

# STC Panel

Wednesday 26 January 2022

# WELCOME



nationalgridESO

# Introductions & Apologies for absence

- **Apologies**

- None

- **Alternates**

- Terry Baldwin

- **Presenters**

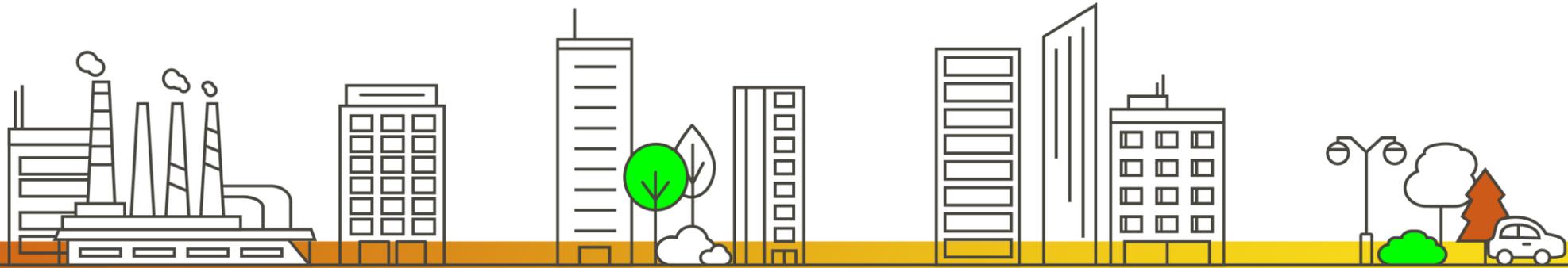
- Stephen Baker
- Antony Johnson
- Hannah Rochford
- Nicola White
- Katherina Meehan

- **Observers**

- Sally Musaka

# Approval of Panel Minutes

Approval of Panel Minutes from the Meeting held  
15 December 2021



# Actions Log

## Review of the actions log



# Authority Decisions

**Decisions Received since last Panel meeting**

None

**Decisions Pending**

None

# New modification submitted



- **CM080** - *“Transmission Impact Assessment process”*
- **PM0121** – *STCP16-1 Bay Reservation Amendment*



# CM080 Transmission Impact Assessment process- Proposal

[Terry Baldwin]

# Introduction

- **The current Statement of Works (SoW) process can be inefficient and time-consuming where there are concurrent multiple smaller connection applications**
- **Network Operators have trialled and refined a more efficient aggregated assessment (widely known as the “Appendix G” process) of Distributed Generators (DG) that have or may have an impact on the National Electricity Transmission System (NETS)**
- **This STC modification seeks to formalise the trial process (Transmission Impact Assessment, TIA) into the STC which will work alongside the current Statement of Works process**
- **Proposing Standard governance with workgroup so OFGEM can consider CMP298 and CM080 together**

# Process

GSP Name	DNO	ETI Trigger Criteria					ETI Method	TIA Data	
		Active Power (MW)	Apparent Power (MVA)	Reactive Power (Mvar)	Amperage (KA)	Voltage (kV)		Total MW	Materiality Trigger (MW)
Example	Western Networks	10	11	N/A	N/A	33			
Testington	Eastern Power	1	0.5	N/A	1	11	Transmission Impact Assessment (TIA)	150	26

- **ETI Trigger criteria required from TOs at each GSP**
- **Materiality Trigger (function of planning limit) to be completed by TO when a DNO makes an application.**
- **Total MW connected/allocated to be update to be provided by NGENSO to TOs following DNO updates. Frequency of updates to be determined.**

# Changes required

## STC SECTION D: PLANNING CO-ORDINATION

- Rename section four from “Statement of works” to “Evaluation of transmission impact (ETI)” with Statement of works moving to a sub heading
- At the end of section four add Transmission impact assessment process requirements

## STCP 18-4

- Rename STCP 18-4 from “Request for a Statement of Works” to “Evaluation of transmission impact (ETI) assessment”
- Update introduction to describe the two routes available
- Change 3.2 to Statement of works process
- Add a section 3.5 detailing the Transmission Impact Assessment (TIA) process

# Draft Proposal feedback

- **Increase in the minimum frequency of updates has been fed back to the CMP298 workgroup. Annex 3a now states Appendix G updates to be provided monthly or as otherwise agreed.**
- **The issue of this modification disadvantaging large embedded generators has been debated during CMP 298 so it is not proposed to repeat that as part of the STC modification.**

# CM080– Timeline

- The following timeline shares Workgroup days with CM079:

Milestone	Date	Milestone	Date
Modification presented to Panel	26 January 2022	Code Administrator Consultation (15 Working Days)	30 May – 22 June 2022
Workgroup Nominations (15 Working Days)	31 January – 18 February 2022	Draft Final Modification Report (DFMR) issued to Panel	19 July 2022
Workgroup 1 Understand proposal and solution, agree any refinements to solution, agree timeline, WG to agree Terms of Reference, discuss any potential alternative solutions, agree any specific Workgroup Consultation questions.	11 March 2022	Panel undertake DFMR recommendation vote	27 July 2022
Workgroup Consultation (15 working days)	18 March – 8 April 2022	Final Modification Report issued to Panel to check votes recorded correctly (5 working days)	1 August – 5 August 2022
Workgroup 2 Discuss workgroup consultation responses, refine solutions (s), hold Alternative vote and workgroup vote, finalise Workgroup Report	20 April 2022	Final Modification Report issued to Ofgem	8 August 2022
Workgroup report issued to Panel	17 May 2022	Ofgem decision	August 2022
Panel sign off that Workgroup Report has met its Terms of Reference	25 May 2022	Implementation Date	10 Working Days following decision

# CM080 Terms of Reference

## Workgroup Terms of Reference

1.Implementation

2.Review and support the legal text drafting;

3.Ensure the appropriate Industry experts or stakeholders are engaged in the Workgroup to ensure that all potentially affected stakeholders have the opportunity to be represented in the Workgroup

4.The cross Code impacts this Modification has, in particular the CUSC

**5.[Any additional ToR to be determined by Panel]**

# CM080– the asks of Panel

- **AGREE** that this Modification should follow Standard Governance (Ofgem decision) rather than the Self-Governance Criteria (Panel decision)
- **AGREE** that this Modification should proceed to Workgroup
- **AGREE** Workgroup Terms of Reference
- **NOTE** the proposed timeline



PM0121 STCP16-1 Bay Reservation  
Amendment

# Governance & Panel Vote

## Governance Rule

As detailed in Section B of the STC, paragraph 7.3.2.3 *'the amendment or addition does not impose new obligations or liabilities or restrictions of a material nature on Relevant Parties which are not subsidiary to the rights and obligations of the Relevant Parties under the Code'* as this STCP proposes a new obligation on the ESO, this will require approval from Ofgem that this STCP proposal can be raised, stated in 7.3.4 *'The Relevant Party Representatives may agree an amendment to an existing Code Procedure or creation of a new Code Procedure under this paragraph 7.3 despite the prohibition in sub-paragraph 7.3.2.3 only where the Authority has notified the Relevant Party Representatives in writing that they may do so.'*

## Modification Route

Section B 7.3 states amendments for a STCP need approval from the STC Modification Panel. The Proposer recommends that this final proposal should now be approved and implemented on **14 March 2022**.

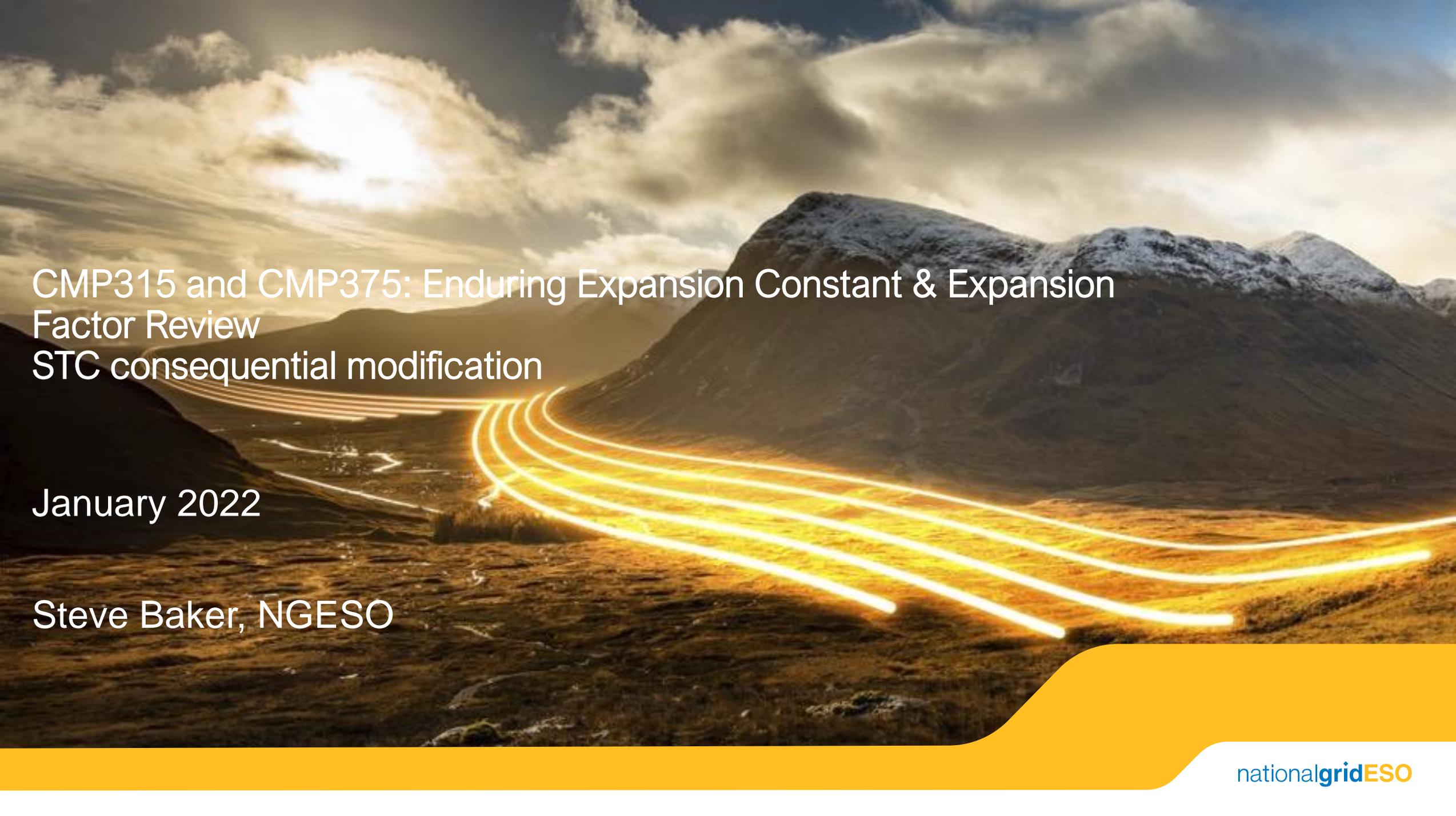
## Panel vote

The STC Panel must approve that the change would better facilitate the STC Applicable Objectives.

# Draft modifications to be discussed

- ***CMP315 and CMP375: Enduring Expansion Constant & Expansion Factor Review***
- ***Distributed Re-Start***

**DRAFT**



CMP315 and CMP375: Enduring Expansion Constant & Expansion  
Factor Review  
STC consequential modification

January 2022

Steve Baker, NGENSO

# CMP375- background

## What is the issue?

- As approved under CMP353, the CUSC currently specifies that the Expansion Constant (EC) and associated generic onshore Expansion Factors (EF) are fixed at the value used in 2020/21 plus relevant inflation for each following year
- Without establishing and implementing an enduring solution for the calculation of the EC and EFs there is a risk that the charging methodology will not appropriately reflect the incremental costs of the system to Users
- CMP375 seeks to amend the calculation of the Expansion Constant & Expansion Factors to better reflect the growth of and investment in the National Electricity Transmission System (NETS)
- This proposal will have a high potential impact on all Users who pay TNUoS charges, ESO and Onshore and Offshore Transmission Owners

## How is the modification being managed?

- CMP375 is being progressed as a Standard Governance modification with assessment by a Workgroup (which is ongoing)
- The Proposer (ESO) recommends that CMP375 is progressed jointly with CMP315 'TNUoS: Review of the expansion constant and the elements of the transmission system charged for'
- Consequential changes to the STC are likely to be required to facilitate these proposals

# STC requirements to align with CMP315 and CMP375

- Amending the calculation of the Expansion Constant & Expansion Factors to better reflect the growth of and investment in the National Electricity Transmission System (NETS) will impact the STC
- The STC itself doesn't define or otherwise mention TNUoS or the Expansion Constant but STCP14-1 feeds into this via the provision of data
- If the EC & EF methodology calculation changes then so may the data required

## STC Impacted areas

- STCP 14-1
- There may be other sections or STCPs impacted which are yet to be identified
- Changes are likely to be relatively minor but would be expected to be presented to Ofgem as a package with the CUSC changes

## Proposed timeline

CUSC

- 12<sup>th</sup> Jan '22 Work Group
- Late Feb/ Mar '22 Work Group consultation
- May '22 Vote
- April 2023 Implementation date (need data from TO's before going live Oct '22 – Jan '23?)

STC

- Jan 26<sup>th</sup> '22 Raise issue at STC Panel
- Feb '22 create draft modification
- Develop in tandem with CUSC modification- may be adjusted depending on CUSC progress
- April 2023- Implementation date simultaneous with CUSC

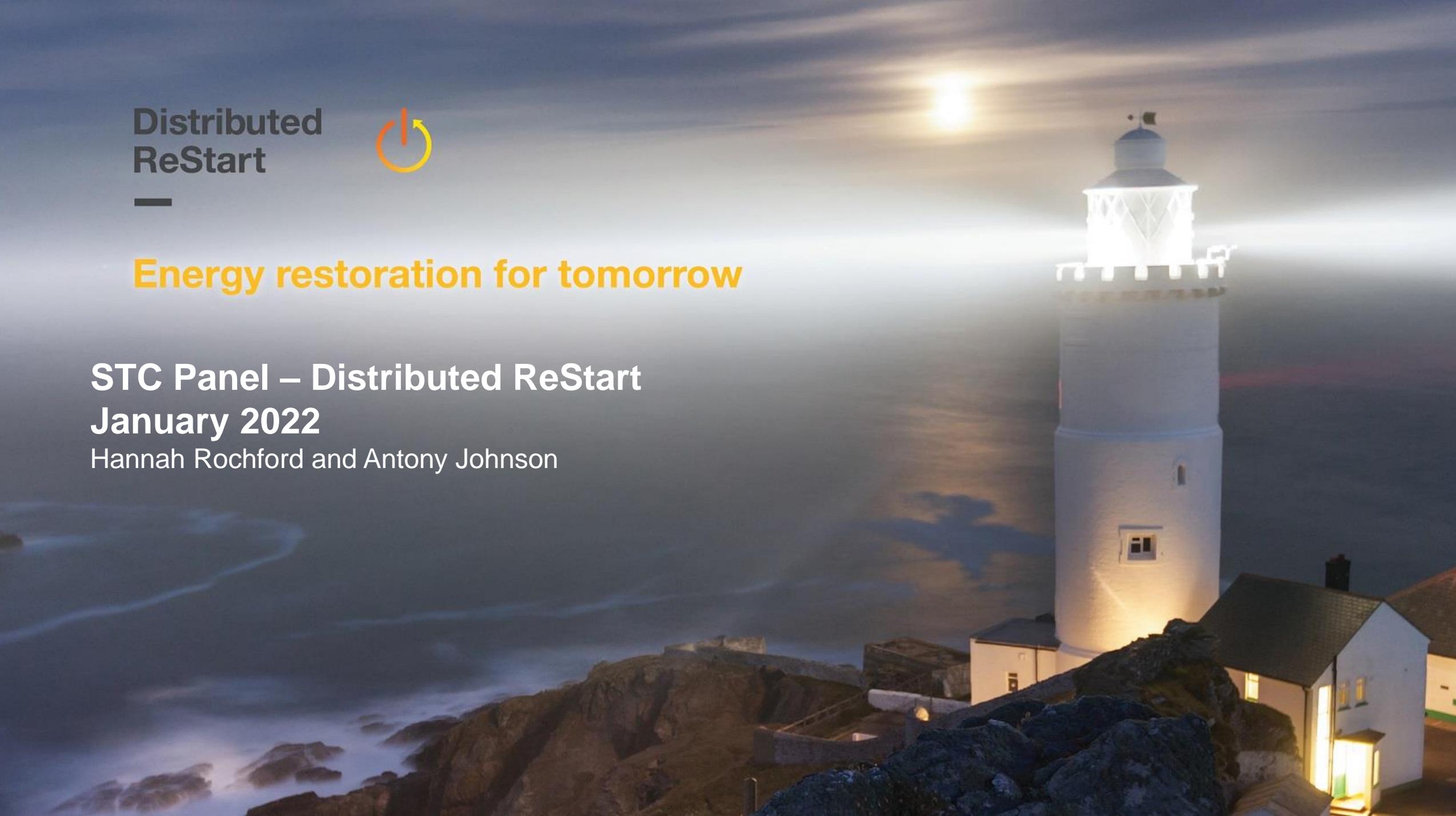
**Distributed  
ReStart**



**Energy restoration for tomorrow**

**STC Panel – Distributed ReStart  
January 2022**

Hannah Rochford and Antony Johnson



# Why Distributed ReStart?



A 'Bottom up' approach for Black Start restoration from Distribution to Transmission using Distributed Energy Resources will:

- Reduce cost to consumers by introducing competition
- Decrease carbon footprint
- Future proof our networks
- Accelerate regional restoration timescales

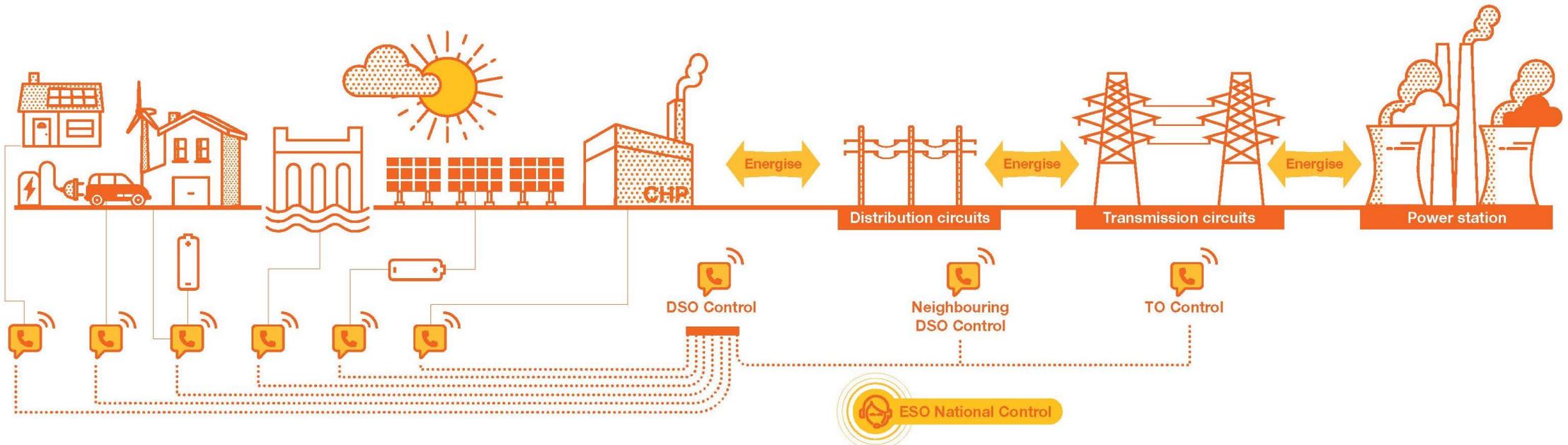
**energy.**

with **renewable**

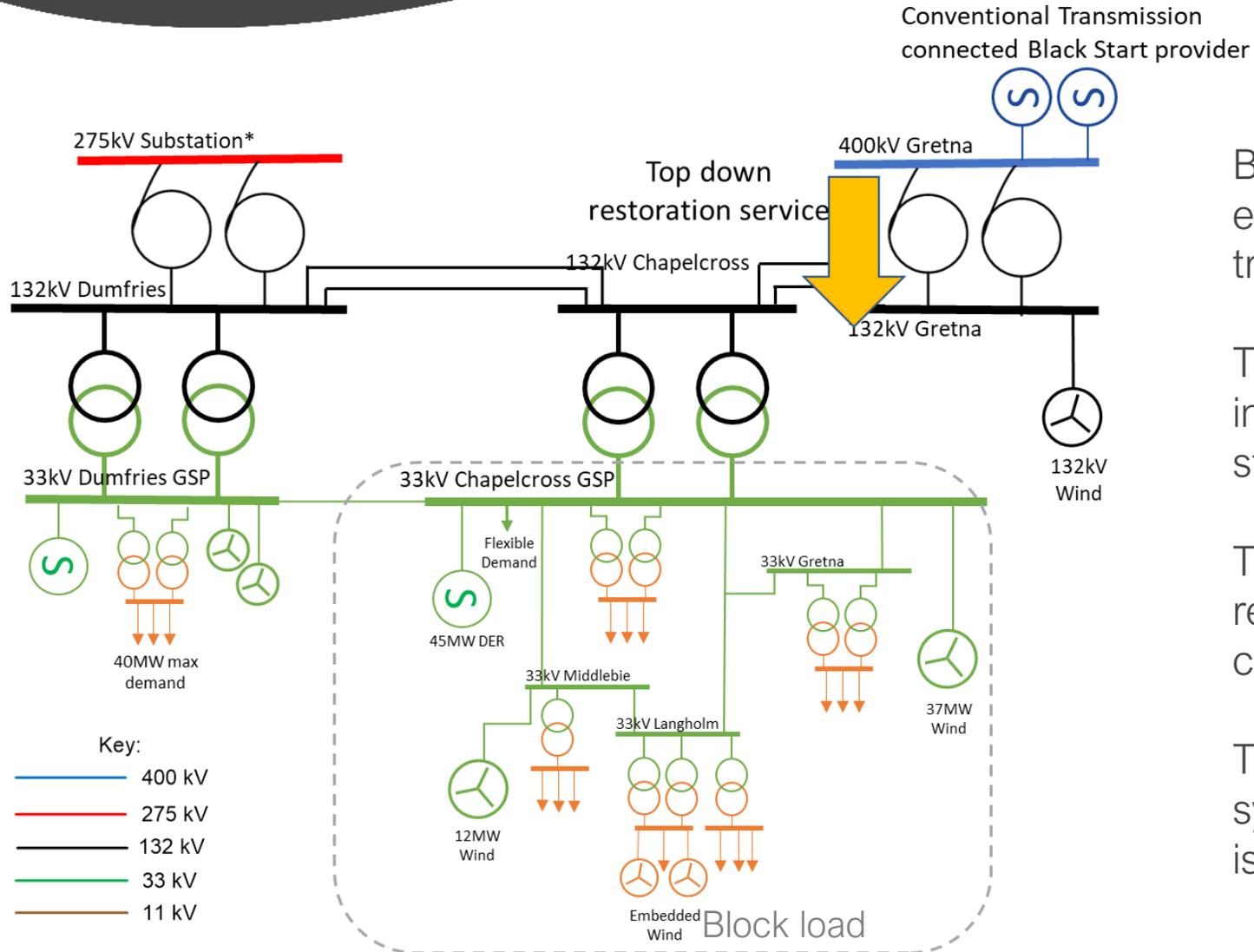
to prove **it's possible**

approach to **black start,**

This project uses a **bottom up**



# Traditional Restoration Procedure



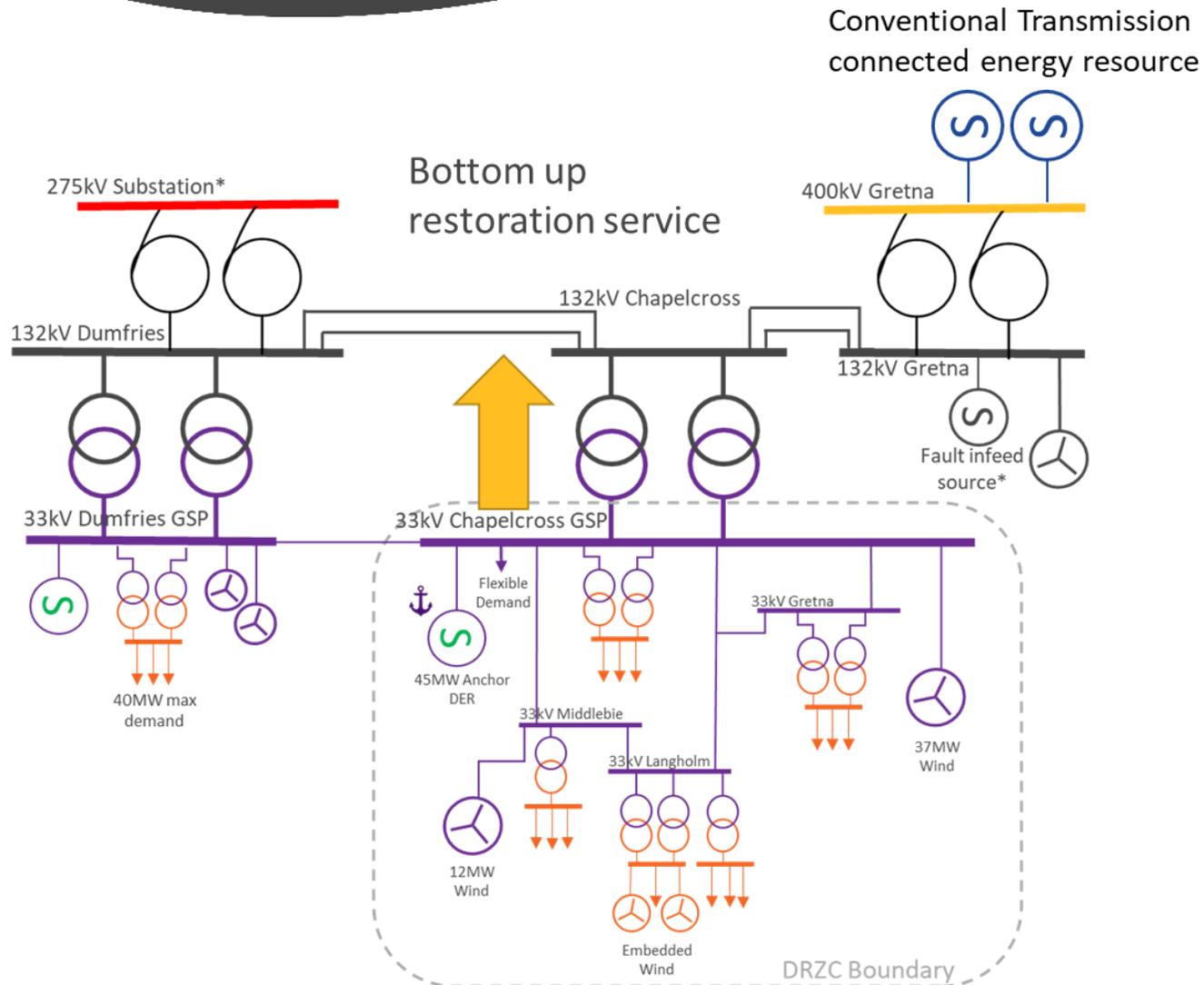
Black Start providers will start without external power supplies and energise the transmission network

The distribution networks will be energised in pre-segregated blocks of demand to stabilise the Black Start provider

The transmission network will be grown to restore supplies to other transmission connected energy resources

This process is repeated until the power system is restored with multiple power islands being grown in parallel across GB

# Distributed Restart Procedure



A distribution connected energy resource (Anchor DER) will start without external energy supplies

This will be used to energise other distribution connected energy resources which will collectively be used to energise the transmission system and restore local demands

The collective capability of the demand and DERs will be used to provide outward transmission energisation and restore supplies to transmission connected energy resources

This process is repeated until the power system is restored with multiple power islands being grown in parallel across GB

# Traditional Procurement vs Distributed ReStart Procurement Design



## Conventional Black Start Large provider

- Self starting
- Energise NETS
- Block load capability

## Black Start Enhanced restoration Large provider

- Self starting
- Energise NETS
- Block load capability

## Black Start Embedded Large Distribution Embedded provider

- Self starting
- Energise NETS
- Block load capability  
(potentially lower MW block capability)

## Trip to House Load (Readiness provision) Large provider

- Self starting
- Energise NETS
- Block load capability

## Interconnectors Full Service

- Self starting
- Energise NETS
- Block load capability

## Interconnectors Fast Start

- Self starting
- Energise NETS
- Block load capability

No discrimination on technology just capability, new services are procured through a tendered process but legacy sites have been bilaterally contracted

## Distributed ReStart Procurement Design

Buy

Buy individually, all together, or combination

Power Island Growth

Anchor generator

Energy MWh

Fast MW

Fast MVAR

Inertia

Fault Infeed

Reactive Capability

# Black Start from DER Organisation – ‘Central Model’

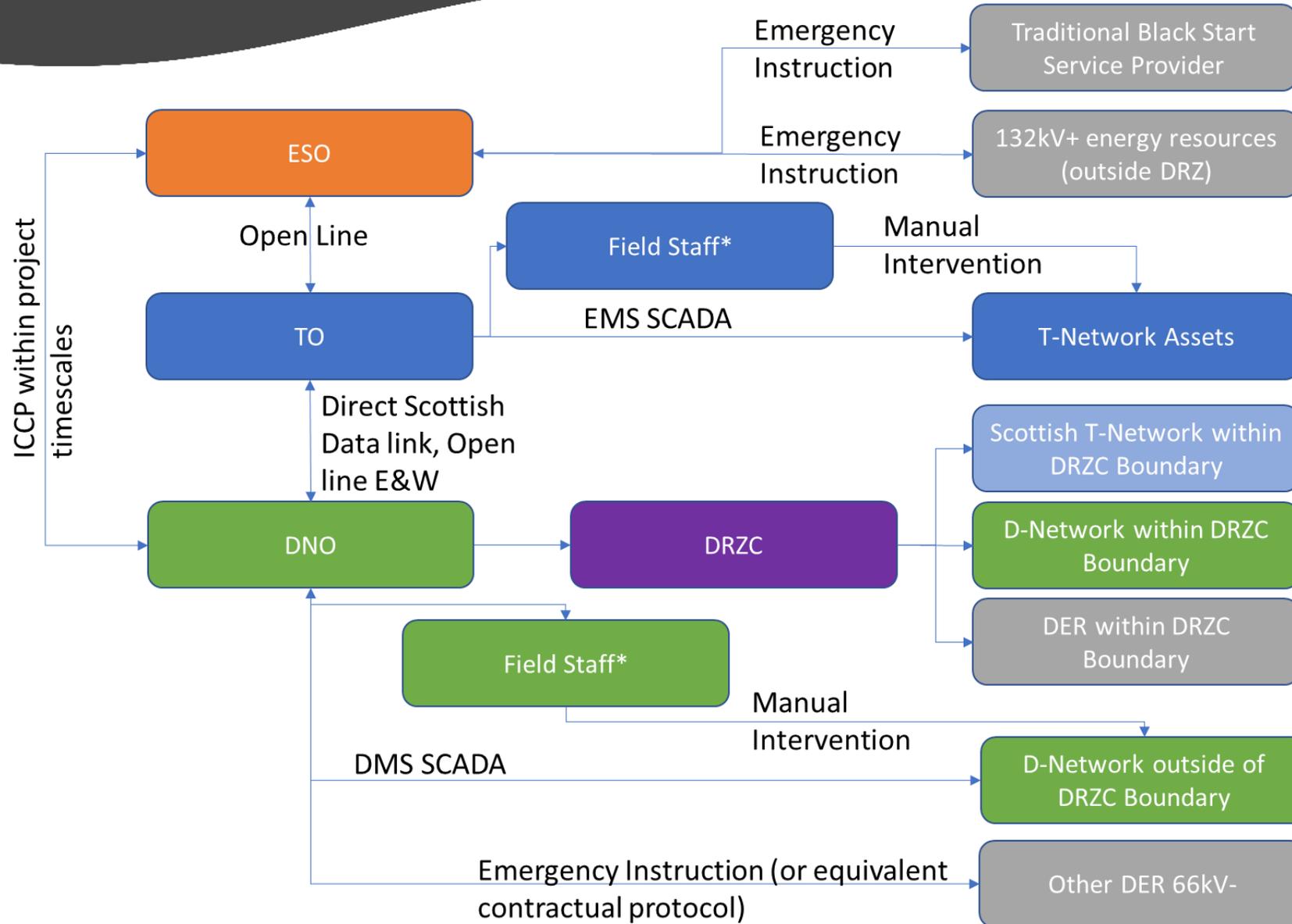


ESO & DNOs work cooperatively with a minimum viable DRZ Controller & DNO Scada automation

- ESO coordinates nationally / regionally, DNOs coordinate locally

	Frequency Leader	Strategic controller	Key Systems
	NGESO	NGESO	EMS control
	DNO	NGESO	DMS control*, points mapped on EMS, DRZC virtual power plant
	DNO via DRZC	DNO after ESO instruction to start a DRZ	DMS and DRZC islanded operation

# 'Central Model' - Control & Communications





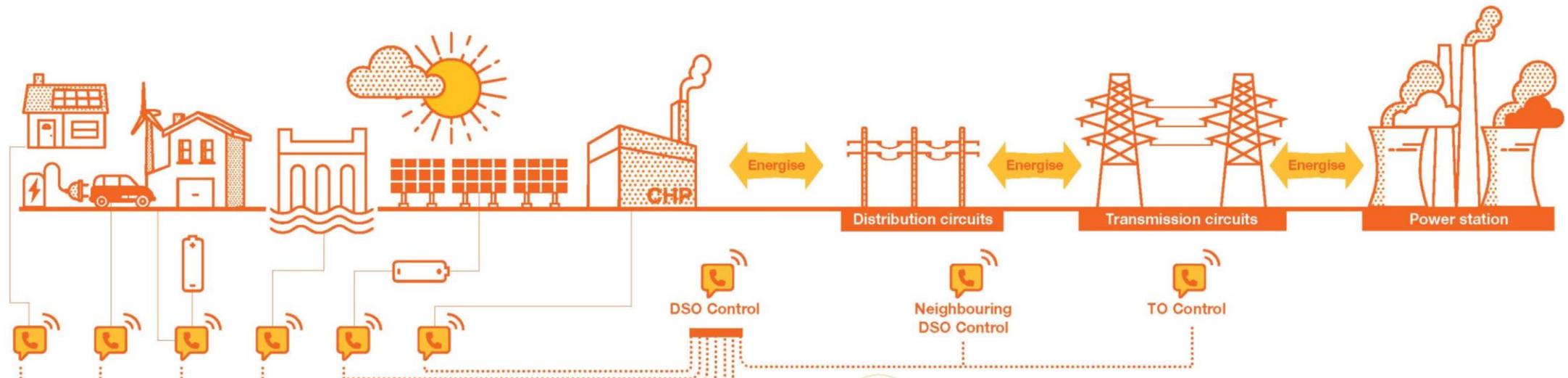
## Restoration Stages

- **Stage 1: Network Preparation and Initialisation** – Reconfigure network, change protection, confirm readiness to DER
  - **Stage 2: Anchor generator start up and initial network energisation** – Energise skeleton network, instruct and supervise anchor self-start
  - **Stage 3: Power island expansion** – Block Loading, energise and dispatch supporting DER, maintain all DER within limits
  - **Stage 4: Maintaining a stable power island** – Maintain frequency and stability awaiting further expansion
  - **Stage 5: Transmission network energisation** – Manage DER to prepare for transient conditions on energisation of the T network
  - **Stage 6: Power island resynchronisation** – Co-ordinate anchor generator and DER to perform the synchronisation process
  - **Stage 7: DRZ termination** – Manage transition to recover to normal grid connected operation.
- 
- The restoration process will require a level of automation to overcome technical challenge and resource constraints.
  - The concept of a Distributed ReStart Zone Controller (DRZ Controller or DRZ-C) has been developed to describe the system(s) that will enable monitoring, control and coordination of a range of DER and network resources to provide Black Start services.

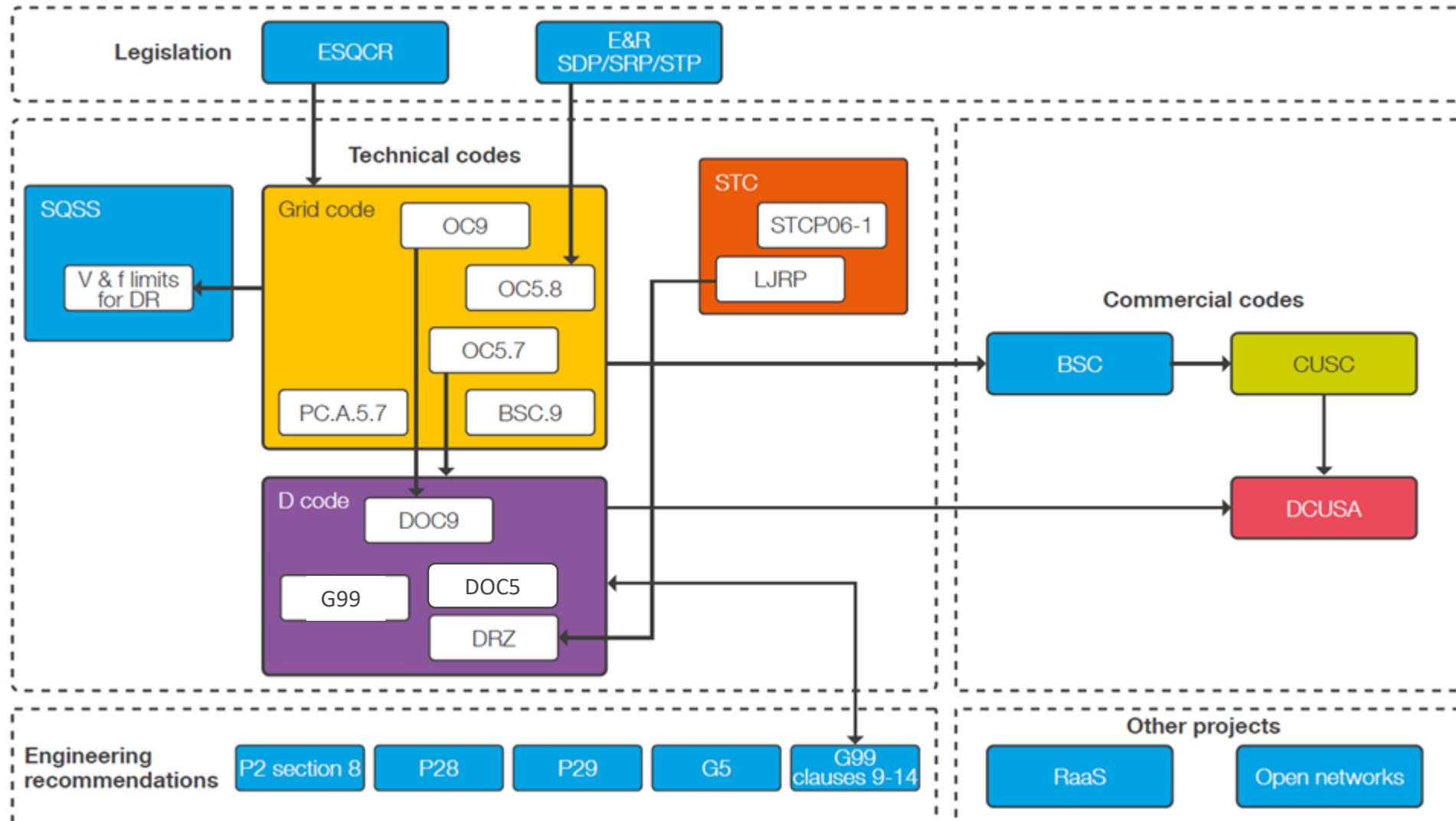
# What to look out for in final project year...



- Live Trials at 3 case studies will test our findings – October 2020 – Early 2022
- Functional specifications for controller published - 4<sup>th</sup> December 2020
- Functional specifications for resilient & cyber secure telecoms & control published - 11<sup>th</sup> December 2020
- Build & testing of a prototype controller – Summer / Autumn 2021
- Desktop Exercises used to refine industry organisational processes – Spring 2021
- Trial Procurement event – Summer 2021
- Industry code drafting will be progressed through industry working groups
- Roadmap for implementation in BAU – Winter 2020 onwards



# Detailed Code Interdependencies Map





- Grid Code drafting started in late 2020 with Distribution Code drafting in early 2021
- The Grid Code and D Code drafting reflects the processes outlined above and the project team have been fully involved at each stage of its development to ensure consistency
- The Grid Code and D Code drafting recognises the wider Black Start Strategy of re-energising the System and re-establishing Demand as soon as possible. This would be achieved through a combined “Top Down” and “Bottom up” approach in parallel.
- **Top Down**
  - Instructions are issued by the ESO to Black Start Service Providers form Power Islands under a Local Joint Restoration Plan (LJRP).
- **Bottom Up**
  - Instructions are issued by the ESO to Network Operators to establish one or more Distribution Restoration Zones though Distribution Restoration Zone Plans (DZRP)
- The System is re-established by the connection of Power Islands, in which each individual Power Island could have been established through either an LJRP or DRZP.
- The wider System Restoration Strategy work (which includes changing the term “Black Start” to “System Restoration”) is out of scope of this work

# Grid Code and Distribution Code Updates



- As part of the Grid Code update process to implement Distributed Re-Start, the following sections of the Grid Code and Distribution Code will be updated
- This process is currently being progressed through Grid Code modification GC0148

Grid Code	Distribution Code
Glossary and Definitions	Glossary and Definitions
Planning Code	
Connection Conditions	
European Connection Conditions	
Operating Code 5	DOC 5 – Testing and Monitoring
Operating Code 9	DOC 9 – Contingency Planning
Balancing Code 2	
Data Registration Code	Distribution Data Registration Code
General Conditions	
	G99



- As part of this process some changes will be required to the STC and STCP's most of which are consequential
- These are minor as most of the changes apply to “Users” through the Grid Code and Distribution Code.
- STC Changes
  - Section C (Transmission Services and Operations)
  - Section J (Interpretation and Definitions)
  - Schedule 3 (Information and Data Exchange Specification)
- STCP Changes
  - STCP 06-1 (Black Start)
  - STCP 08-3 (Operational Tests and System Tests)
  - STCP 18-1 (Connection and Modification Application)
  - STCP 19-3 (Operational Notification and Compliance Testing)



- **The structure and main amendments of the Grid Code and Distribution Code are well developed and being progressed through GC0148**
- **Some detailed comments have been received through GC0148 especially from Northern Power Grid which require assessment**
  - **The STC and STCP updates are largely consequential and follow the Grid Code and Distribution Code drafting amendments**
  - **We propose to give a high level overview of the changes to the STC Panel**
  - **Then formally submit the changes to the STC Panel once there is greater certainty to the Grid Code and Distribution Code changes**

# Potential Future Modifications and impacts of other modifications

**Modifications Tracker – Jennifer Groome**

**European Network Code Impacts – Rob Wilson**

**Authority Update (SCRs/Energy Code Review) – Jonathan Coe**

# Reports from Sub-Committees

**Joint Planning Committee (JPC) – Nicola Bruce**

- **Next meeting: TBC**

**Network Access Policy Workgroup (NAP) – TBC**

- **Next meeting: TBC**

**Transmission Charging Review Group (TCRG) – Richard Woodward**

- **Next meeting: TBC**



# Code Administrator Update

**No Update**

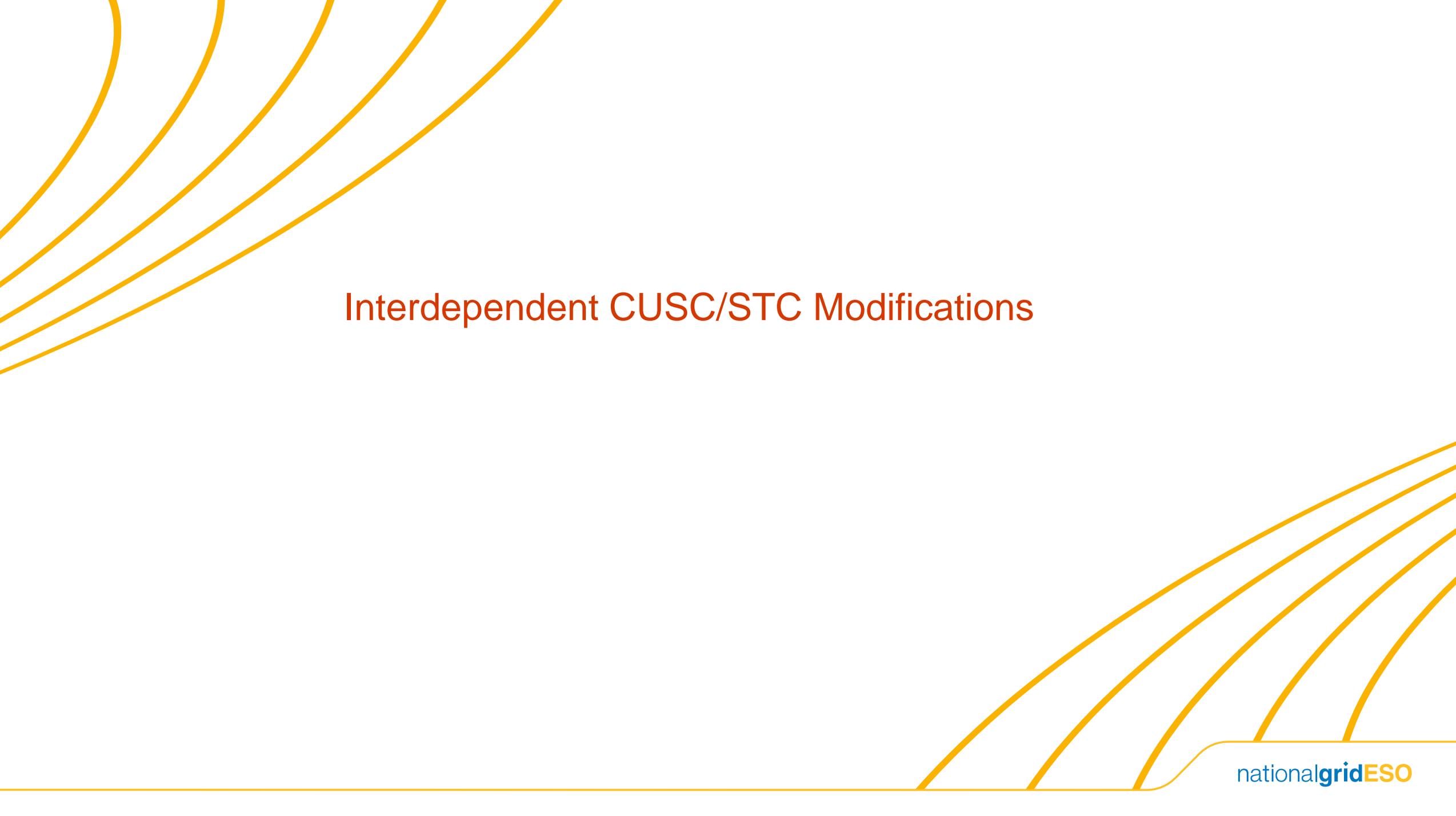
# AOB

- **Cross Code Working**
- **STC & CUSC Modifications January 2022**
- **Ofgem decision to grant PeakGen TO licence and next steps**



STC Panel

STC/ CUSC Mods January 2022



## Interdependent CUSC/STC Modifications

# Interdependent CUSC and STC modifications (1)

There are a number of active CUSC mods which will have significant STC(P) impacts;

- **CMP286/7** - Improving TNUoS Predictability through Increased Notice of the Target Revenue (CMP286) and Inputs (CMP287) used in the TNUoS Tariff Setting Process.
  - Early stages of development by a Workgroup (pre workgroup consultation).
  - Looking to fix TNUoS tariffs earlier than the current 3 months notice.
  - Will change data provision requirements between TO and NGENSO and potentially fix TO's revenue recovery.
- **CMP298** - Updating the Statement of Works process to facilitate aggregated assessment of relevant and collectively relevant embedded generation.
  - Workgroup development complete and so expected to proceed to CAC this month.
  - Make enhancements to Statement of Works process and implement Transmission Impact Assessment (AKA 'Appendix G').
  - Will create new data exchanges and changes to the connections process.
  - Being raised as STC modification **CM080**
- **CMP315/375** – Enduring Expansion Constant & Expansion Factor Review.
  - Under Workgroup development (pre workgroup consultation).
  - Change the TNUoS methodology, specifically how the 'Expansion Constant' and 'Expansion Factor'.
  - Will change the data items (and possibly frequency which) TOs need to provide as part of charge setting.

## Interdependent CUSC and STC modifications (2)

- **CMP328** - Connections Triggering Distribution Impact Assessment.
  - Development complete and with Ofgem for a decision (no ETA).
  - Will create a new process whereby ESO applies to DNOs to determine impact on the DNO's system.
  - Will require change to connections process so TO works are updated to account for DNO works.
  - Being raised as STC modification **CM078** and STCP modification **PM120**
- **CMP330/374** - Allowing new Transmission Connected parties to build Connection Assets greater than 2km in length & **CMP374: Extending contestability for Transmission Connections**
  - Under Workgroup development (pre workgroup consultation).
  - Will expand the scope of works that can be done contestably by connectees
  - Will require changes to connections process and creation of new contracts to be used by TOs (i.e. an a adoption agreement)
  - Being raised as STC modification **CM079**
- **CMP376** - Inclusion of Queue Management process within the CUSC
  - Under Workgroup development (pre workgroup consultation).
  - Will incorporate the ENA Queue Management policy in to the transmission connection process
  - Will require changes to connections process and T&Cs

STC(P) modifications for these changes either raised or in the process of being raised.

# Lessons Learned & Proposals for Way Forward

Suggestion for how we work across STC and CUSC better to improve cross-code development:

- **Identify need (or not) for STC(P) at early point in the CUSC modification**
  - If required highlight in Terms Of Reference of CUSC Proposal
  - Decide best time to raise STC mod e.g. once CUSC is taking shape
- **Once need is identified for STC(P) follow-on Modification, raise Proposal**
  - Raise necessary STC as soon as practicable when have view of CUSC format
  - Align with timeline for CUSC mod
- **Consider running a combined CUSC and STC(P) Work Group**
  - **Where appropriate**, combined WG may be more efficient use of time
- **Always look to complete modifications simultaneously**
  - Increases likelihood for efficient submission and decision-making

Comments and suggestions welcome...

# Date of next meeting

**Wednesday 23 February 2022**

**Panel Papers Day – 15 February 2022**

**Modification Submission date – 08 February 2022**

Close

