

# Transmission Charging Methodologies Forum & CUSC Issues Steering Group

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08 August 2018

# Welcome

**Rachel Tullis, National Grid ESO**

# Housekeeping

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- Fire alarms
- Facilities
- Red Lanyards



# Actions

TCMF Mon	Request	Agenda Item	Action	Owner	Notes	Target Date	Status
Dec-17	PB	AOB	Make enquiries re missing website content specifically in relation to previous mods (TCMF members asked to advise when they come across any additional missing content)	RT	We are planning to get get all archived modifications available on the website, however this will take some time due to the volume of material. Proposal forms, Workgroup reports, FMRs and decision letters will be uploaded. In the meantime any specific requests can be sent to the <a href="mailto:cusc.team@nationalgrid.com">cusc.team@nationalgrid.com</a> .	Oct-18	On-going
Jul-18	-	CUSC Modification Update	It was requested by an attendee that a very brief decription of each modification is added to the slide showing upcoming modifications to authority	JH	Abbreviations of code modifications will be used on slides.	Aug-18	Complete
Jul-18	-	Charging Futures update	An attendee asked when the TCR consultation will come out.	BV	Ofgem has advised this will be towards the end of the year. No exact date has been given.	Aug-18	Complete
Jul-18	GG	Charging Futures update	GG asked whether a transcript could be made available for the podcast series which is being hosted by NG about key themes on Ofgem's A&FLC consultation	BV	There will not be a transcript but the podcasts will be available from the Charging Futures website and apple podcasts.	Aug-18	Complete

# Today's TCMF

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CUSC Modifications Update

Loss of Mains Protection Update

Responses to Open Letter on the Five-Year View  
of TNUoS

Compliance with 838/2010

Ofgem Updates

Ofgem's Access and Forward Looking Charges Consultation

AOB

# TCMF CUSC Modifications Update

Joseph Henry, Code Admin

## New Modifications

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- **CMP303** - Improving local circuit charge cost-reflectivity (EDF Energy)
- CMP303 looks to make part of the TNUoS charge more cost-reflective through removal of additional costs from local circuit expansion factors that are incurred beyond the connected, or to-be-connected, generation developers' needs
- Panel decided Modification would go to a workgroup
- Code Administrator will source members

## Upcoming Working Groups

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- **CMP280/281 – w/c 27 August 2018**  
*Removal of Demand Residual TNUoS and BSUoS on Imports for Generators*
- **CMP286/287 – 17 August 2018**  
*Improving TNUoS Predictability*
- **CMP288/289 – 6 August 2018**  
*Delays and Backfeeds*



## Upcoming Modifications to Authority

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- **CMP301 – w/c 6 August 2018**  
*HVDC Subsea Circuits*

## Workgroup Developments

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- **CMP280/281** – Workgroup held 26 July 2018. Progress made against original proposal and potential alternative. Next workgroup planned.
- **CMP286/287** – Workgroup held 31 July 2018, where RFI responses discussed. Further analysis ongoing. Next workgroup 17 August 2018.
- **CMP288/289** – Two workgroups held since last TCMF. Good progress made, with next due to be scheduled for September.
- **CMP291/295** – First workgroup to be held 12 July 2018. CUSC Panel agreed for modifications to be progressed with GC0117. Sourcing dates for next.

## Dashboard - CUSC

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New Modifications	In-flight Modifications	Modifications put out for consultation	Modifications on hold
1	19	2	3

Workgroups Held (July)	Authority Decisions	Workgroups Scheduled August
6	0	3-5

# Loss of Mains Protection Update

Graham Stein, National Grid

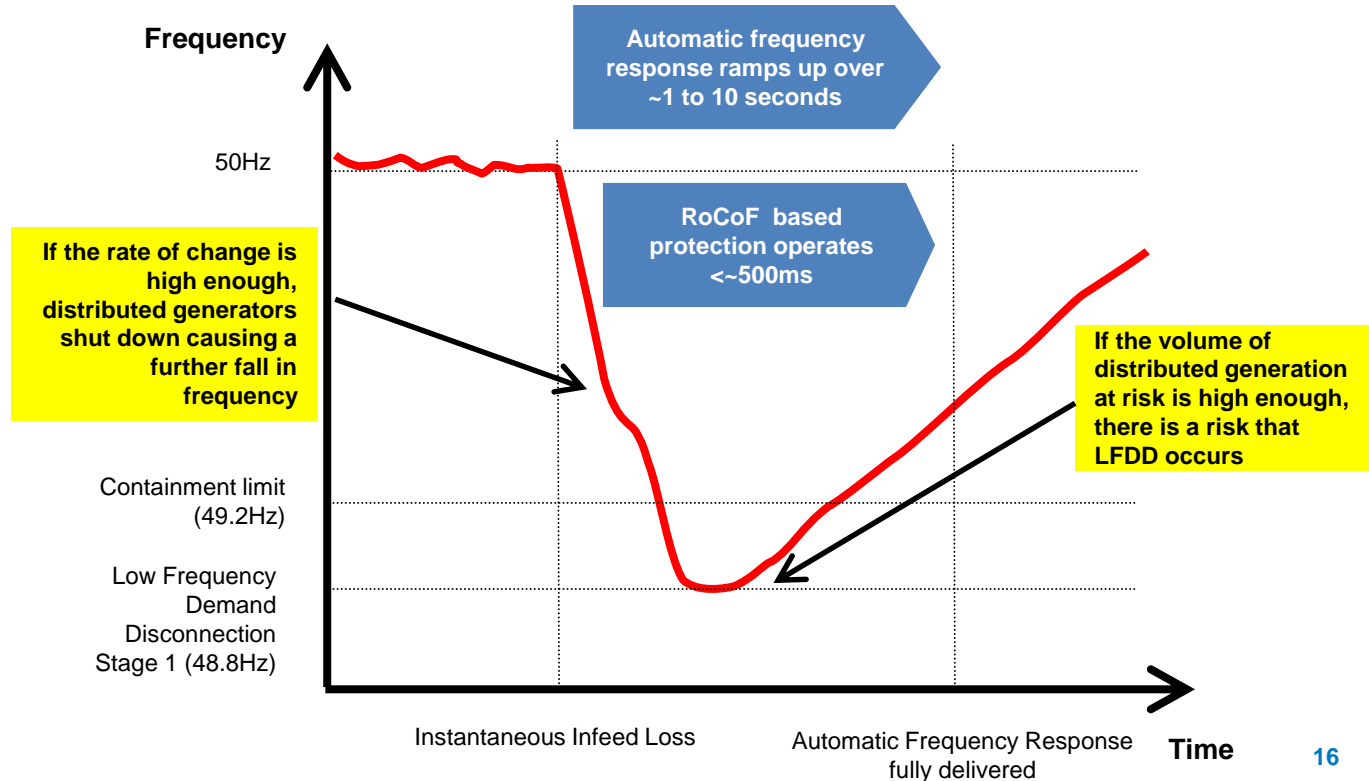
# Loss of Mains Protection



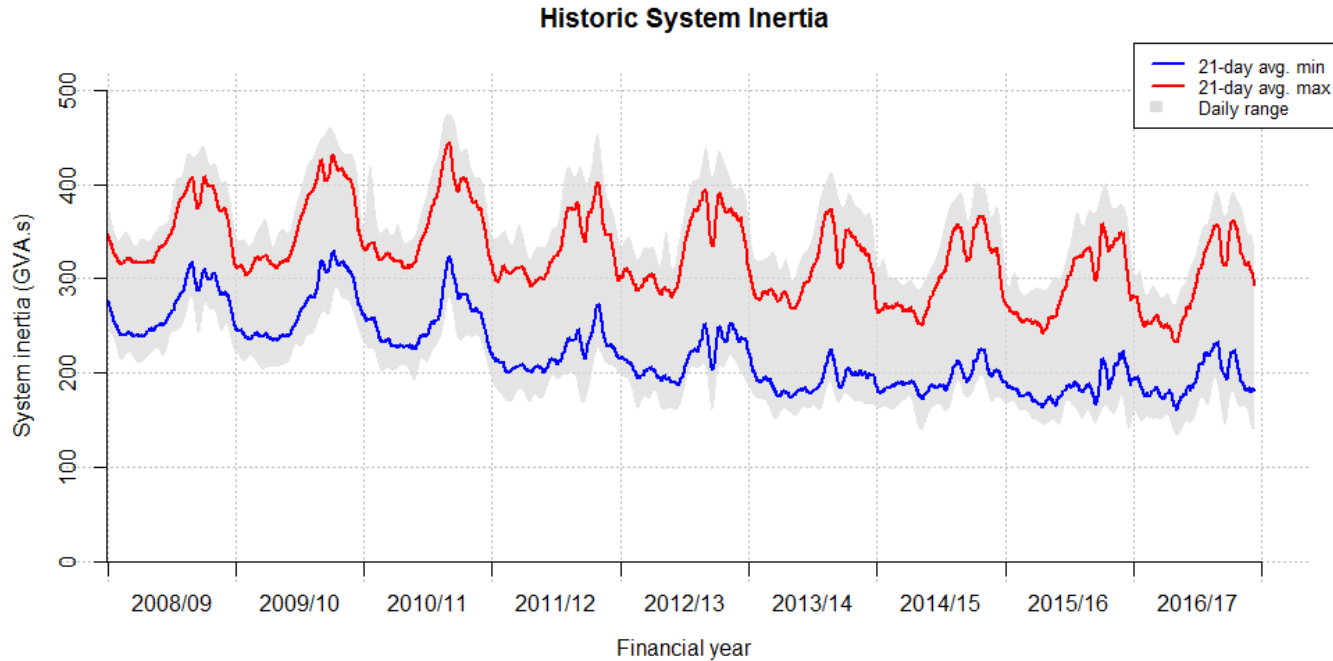
# Loss of Mains Protection



# Why It is an Issue

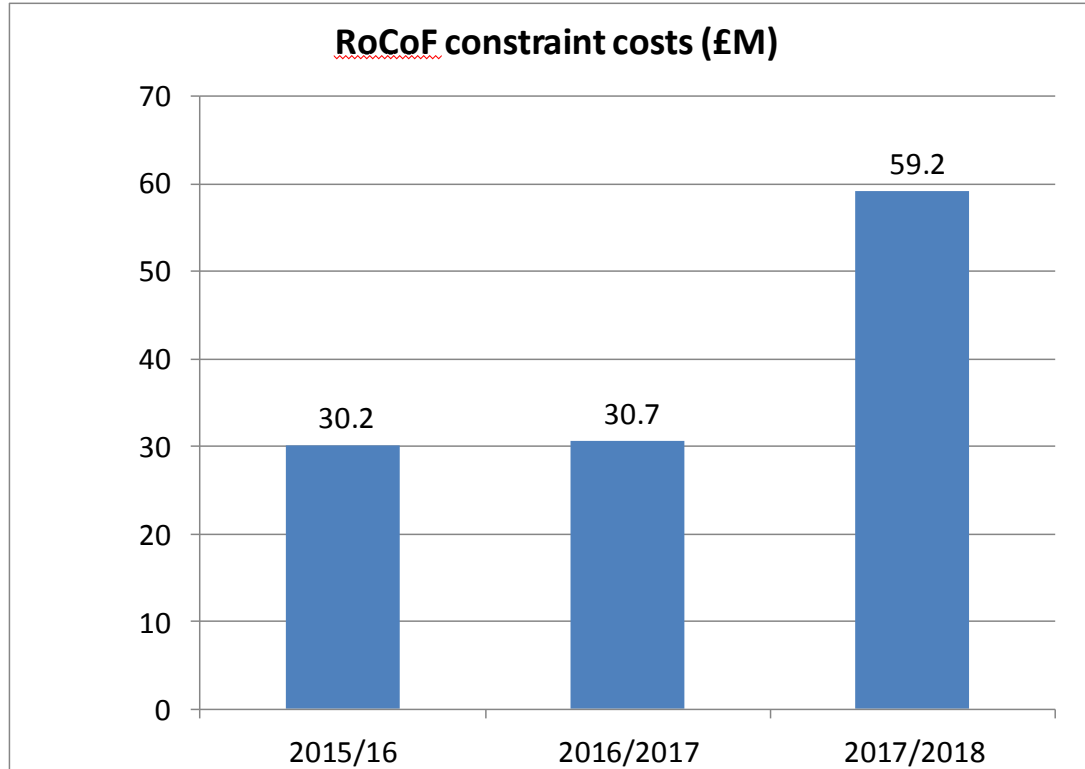


# System Inertia Trend





# Historic RoCoF Constraint Costs



- Steadily increasing trend
- 2018/19 year to date expenditure £38m

# Vector Shift Events

Date/ Time	Fault	Tx Demand Increase	National Solar Output
17/03/2016 12:27	Grain Bus Coupler 4	469MW	61%
20/03/2016 16:13	Grain- Kingsnorth 400kV circuit	200MW	17%
22/05/2016 11:15	Langage – Landulph 400kV circuit	380 MW	52%
07/06/2016 17:04	Cowley-Leighton Buzzard-Sundon 400kV circuit	145MW	28%
21/05/2017 18:20	Littlebrook 400kV Reserve Bar	200 MW	39%
08/06/2017 16:47	COTT – EASO – RYHA CCT energised from EASO4 only	241MW	22%
10/07/2017 14:19	Bramford – Sizewell 4 400kV circuit	300 MW	37%
17/07/2017 15:26	Kensal Green Reserve Bar	580MW DG Loss less 160MW demand loss	50%

# Distribution Code Changes

## GC0035

Applies at stations >5MW  
from August 2016

RoCoF to be set at  $1.0\text{Hz s}^{-1}$ ,  
0.5s definite time

Vector Shift unchanged

$0.5\text{Hz s}^{-1}$ , 0.5s allowed for  
synchronous commissioned  
prior to the change

## DC0079 (1)

Applies to generation  
connected under G59 from  
February 2018

RoCoF to be set at  $1.0\text{Hz s}^{-1}$ ,  
0.5s definite time for new  
non-type-tested generation at  
stations <5MW

Vector Shift banned for all  
new non-type-tested  
generation

## DC0079 (2)

Applies to both G59 and G83  
generation connecting from  
July 2018

RoCoF to be set at  $1.0\text{Hz s}^{-1}$ ,  
0.5s definite time for new  
type-tested generation at  
stations <5MW

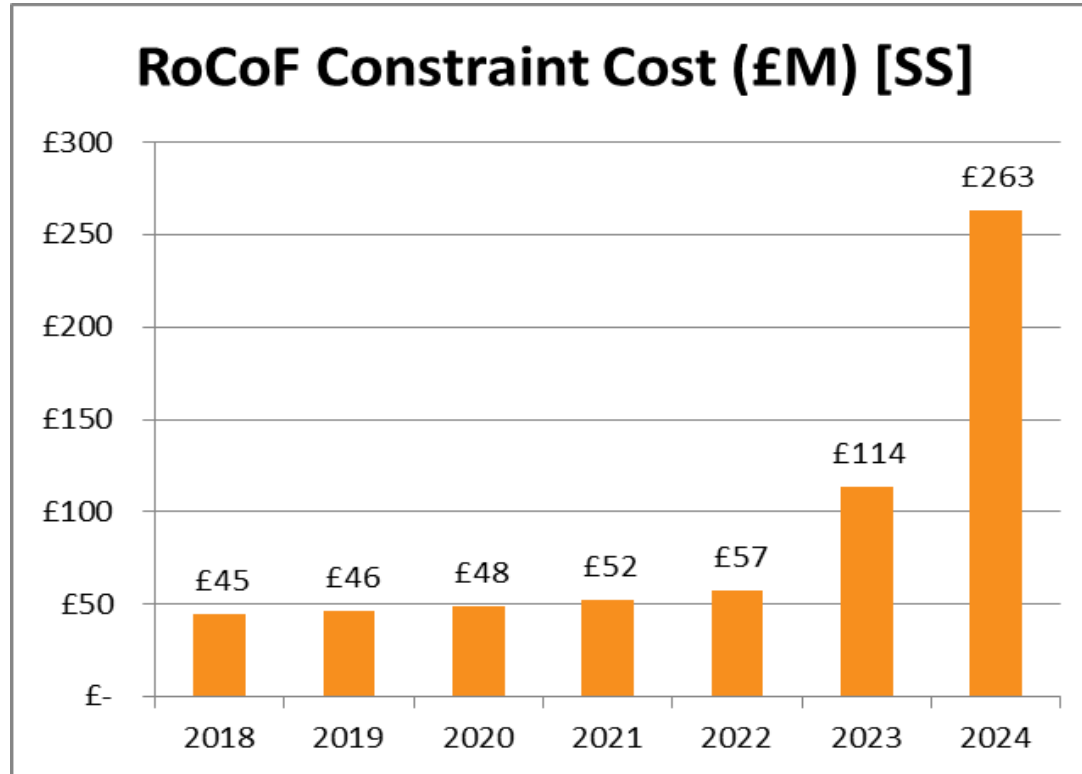
Vector Shift banned for all  
new type-tested generation

# Proposed Distribution Code Change

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- Final DC0079 consultation published on 13 July 2018
  - Responses requested by 17 August 2018
  - Available at <http://www.dcode.org.uk/consultations/open-consultations>
- What's in the consultation
  - Proposals to apply retrospectively to all non-type-tested **G59** generation
    - 1.0 Hzs<sup>-1</sup>, 0.5s definite time for RoCoF
    - to remove Vector Shift
  - Safety Risk Assessment
  - Cost Benefit Analysis
  - Outline Implementation Proposal

# RoCoF cost forecast



# Implementation Cost

	Nature Of Work	Low Estimate		WG Estimate		High Estimate	
		Number of Sites	Cost (£)	Number of Sites	Cost (£)	Number of Sites	Cost (£)
1	Synch - reset RoCoF	355	71,074	477	95,379	260	52,070
2	Synch replace RoCoF	19	144,019	477	3,672,080	2,343	18,042,324
3	Synch reset VS to RoCoF	1,049	209,849	977	195,469	878	175,564
4	Synch replace VS with RoCoF	117	897,685	977	7,525,549	7,900	60,832,857
5	Asynch reset RoCoF	2,585	516,930	2,927	585,401	559	111,730
6	Asynch remove RoCoF	136	27,207	2,927	585,401	5,028	1,005,568
7	Asynch reset VS to RoCoF	41,176	8,235,255	20,625	4,124,951	3,304	660,876
8	Asynch remove VS	4,575	915,028	20,625	4,124,951	29,739	5,947,886

Plant Category	No of Sites	Expected Cost £m	Low estimate £m	High estimate £m
$P_g > 5MW$	677	2.2	0.5	4.2
$1MW \leq P_g < 5MW$	1445	4.6	1	8.9
$P_g < 1MW$	47890	24.1	19.5	83.8
<b>Total</b>	<b>50012</b>	<b>30.9</b>	<b>21</b>	<b>96.9</b>

# Accelerated Vector Shift Change

- National Grid in collaboration with three DNOs initiated an accelerated VS change programme to mitigate the risk for summer 2018
- Programme implemented under Balancing Service framework

	VS change 2018	DC0079
Duration	Within a month before June	Multi-year
Target EG	800MW, 72 sites in specific area	More than 15GW and 50,000 sites nationally
Total cost	£350k	£31M
Benefit	Realised within year	Realised once the whole programme complete
Governance	Tactical exercise between licensees	Steering committee with stakeholder input

# Next Steps

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- There's an opportunity to express views in response to DC0079 at <http://www.dcode.org.uk/consultations/open-consultations>
- Further work will be required to define how the DC0079 proposals will be implemented
- Conclusion and relevant developments will be brought back to TCMF in the Autumn



# Five Year View of TNUoS Tariffs

## Update on our open letter

**Paul Wakeley, Revenue Manager**

# National Grid Revenue Team



**Paul Wakeley**

Forecasting, setting and billing TNUoS and Connection Charges to recover £3bn of TO Revenue per year from generators, demand, DNOs and suppliers

**Tom Selby**

**Alice Grayson**

**Andrew Havvas**

**Paul Hitchcock**

**Gillian O'Sullivan**

**Anthony Tichivangana**



**Jo Zhou**

**Jennie Groome**

**Jessica Rivalland**

**Liz Statham**

**Luke Craddock**

**TNUoS Tariff forecasting and setting**

**TNUoS Billing**

**Connection Charging**

# Context

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**Five Year View  
of TNUoS  
scheduled for  
2019/20 to 2023/24**

**Annual Obligation for  
NGESO to produce a paper**

**TCMF June 2018**

**Open Letter June/July 2018**

# Five Year View of TNUoS Tariffs

- We provided an updated to TCMF in June
- We published an open letter on 19 June seeking feedback on our proposed approach to sensitives in the five year forecast
- We received **9** responses from a cross section of the industry
- Thank you for taking the time to shape our report



# What we proposed in our open letter

## ■ Individual sensitives showing effect on tariffs:

### Residual

- Changes in error margin and other parameters in G/D split calculation
- Effect of change in demand volumes (HH, NHH and Embedded Export volumes)
- Effect of additional £m of Revenue

### Locational

- A shift from Conventional Carbon generation to more intermittent generation
- Effect of changes to DNO Demand Data

### RIIO-T2

- Qualitative analysis of impact of updating charging parameters at start of RIIO-T2

## Your feedback

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- **There was broad support for our proposals,**  
*but you wanted us to go further in some areas:*

- Further sensitives around the locational tariffs including varying the generation mix, or a greater move to decentralised generation
- Effect of changes to project driving large investments and with large local circuits – such as generation of Scottish Islands (Western Isles, Orkney and Shetland) and offshore.
- Ensure we make it clear what assumptions we have used in particular situations; with this in mind we will publish as much data as we can.

**We intend to include these in our 5 Year View**

# Your feedback

■ **There was broad support for our proposals,**  
*but you wanted us to go further in some areas:*

- Further analysis on the impact of proposed CUSC mods, Ofgem’s TCR and Access and Forward Looking Charges.
- Rezoning of generation zones for RIIO-T2
- Provide probability distribution / confidence to tariffs

Individual mods and work streams should do this. The complexity/ uncertainty is too great at this stage. See note about TDR

We are investigating this. It is a complex task. We hope to have more information in the Autumn

We are considering this for future improvements

**We can not take these forward in the Five Year View**

# What can you expect to see: Best View

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- “Best View” Indicative Tariffs for each year in full detail



**You said, make the assumptions clear:**

We will publish as much data as we are able. We are following the FES Scenarios in terms of growth of wind, reduction in coal and new build CCGT



# What you can expect to see: Sensitives

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## ■ Factors affecting the locational tariffs

- A shift from Conventional Carbon generation to more Intermittent generation.
- DNO demand data.
- Varying the generation mix, and increase embedded generation

## ■ Factors affecting the residual tariffs

- The G/D split calculation
- Changes in Chargeable Demand Volumes
- Changes in total allowed revenues

## ■ Effect of changes to projects driving large investments and with large local circuits – such as generation of Scottish Islands (Western Isles, Orkney and Shetland) and offshore.

## ■ Comment on the parameters that need to be updated at RIIO-T2.

## A note about the TDR: Who pays it today.

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- **The 19/20 Forecast Transmission Demand Residual (TDR) is: £2653m**
  - Demand to pay 86% of TNUoS = £2476m
  - Demand locational covers -£66.7m
  - Embedded Export Tariff pays out £110.9m
  - Demand Residual is  $2475.94 - (-66.7) + 110.9 = £2653m$
  
- **The TDR tariff is £2653m / 51.3 GW = 51.70 £/kW**
  
- **This is recovered from 18GW of GHH demand, and the rest from NHH**
- **Gross HH Demand pays  $18 \text{ GW} * 51.70 = £930m$  of the TDR**
- **NHH Demand pays  $£2653m - £930m = £1723m$  of the TDR**
- **HH pays  $18\text{GW}/51.3\text{GW} = 35\%$  of the TDR; NHH pays **65%** of the TDR**

Thank You

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# Compliance with 838/2010

Jon Wisdom, National Grid ESO

# Ofgem Updates

James Thomson, Ofgem



# Consultation on reforming access and forward looking charges

**Jon Wisdom, National Grid ESO**



# The work to date

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- > In November 2017, Ofgem **published a working paper** on “Reform of electricity network access and forward looking charges”.
- > Ofgem commissioned **Baringa to gather evidence** to assess the materiality of current inefficiencies.
- > **Two industry Task Forces were set up under the Charging Futures** to help assess the options for the change. The Task Forces published three outputs. Their final report identified the initial options for further consideration.
- > Ofgem published a consultation on 23 July 2018 proposing the way forwards

# Aim of the consultation

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- The energy system is going through a radical transformation.



- These changes could create challenges and opportunities for our electricity networks.
- Reform of electricity network access and forward looking charging arrangements is to enable electricity networks to be used more efficiently and flexibly so that users can have the access they need, and benefit from new technologies and services, whilst avoiding unnecessary costs.



# What are access rights & forward-looking charges?

## Network access rights

- **Users' network access rights and how these rights are allocated.**
- Network access rights define the nature of users' access to the networks e.g. how much they can import or export, when and for how long, where to/from, and how likely their access is to be interrupted and what happens if it is.

## Forward-looking charges

- The elements of network charges that **signal to users how their actions can either increase or decrease future network costs in different locations.**
- Includes connection charges and elements of use of system charges

## Residual charges ("scaling")

- Residual charges are 'top up' charges set to ensure that the network's efficient costs can be covered, after other charges have been levied.
- Residual charges are intended for revenue recovery, and are not meant to incentivise specific actions by network users.

# The case for change

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Baringa were commissioned to help assess the materiality of issues with the current arrangements. Their analysis identified three high priority areas:

- A** Managing constraints on the distribution network as a result of growth in demand (eg EVs and heat pumps)
- B** Managing constraints on the distribution network as a result of growth in distribution-connected generation
- C** An effective interface between transmission and distribution arrangements

# Ofgem views on the priority areas to be reformed

## Network access arrangements

Improving access choice and definition for larger users

Clarify access rights and choices for smaller users, including households

Improving the allocation of access rights, including enhancing the scope for markets

## Forward-looking charging arrangements

Comprehensive review of distribution use of system charges (DUoS)

Review of distribution connection charging boundary

Focused improvements to the transmission use of system charges (TNUoS)

# Focussed improvements to TNUoS

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The consultation proposes the following areas of TNUoS to be considered:

## Embedded Generation

- > Basis of TNUoS charging of distribution connected generation
  - > 'Should this be aligned with the charging of larger generators rather than negative demand'?

## Triad

- > The basis of TNUoS forward looking charge on demand. Could move away from Triad to:
  - > Fixed periods of time
  - > Charging based on agreed capacity

# Taking forward this review

- > The proposed review could be **Ofgem-led or system/network operator-led**. Ofgem are able to **launch a Significant Code Review** where they consider that Ofgem leadership is needed

## We consider that a Significant Code Review should cover the following areas

- > Clarifying rights and choices for smaller users;
- > Improving forward-looking charging arrangements.

## We are seeking views on who should lead

- > Improving the definition and choice of access for larger users.

## We consider that the SO and DNOs should lead

- > Improving allocation of access, including enhancing scope for markets.

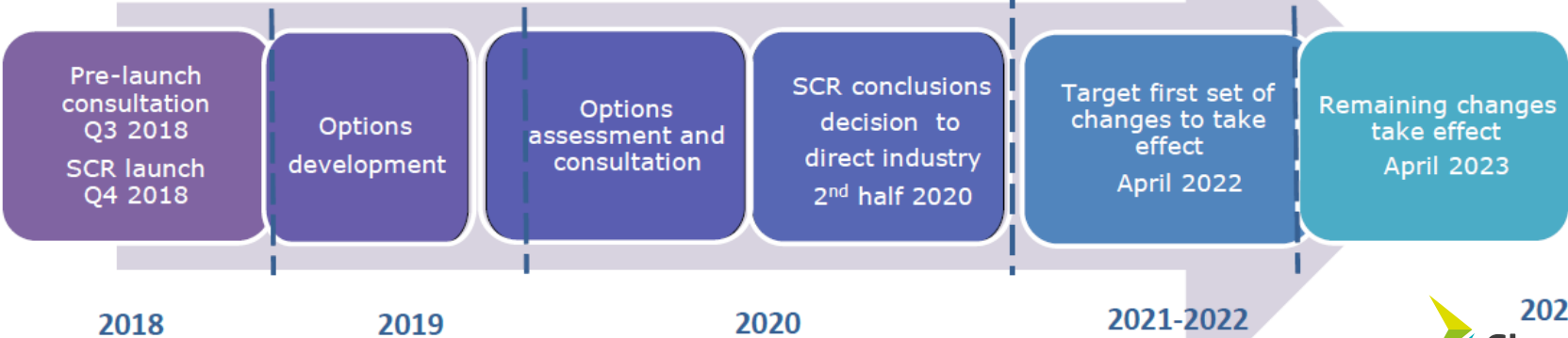
- > The **introduction of a licence condition on the SO and DNOs** is considered to provide assurance that they will lead their areas of the review in a timely way

# Timeline for change

## INDUSTRY-LED CHANGES OUTSIDE SCR

Some potential reforms could be progressed earlier.

## INDICATIVE SCR TIMELINE



## Next steps

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- > Ofgem are seeking views on our proposed scope of review and proposed way forward – **consultation closes 18 September 2018**
- > The consultation will be discussed at the next Charging Futures Forum on 5 September 2018 – **invites have been sent out**
- > More information can be found at [www.chargingfutures.com](http://www.chargingfutures.com) for:
  - > Summary notes
  - > Podcasts
  - > Recorded webinars
  - > Consultation document

**AOB**

**Rachel Tullis, National Grid ESO**



## Next meetings

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**September**

**12**

**Wednesday**

**October**

**10**

**Wednesday**

Will be an 10:30am start unless otherwise notified.

# We value your feedback and comments

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If you have any **questions** or would like to give us **feedback** or share **ideas**, please email us at:

[cusc.team@nationalgrid.com](mailto:cusc.team@nationalgrid.com)

Also, from time to time, we may ask you to participate in surveys to help us to improve our forum – *please look out for these requests*

Close

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