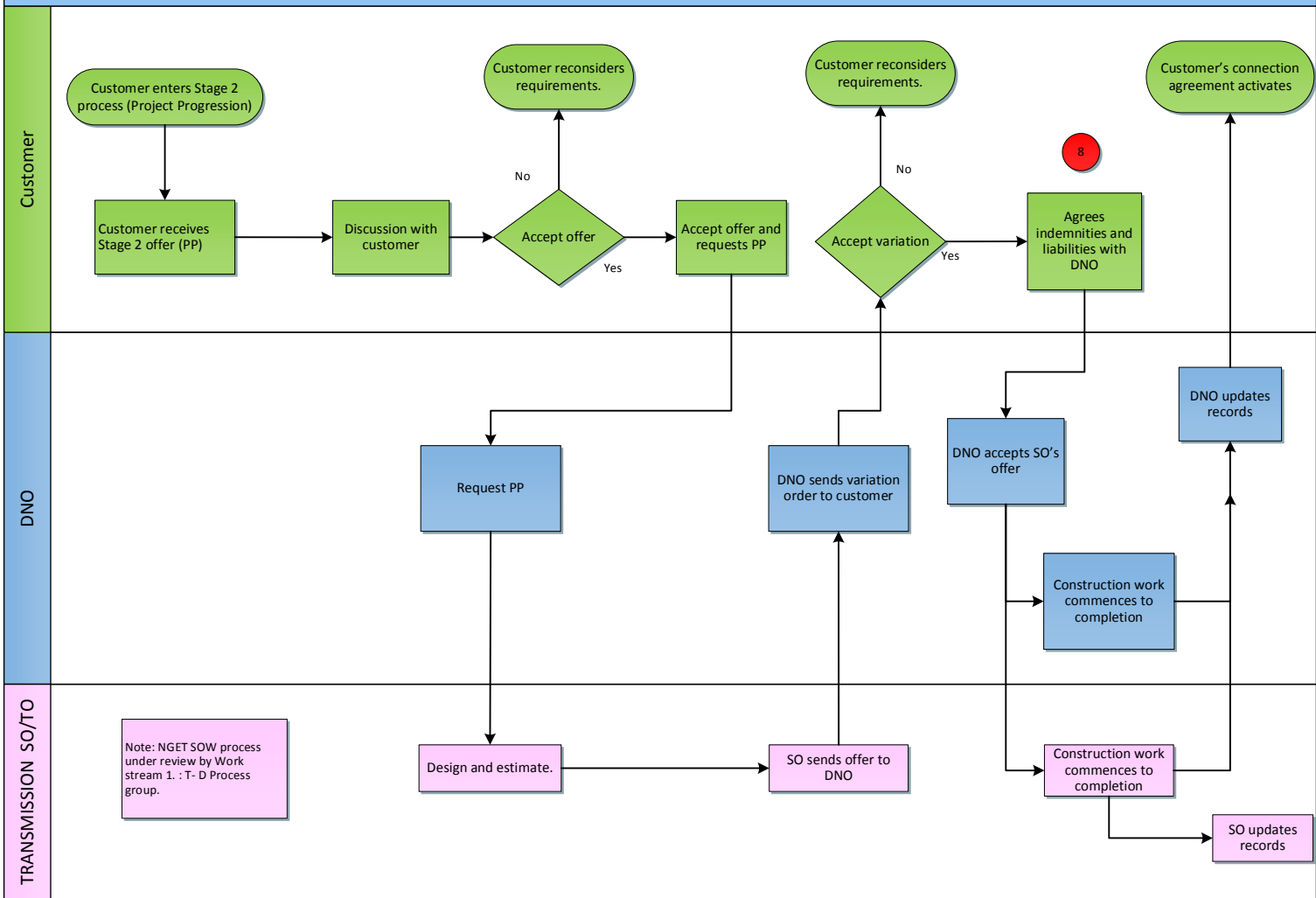
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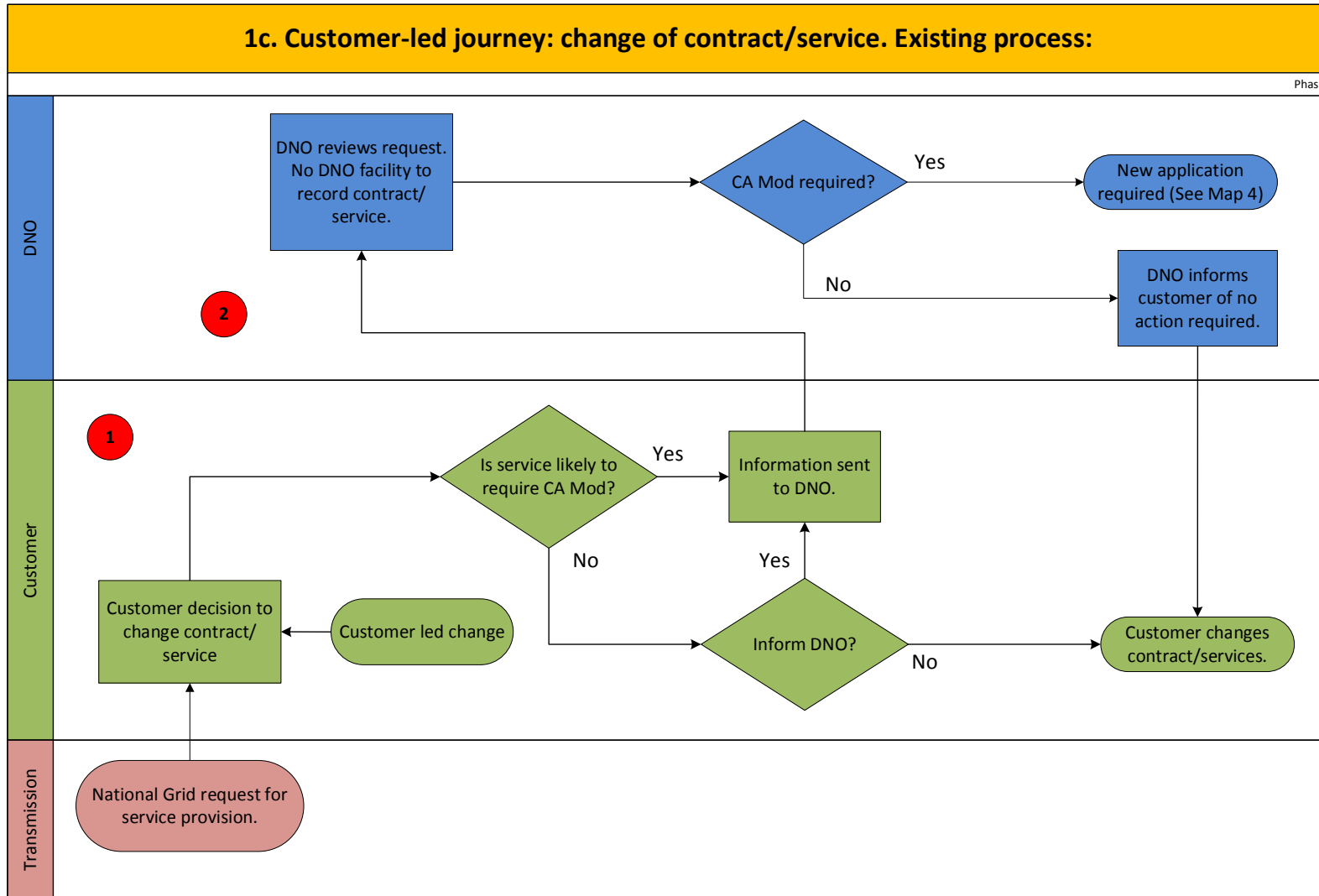


Customer Experience Workstream

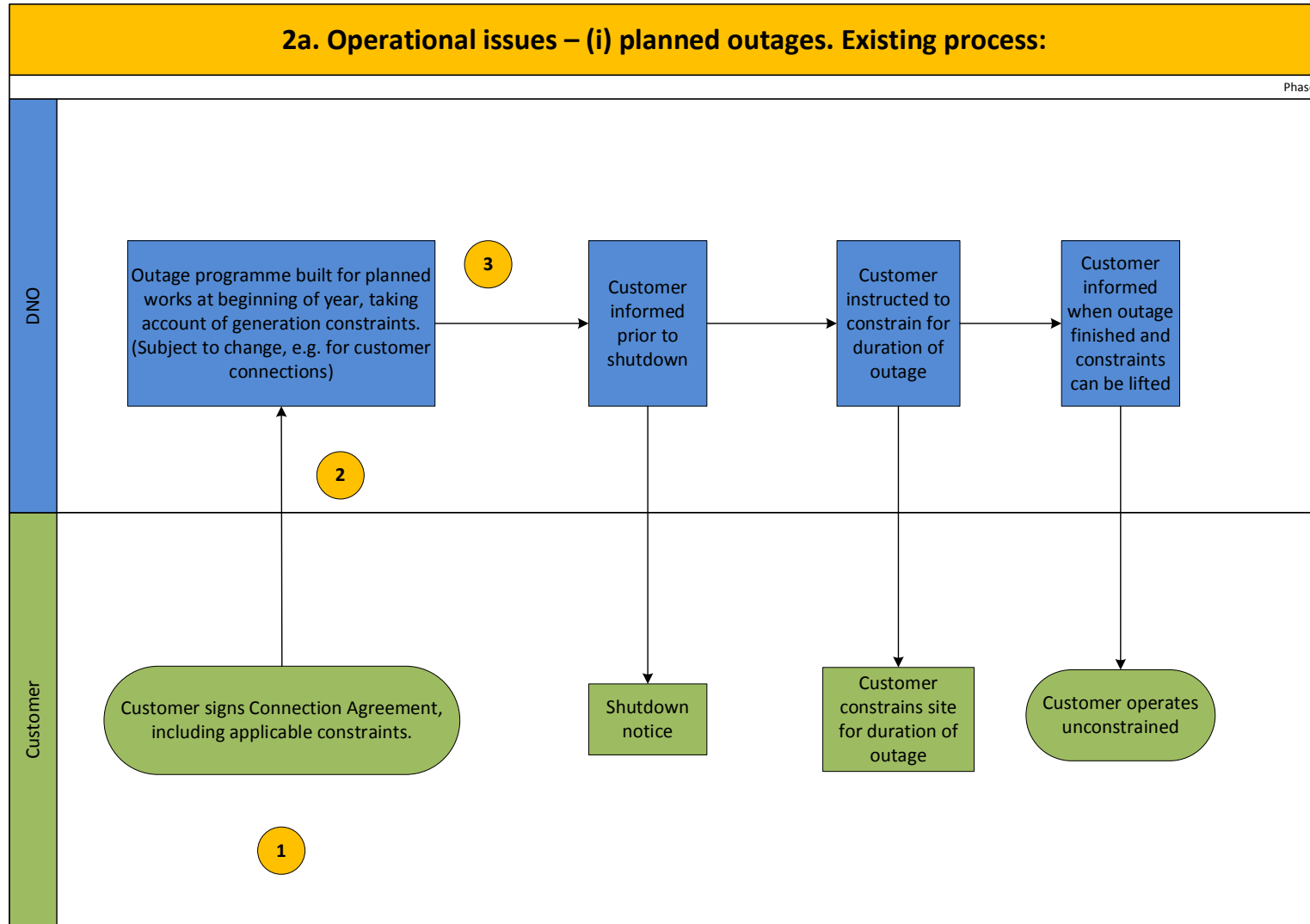
Pre-Connection Issues:

1. DNOs publish heat maps to assist customer's own assessment (some include demand and DG headroom to assist storage).
2. Connection process for storage – Dedicated storage application form available.
3. (&7) DG and storage customers want more information on estimated curtailment in connection offers, particularly for un-firm connections (from both planned outages and faults). The level of constraint information available for ANM connection offers will vary depending on the level of data captured for previous year by the relevant scheme.
4. Improved NGET SOW process.
5. DG connection offers contain milestones to enable DNO unlock unused capacity.
6. The connection agreement sets the operational 'envelope' for DG and storage to provide flexibility services.
8. DNOs to publish information on indemnities and liabilities when transmission work required.

Customer Experience Workstream Post-Connections Processes

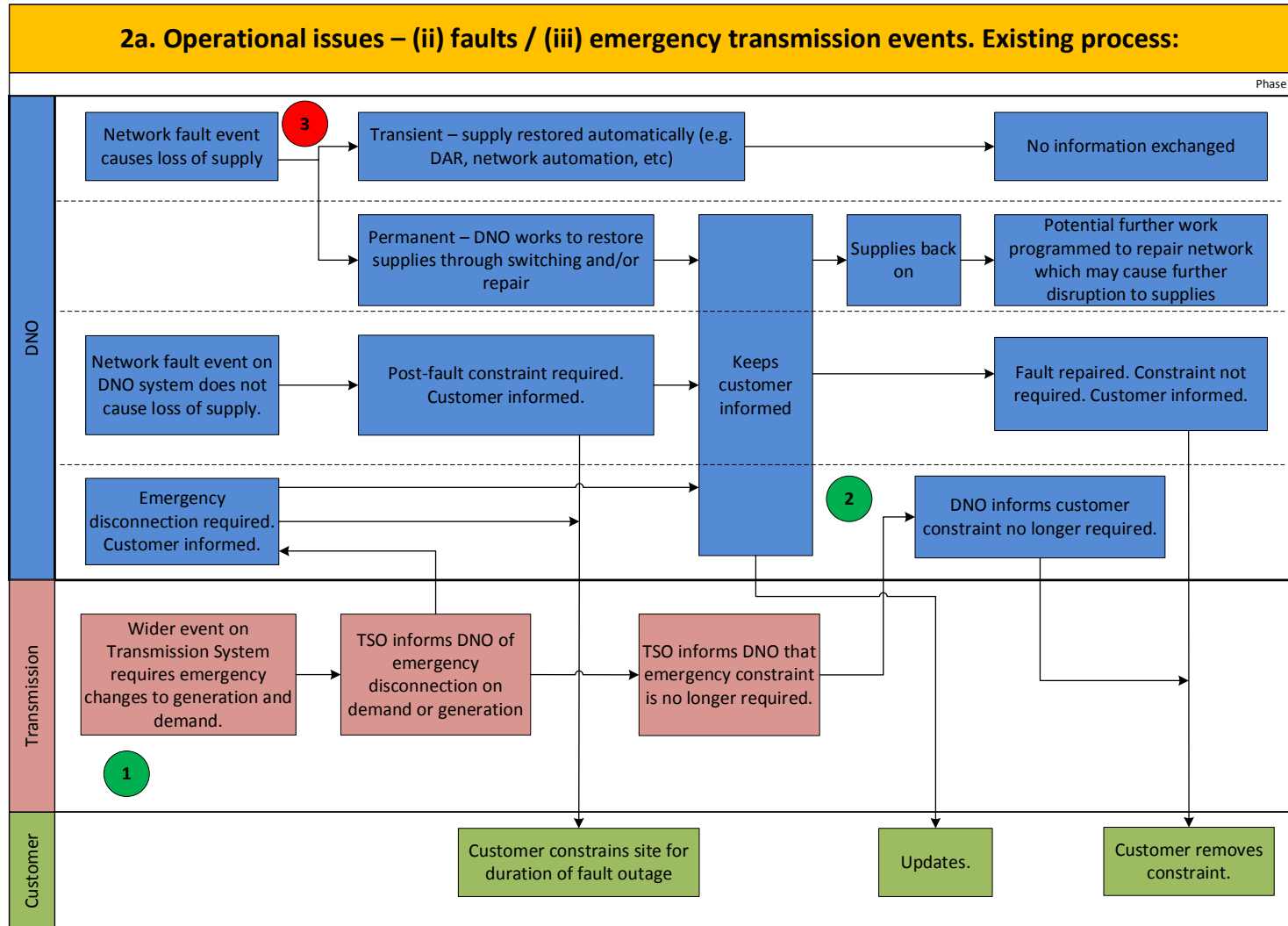


Customer Experience Workstream Post-Connections Processes



Customer Experience Workstream

Post-Connections Processes



Customer Experience Workstream

Post-Connection Issues:

Change of Contract/Service:

1. DNOs to provide guidance to customers who want to change contract for services provision (to check it is within the envelope of the connection agreement).
2. DNOs need to clearly define the services required by the network.

Planned Outages:

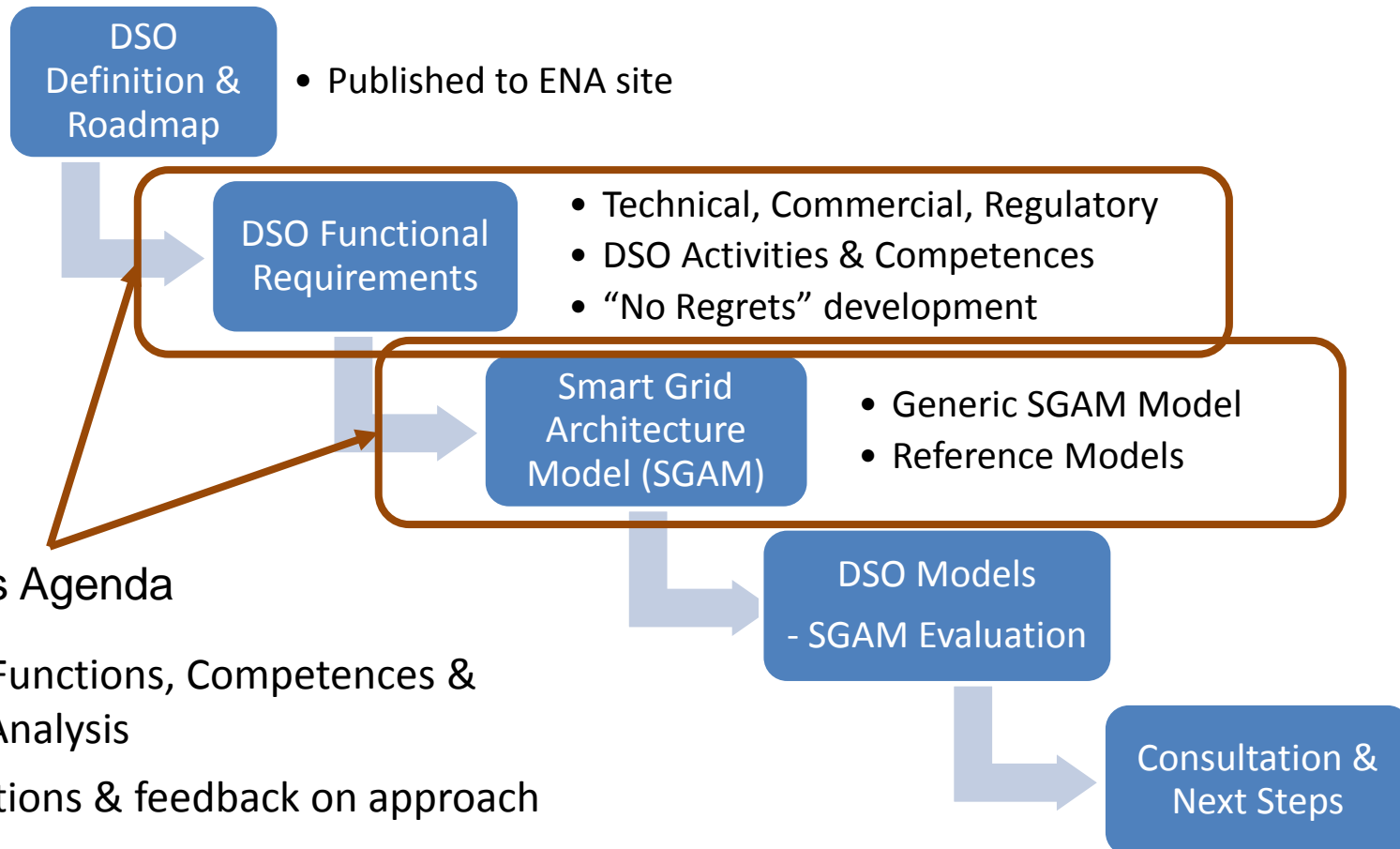
1. More information on constraints/curtailment and outages post connection (and Site owner forums) e.g. at the beginning of each year.
2. Out of normal hours work: Some customers are prepared to pay for out of hours working to ease constraints, e.g. outages affecting PV during winter or hours of darkness. However, there is no official process in place and is agreed by local arrangement. Customers are likely to make these requests more in the future.

Faults & Emergency Events:

1. DNO will use all available means of communication, including telephone, email, website and social media. (It is important for the customer to provide updated contact details. The DNO needs to have a process in place to record these updates).
2. Emergency disconnection on the transmission system is only used following the use of all available commercial means.

**Transition to DSO Workstream 3:
DSO Functional Requirements &
Potential DSO Market Models
Stewart Reid – Workstream Lead**

Workstream 3 - DSO Transition



Today's Agenda

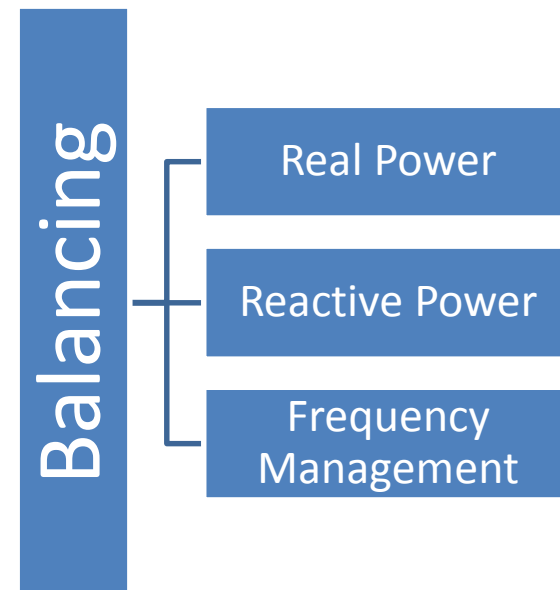
- DSO Functions, Competences & Gap Analysis
- Questions & feedback on approach
- Use of DSO models for SGAM
- Views on high level DSO Models

8 DSO functions have been identified. These group together the activities which DSO will need to undertake in order to be effective:

1. Balancing
2. Network Management
3. Investment Planning
4. Connections & Connection Rights
5. System Defence and Restoration
6. Service/Market Facilitation
7. Service Provision
8. Charging

Within each DSO function, there are activities described which further detail the requirements needed for full DSO operations.

For example:



Product 2 Approach – Competences

There are key underpinning DSO competences for effective operation:

- Customer Liaison
- Innovation & Change Management

DSO functions will also require further specific competences to be developed:

1. Forecasting
2. Regulation Codes & Frameworks
3. Commercial & Whole System Frameworks
4. Whole System Co-ordination
5. Power System Analysis
6. Contractual Arrangements
7. Dispatch
8. Pricing
9. Outage Planning
10. Data Management
11. Settlement
12. Contract & Service Compliance

The capability for each competence has been given scoring criteria based on a defined 1-5 scale

FORECASTING

Development of consistent, repeatable and auditable methodologies in operational and investment timescales for forecasting demand, generation, network power flows and the requirements for DSR & flexibility.



ATTRIBUTES

For example Real time system with operational forecasts being updated on a regular basis.



SCORING 1 to 5

1 Some competence through traditional activities, capabilities and in-place systems.

...

5 Fully functional forecasting capability in operational & investment time-frames. Authoritative in service area.

WS3: Product 2 – Example Use Case

For each DSO function, a use case has been developed to detail the activities required within the function and to demonstrate the current, short (1-2yr), medium (3-5yr), & long-term (+8yr) competence levels required in the DSO roadmap.

Use Case Title		
Balancing – (Future positions based on Reference Case 1 / Roadmap)		
Description: Matching and optimising local demand and generation requirements within technical limits of the network and assets. Optimising powerflows to best utilise capacity and reduce losses.		
DSO Function(s)	Activities	Description
Balancing	<ul style="list-style-type: none"> Real Power Balancing 	Managing MW demand and generation within a local network area and managing exchanges to other network areas within agreed limits. Maintaining powerflows and voltages within equipment technical limits.
	<ul style="list-style-type: none"> Reactive Power Balancing / Voltage Management 	Managing MVA demand and generation within a local network area and managing exchanges to other network areas within agreed limits. Maintaining powerflows and voltages within equipment technical limits.
	<ul style="list-style-type: none"> Frequency Management (Response/Reserve) 	Contributing to the management of system frequency through the facilitation of local network services provided by DER.

WS3: Product 2 – Example Use Case

The scored competences are displayed for each period within the roadmap and evidence to support the score is in the narrative below.

Competence is scored at an industry level against the criteria developed before. There is an assumption that DNOs will work together to disseminate knowledge.

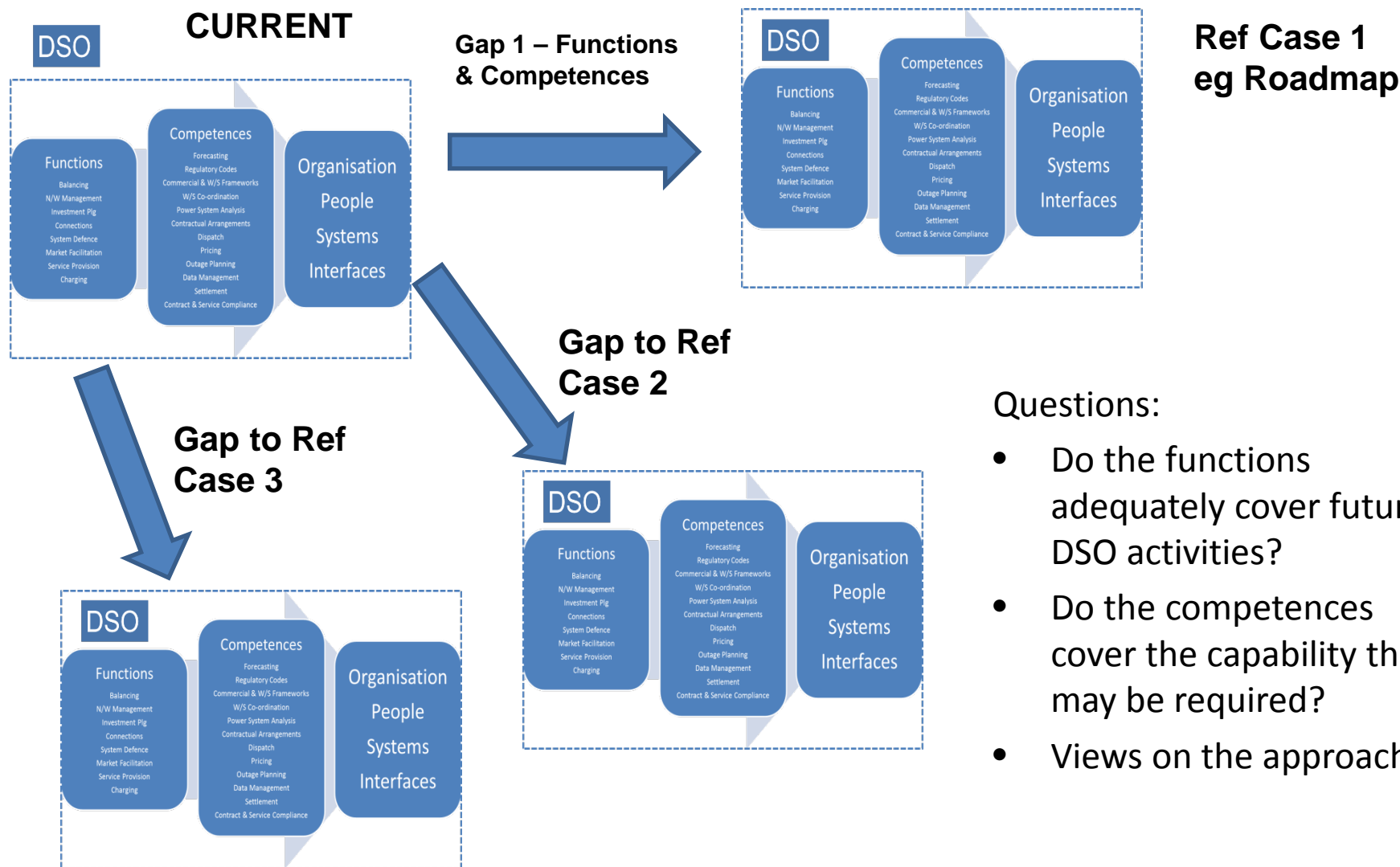
Current												
Balancing [Total score = 6]	1	0		1		1	1	0		1	0	1
	Forecasting	Regulation Codes/Frameworks	Commercial/W.S. Frameworks	W.S Co-ordination	Power System Analysis	Contractual Arrangements	Dispatch	Pricing	Outage Planning	Data	Settlement	Contract/Service Compliance
<p>At present, there is very little balancing of local networks carried out by DNOs. Trials are underway to test aspects of DER connection, operation and utilisation for services. For example the increasing use of ANM systems is starting to provide a means to interact and manage levels of DER. Most of the competences that would support the Balancing function are not yet being developed.</p> <ul style="list-style-type: none"> • Forecasting – Existing DNO capability provides a starting point for the forecasting capability to support Balancing activities. As yet, this capability is limited in operational timescales. • Whole System Co-ordination – Resources on distribution networks are largely managed passively with limited consideration of whole system impacts. Through some projects and trials, more extensive whole system approaches are being considered on a local basis. These initial trials should provide a basis to develop this competence. • Contractual Arrangements – Existing contractual arrangements are in place with many of the participants that would be party to a local balancing area. • Dispatch – There is developing capability through the implementation of ANM schemes. • Data Management – DNOs are starting to handle increased levels of DER data to support operations. Communications links are being utilised to enable near real-time exchange of data in some areas. As yet, data management is not focussed towards Balancing activities. • Contract & Service Compliance – Some consideration of DER requirements is taking place. As yet, there is limited ongoing interaction with DER post connection. 												

WS3: Product 2 – Example Use Case

In the roadmap case, for DSOs to deliver the anticipated longer term functionality for Balancing, a number of areas would need to be developed from the current level.

Long Term												
Balancing	4	4		4		4	5	4		4	5	4
[Total score = 38]												
Forecasting	Regulation Codes/Frameworks	Commercial/W.S. Frameworks	W.S Co-ordination	Power System Analysis	Contractual Arrangements	Dispatch	Pricing	Outage Planning	Data	Settlement	Contract/Service Compliance	
<p>Reference Case 1 (DSO Roadmap case) – This envisages some larger regions (multiple grid supply points) operating with mature DSOs in place. In these regions, DSO functionality would include the dispatch and operation of DER to satisfy local network limitations. Surplus services (MW, MVar, Frequency response) that are available could be offered to the GBSO and to other DSO regions.</p> <p>The market models being used in different DSO regions would be relatively consistent. Large volumes of data would be handled in operational time-scales to enable balancing and the interactions with the GBSO and other DSOs. Data would be managed with a “Whole System” perspective. DSO’s would interact with smart city and community initiatives to provide support where needed and to utilise services where available. Whilst balancing functions would not yet be mature, they would be comprehensive and leading edge when compared internationally. In terms of Competences to support the Balancing Function:</p> <ul style="list-style-type: none"> • Forecasting - MW and MVar forecasting capability for demand and DER would be very well developed in DSO balancing areas. Short term planning forecasts would be very strong in these balancing areas. • Regulatory Codes & Frameworks - These would be reasonably well developed with consistent frameworks in place across different balancing areas. Codes and frameworks would still be developing given the relative immaturity of DSO models. • Whole System Co-Ordination – Well developed processes and skill-sets would be in place to allow the optimal use of services across T-D boundaries and between DSOs. Network assets and services would be used. Processes not yet mature or fully consistent. • Contractual Arrangements – A wide range of contracts would be used to support local balancing requirements. Contract volumes would depend on the number of areas operating with DSOs. • Dispatch – Services would be dispatched to satisfy a range of factors. Dispatch systems would be automated and co-ordinated with GBSO systems. • Pricing – Decisions would be based on a good understanding of a range of options. • Data Management – Large scale volumes of data would be handled in real-time via enterprise systems. Data would be shared across organisations. • Settlement – Systems would be in place to settle a range of services taking account of interactions with different areas. • Contract & Service Compliance – DSOs would be ensuring that services are being provided as requested with measures in place to address shortfall or non-provision of services. 												

Product 2 Approach – DSO Assessment



Questions:

- Do the functions adequately cover future DSO activities?
- Do the competences cover the capability that may be required?
- Views on the approach?

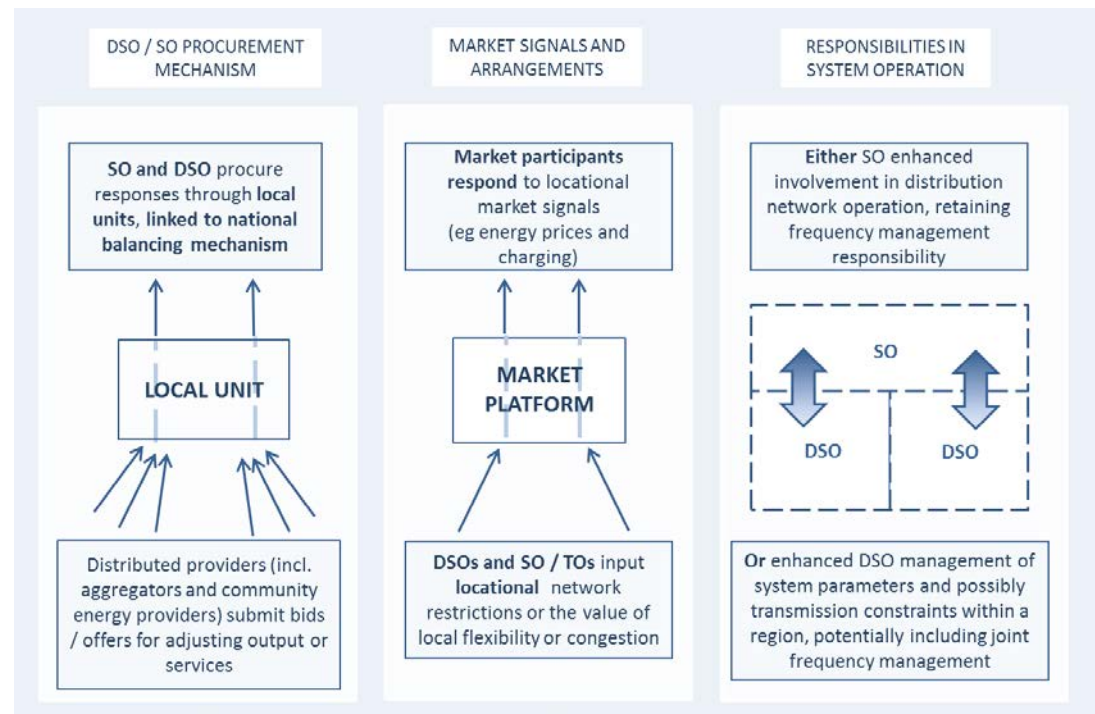
DSO Reference Models

Elements of DSO are emerging and we would like to identify some reference models to:

1. Better understand the gaps from current levels of DNO functional capability and competence to these future models
2. Start to build the SGAM representation

What are your views on the reference models that should be considered?

eg BEIS, Ofgem Call for Evidence on a Smart, Flexible Energy System



**Charging Workstream 4:
Charging Recommendations
Tony McEntee – Workstream Member**

Paper	Detail
Network Charging Initiatives update paper	<ul style="list-style-type: none">– A status update from Ofgem on the Targeted Charging Review, Future-focused Strategy and Charging Coordination Group.– A status update, next steps and key questions from the CDCM/EDCM Review of distribution charging.– A status update, next steps and key questions from National Grid in its review of transmission charging.
Charging Scenario Paper	<ul style="list-style-type: none">– Root cause analysis looking at whether differences in the charging arrangements influence customers' economic decisions on where and how to connect to the electricity system.
Charging Issues Paper	<ul style="list-style-type: none">– Overview and options for progressing charging issues considered to be of particular relevance to the development of the GB DSO model.

Charging Workstream

Network Charging Initiatives update

Ofgem Charging Initiatives

- Targeted Charging Review (TCR)
- Future-focused Strategy
- Charging Coordination Group (CCG)

Distribution Charging Review Update

- CDCM and EDCM reviews have now been brought together
- Now giving greater consideration to future developments, for example the growth in DG, and their impact on the 500MW models
- Proposed that work will continue to develop costing models and tariff options awaiting direction from the Charging Coordination Group.

Transmission Charging Review Update

- Number of quick wins progressed and delivered.
- Awaiting Ofgem proposals for Targeted Charging Review and Future Focused Strategy to develop long term need case.

Charging Workstream

Charging Scenario Paper

Key conclusions:

- Whilst Ofgem's recent decision on embedded benefits has reduced the difference between T&D charging arrangements there remains an incentive for DG to connect to D networks.
- Licensable DG are liable for both T&D charges - may discourage such developments.
- Parties connecting at HV in Scotland may face charges for relevant transmission reinforcements at 132kV. Not relevant in E&W.
- Parties connecting at 132kV face lower charges when connecting in E&W.
- Discounts available for smaller 132kV TG help reduce differences but create discrepancies between parties with capacities above and below the 100MW threshold.
- Application of distribution charging methodologies (EDCM/CDCM) can result in significant differences in charges or credits applied to DG connecting at EHV and HV/LV.

- *How material do you believe the highlighted differences in T&D charging are to the developers' decision making process of where to connect?*
- *The work to date has focused on cost signals for parties seeking to connect. Do you agree that future analysis should cover the impact on wider consumers and not simply the connecting party?*
- *Are there other scenarios not covered above that should be looked at?*

Charging Workstream

Charging Issues Paper

Key Issues identified:

1. Common charging methodology for costs associated with Active Network Management.
2. Future compensation arrangements for distributed energy resource.
3. Cost-reflective charging arrangements for 'behind the meter' connections.
4. Cost-reflective charging arrangements for reactive power across T&D.
5. Cost reflective charging arrangements for electricity storage providers.
6. Rights to connect to and access networks between transmission and distribution.
7. Network charges for Community Energy and parties with Local Generation and Supply.

- *Do you agree these issues are relevant for further work?*
- *What priority would you apply to progressing solutions to each of these?*
- *Are there other key issues not captured above that we should be looking at?*

Charging Workstream Recommendations

Recommendations:

- Following Advisory Group input, findings to be updated and shared with Ofgem Charging Coordination Group (CCG).
- Further analysis of scenarios and wider impact to be paused pending feedback.
- Recommendations on further work to be determined and presented to Advisory Group.

Annex – Charging Initiative Updates

Charging Workstream

Ofgem Charging Initiatives Update

Targeted Charging Review (TCR)

- Spring 2017: Consultation on TCR – review of residual charges
 - Proposed Significant Code Review to consider:
 - Changes to residual charges
 - Changes in charging arrangements or smaller embedded generation
 - Changes required now prior to completion of proposed SCR
 - Views on changes to network charges for storage
 - Consultation now closed
 - SCR to be launched in summer 2017

Future-focused Strategy

- Review of forward-looking charging arrangements – proposals to be set out shortly

Charging Coordination Group (CCG)

- Planned to be set up by Autumn 2017
- Will co-ordinate Ofgem and industry led initiatives affecting network charges
- Update from Open Networks Charging WS will help inform CCG's coordination of initiatives

Charging Workstream

Distribution Charging Review Update:

Update

- CDCM and EDCM reviews have now been brought together
- Now giving greater consideration to future developments, for example the growth in DG, and their impact on the 500MW models
- Proposed that work will continue to develop costing models and tariff options awaiting direction from the Charging Coordination Group.

Next steps

- Report to be submitted to CCG
- Development of costing model options to continue over summer. Submission to CCG targeted in late Autumn 2017
- No further work until direction from CCG received

Charging Workstream

Transmission Charging Review Update:

Progress to date

- Industry Proposals / Guidance Documents published, including:
 - Proposals to change TNUoS charging methodology to facilitate transition to HH metering
 - Clarification of transmission charging arrangements for storage and impact on zonal transmission losses
- Stakeholder seminars have highlighted that holistic charging review or strong coordination in charging developments needed
- Consistency with Ofgem thinking

Next steps

- Awaiting Ofgem proposals for Targeted Charging Review and Future Focused Strategy
- Potential for development of those scope areas not being addressed under other Ofgem workstreams

Question

Do you believe that areas relating to harmonisation and alignment of transmission and distribution charging arrangements would be more efficiently progressed through the Open Networks Charging workstream?

Wrap-Up

**Nigel Turvey – ENA Open Networks Project
Steering Group and Advisory Group Chair**

We will:

- Take your feedback and update our products
- Publish updated products on the ENA Open Networks website:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-workstream-products.html>

- Take into account feedback in the future direction of development work

Key Deliverables

Deliverable	Planned Date
WS1 - Investment and Operational Planning Change Requirements	Sep 2017
WS1 – Whole System Planning Processes/Models	Dec 2017
WS1 – Ancillary Services Review	Dec 2017
WS1 - Approach for the co-ordination of T & D constraints	Dec 2017
WS1 - Whole system commercial agreements for ANM with DG	Dec 2017
WS1 – Statement of Works Mods & Industry Guidelines	Aug 2017
WS2 – Customer Issues Analysis	June 2017 – July meeting
WS2 – Service Provision Improvements	Dec 2017
WS3 – DSO Definition & Tier 1 Roadmap	May 2017 – Complete June
WS3 – DSO Transition SGAM Model	Oct 2017
WS4 - Charging Recommendation Paper	June 2017 – July meeting

What we want from you before next meeting

- Disseminate documents to your membership
- Review documents with members and feedback comments to ENA and the Members at the Advisory Group
- Let ENA know if you want to present at the next Advisory Group. This would involve a 5-10min presentation at the round tables on a relevant topic of particular interest to you that affects the Open Networks Project
- Reminder that the next session is on 31st August in London (same location)

AOB/Close