

CMP332: Workgroup #1

Monday 13th January 2020

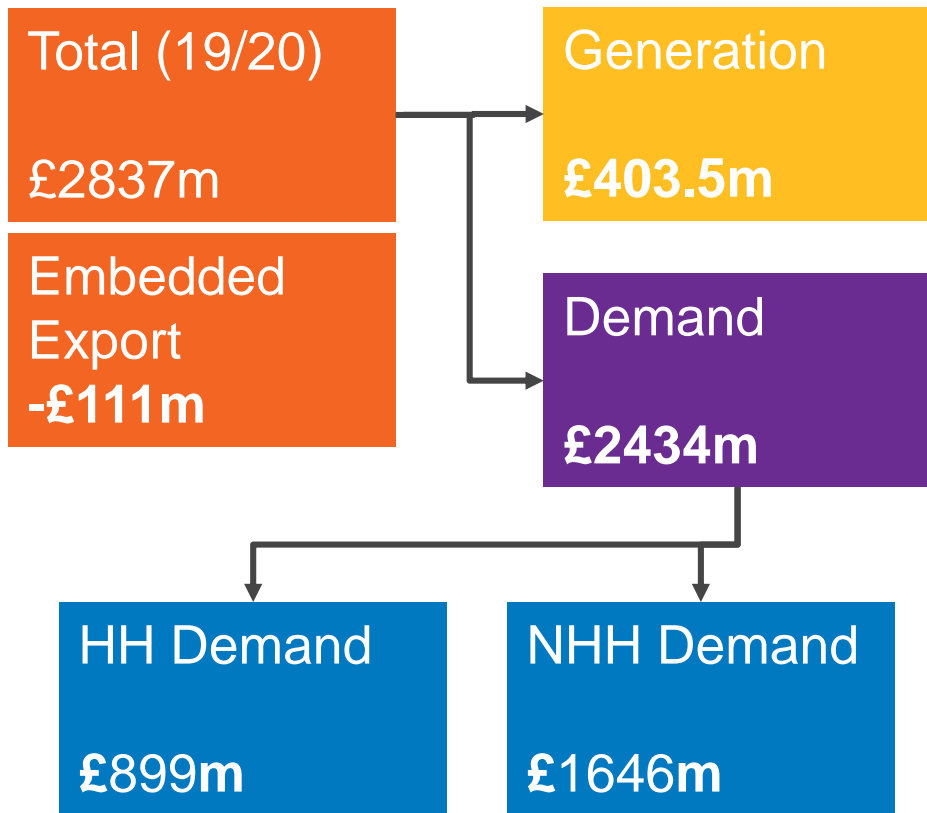
*V1.1 with corrections as of
16th January 2020*



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Demand TNUoS Today: How much do Demand users pay?



Demand TNUoS Today

- The majority of TNUoS revenue is recovered from Demand Users.
- There are two components to the Demand tariff: locational and residual.
- Most of the Demand TNUoS bill is recovered through the Transmission Demand Residual (TDR).
- The TDR is the focus of Ofgem's TCR decision, decisions on locational elements will be in A&FLC

Demand TNUoS Today: Tariff Calculation

Gross Half-Hourly (HH) Demand

Charged a £/kW tariff for average demand over the Triads

Non Half-Hourly (NHH) Demand

Charged a p/kWh tariff for consumption between 4pm and 7pm each day

Zone	Zone Name	HH Demand Tariff (£/kW)	NHH Demand Tariff (p/kWh)
1	Northern Scotland	20.971270	2.820450
2	Southern Scotland	30.755392	4.026035
3	Northern	41.026683	5.213833
4	North West	47.831581	6.202276
5	Yorkshire	48.039318	6.116328
6	N Wales & Mersey	49.345368	6.223760
7	East Midlands	51.439770	6.738557
8	Midlands	52.928066	6.977433
9	Eastern	53.788327	7.496688
10	South Wales	49.725642	5.873287
11	South East	56.110850	7.945653
12	London	59.175788	6.291396
13	Southern	57.338781	7.586023
14	South Western	55.686678	7.767486

Comment

- HH demand locational is calculated using the Transport Model, it is negative for some zones.
- The locational tariff is combined with the nationwide HH residual to create the HH tariffs.
- The NHH tariffs recover the remaining revenue after HH revenue is considered.

Stepping through Today's Tariff Setting Process

1)	TO MAR (£) – Generation TNUoS Value (£) + EET (£) = Total Amount to be recovered through Demand TNUoS
2)	Zonal locational HH Tariffs (£/kW) x Zonal Gross System Triad Demand (kW) = Expected Locational Revenue per Zone (£)
3)	Zonal locational HH Tariffs (£/kW) x Zonal HH Triad Demand (kW) = Actual Locational Revenue per Zone (£)
4)	$\frac{[\text{Demand TNUoS Value from 1}) - \text{Sum of 2) from all zones}]}{\sum_{Z=1}^{14} \text{Zonal gross system triad Demand (kW)}} = \text{£/kW value} = \text{HH nationwide TDR}$
5)	HH Zonal Final Tariff = Zonal locational HH Tariffs (£/kW) + 4) there is a different HH Final Tariff for each zone
6)	$\sum_{Z=1}^{14} \text{HH Zonal Final Tariff} \times \text{Zonal HH Triad Demand (kW)} = \text{Total Recovery from HH (£)}$
7)	$(\text{HH Zonal Final Tariff} \times \text{Zonal Gross System Triad Demand (kW)}) - (\text{HH Zonal Final Tariff} \times \text{Zonal HH Triad Demand (kW)})$ = Remaining Revenue per zone (NHH)
8)	Remaining Revenue per zone / NHH Chargeable Zonal MWh = NHH Zonal Tariff (p/kWh)

Zonal locational HH Tariffs (£/kW), produced by the T&T model as part of annual charge setting, those in the North of GB are negative

Zonal Gross System Triad Demand (kW), this includes both HH and NHH demand offtakes from the Transmission system per GSP group not net of embedded export

Zonal HH Triad Demand (kW), this an average of all the imports to HH metered sites over the three winter Triad periods

HH Zonal Final Tariff, as published in the ESO charging statement. These tariffs are floored at £0/kWh [CUSC 14.17.3]

NHH Chargeable Zonal MWh, as forecast by suppliers.

Summary of Demand TNUoS Today

Facts and Figures

14 HH Locational Tariffs (one per GSP group)

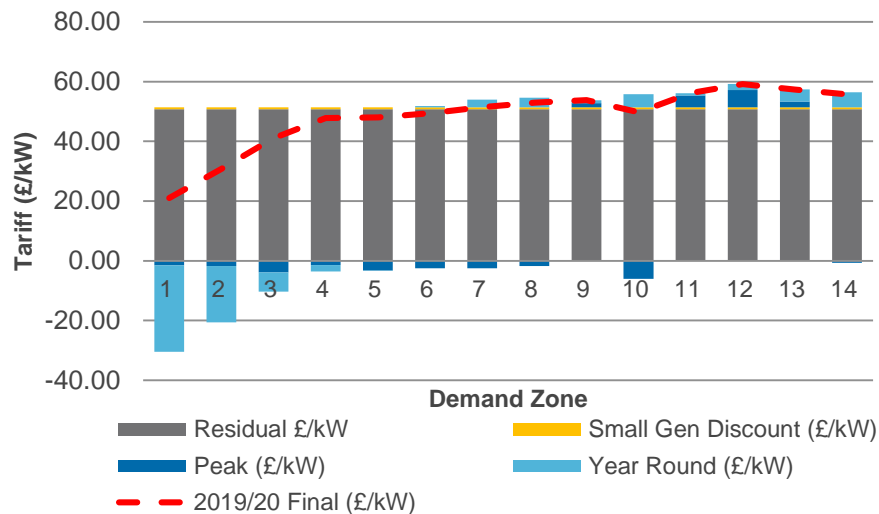
1 national HH residual

14 NHH Tariffs (one per GSP group)

Levied on Triad demand (£/kW)

Levied on 4-7pm demand (p/kWh)

HH Demand Tariffs



Conclusions of Ofgem's Targeted Charging Review

On the Transmission Demand Residual

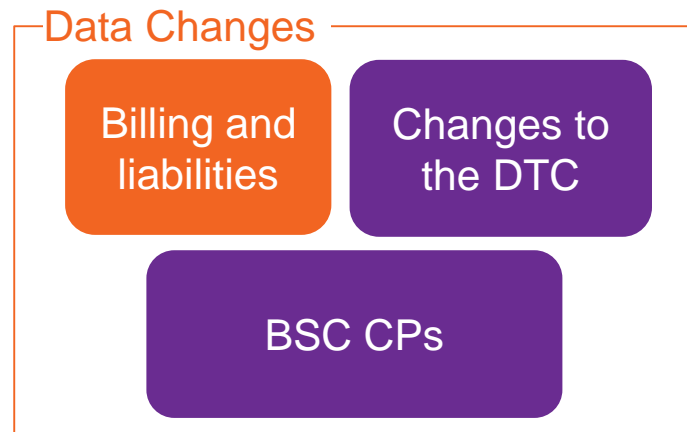
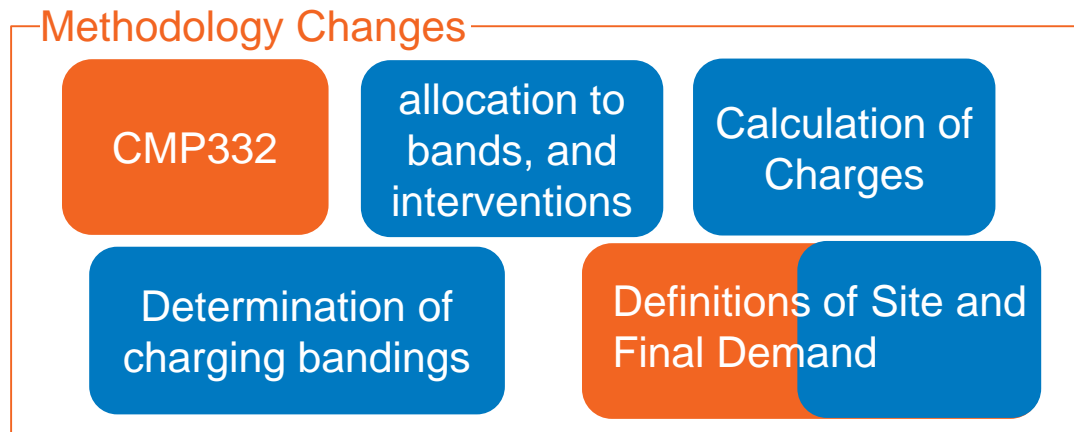
- The locational or “forward-looking” element of Demand TNUoS is being examined by Ofgem through A&FLC SCR. Conclusions are expected to be implemented in 2023.
- The TCR has focused on the ongoing ‘residual’ charges which, in Ofgem’s view, aren’t supposed to send signals for how the networks should be used.
- The TCR decision will result in fixed residual charges for all demand customers. These residual charges will be levied on a pence/site/day basis.
- Residual charges will be levied on final demand users.
- There will be several modifications required to the industry codes in order to implement Ofgem’s TCR decision on the TDR.

How CMP332 fits into the other framework changes for TCR

On 20th December 2019 NGESO and the DNOs published a joint [Project Initiation Document](#) (PID) which lays out a plan for delivering Ofgem's TCR decision.

Framework changes were identified to a range of industry codes including:

- CUSC
- BSC
- DCUSA



Assumptions for the purposes of CMP332

- We are assuming for the purposes of this mod that site specific data and data for final demand can be obtained by the ESO for the purposes of charge setting.
- We have engaged extensively with the DNOs and ELEXON to discuss and determine data sharing possibilities to implement the charge setting and billing for TDR.
- The definitions of Site and Final Demand are to be determined in another modification worked jointly across DCUSA and CUSC

CMP332 Modification

This modification will update the current methodology by;

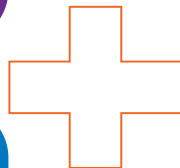
Using the concepts of 'Final Demand' and 'Single Site' which are to be defined in a subsequent non-charging modification (to be raised at January CUSC panel).

1. Create a new methodology for determining charging bands for TDR based on the methodology in Ofgem's decision
 2. Create a new methodology to split TDR cost to these bands based on Final Demand at Single Sites
 3. Establish a process for a periodic review of the TDR methodology
- Was raised as urgent, Ofgem decision pending.

1. Structure of Proposed Demand TNUoS tariffs

14 HH Locational
Tariffs (£/kW based on
consumption over
Triad)

14 NHH Locational
Tariffs (£/MWh) based
on 4-7pm consumption



Transmission connected Demand Residual

EHV connected
Demand Residual

>85th percentile
70th – 85th percentile
40th – 70th percentile
<40th percentile

HV connected
Demand Residual

>85th percentile
70th – 85th percentile
40th – 70th percentile
<40th percentile

LV non-dom (MIC)
Demand Residual

>85th percentile
70th – 85th percentile
40th – 70th percentile
<40th percentile

LV non-dom (No
MIC) Demand
Residual

>85th percentile
70th – 85th percentile
40th – 70th percentile
<40th percentile

Domestics Demand Residual

18 nationwide residual tariffs (p/site/day)

1. How will the bands be determined?

An example banding situation with 1000 HV demand sites using randomised data between 1kW and 500kW

$\geq 85^{\text{th}}$ percentile

$70^{\text{th}} \leq x < 85^{\text{th}}$ percentile

$40^{\text{th}} \leq x < 70^{\text{th}}$ percentile

$< 40^{\text{th}}$ percentile

HV Band 4

$\geq 428\text{kW}$

HV Band 3

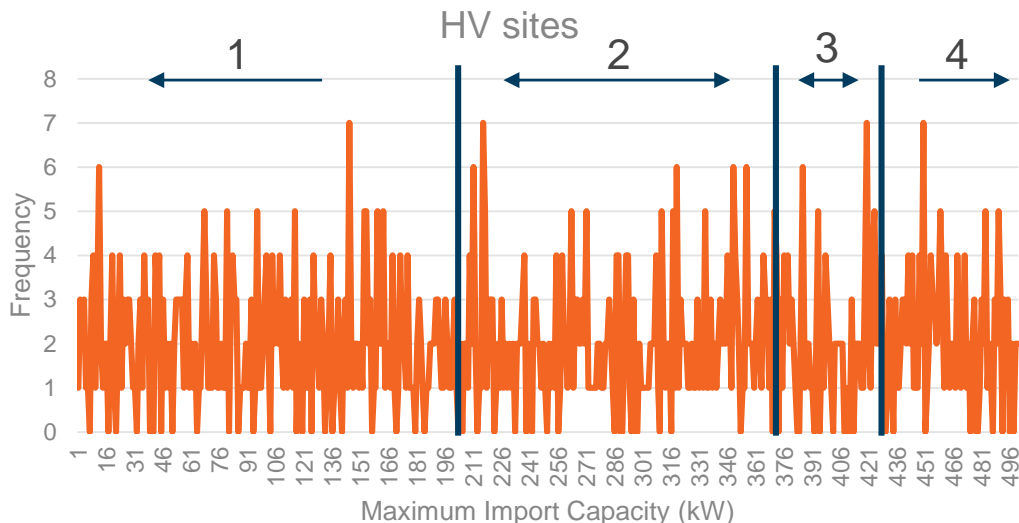
$357\text{kW} - < 428\text{kW}$

HV Band 2

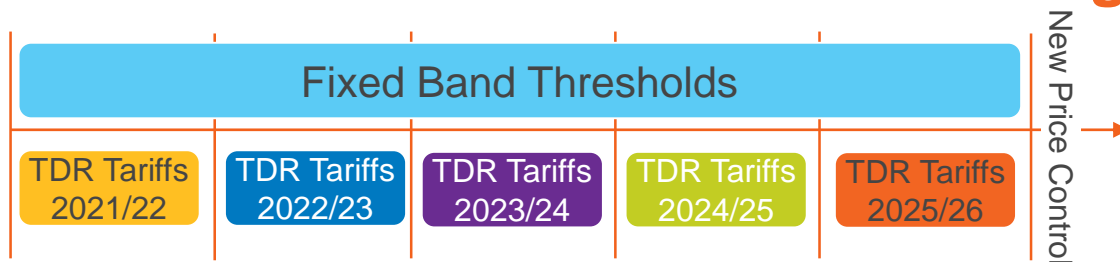
$206\text{kW} - < 357\text{kW}$

HV Band 1

$< 206\text{kW}$



1. Further information on the banding methodology



New sites would be sorted into the relevant band based on the kW or kWh segmentations and their estimated values.

Unmetered Supplies (UMS)

- The TCR decision states that residual charges for UMS will be derived considering their net consumption volume or agreed capacity and the applicable charging model.
- The decision also states that there should be “distinct arrangements” for UMS.
- Following discussion with Ofgem we have agreed our interpretation of this wording to be that UMS sites will be included in the banding methodology and allocated to the relevant band for the purposes of TDR like any other sites.
- The only different will be that the volumes will be modelled on typical consumption patterns rather than actual metered volumes.

A site will remain in its band for the entirety of the price control period.

Ofgem has instructed the ESO and DNOs to develop an appeals process but this is not in scope of CMP332. We expect that this will be an ELEXON/DNO owned process.

2. How the total TNUoS Demand Residual (TDR) could be calculated

The potential process for determining TDR;

$$(A) \quad \text{TO MAR (£)} - \text{Generation TNUoS Value (£)} + \text{Embedded Export Tariff (£)} = \text{Demand TNUoS Value (£)}$$

$$(B)^* \quad \text{Zonal HH tariffs (£/MW)} \times \text{Zonal gross peak demand (MW)} = \text{Expected Zonal revenue (£)}$$

$$(C)^* \quad \text{Zonal HH tariffs (£/MW)} \times \text{Zonal Triad demand (MW)} = \text{Recovered HH Zonal Value (£)}$$

$$(D)^* \quad (B) - (C) = \text{"NHH Zonal Recovery Value" (£)}$$

$$(E)^* \quad (D) \div \text{NHH Chargeable Zonal Volume (MWh)} = \text{NHH Locational Tariff (£/MWh)}$$

$$(F) \quad (A) - \Sigma(C) - \Sigma(D) = \text{TDR Value (£)}$$

(G) Take (F) and apply a methodology to spread value across bandings

8 'usage groups'
4 percentiles
= ~18-21 tariff bands

Convert banding values into tariffs (p/site/day)

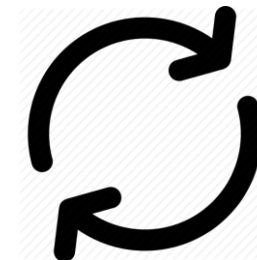
1. Domestic
2. LV no defined capacity
3. LV defined capacity
4. High Voltage
5. Extra High Voltage
6. Transmission
 - a. <40th percentile
 - b. =>40th percentile < 70th percentile
 - c. =>70th percentile <85th percentile
 - d. =>85th percentile

2. How will costs be split between the residual bands?

In the previous slide we found a value (£) for the Transmission Demand Residual in line F. The next step is to determine the residual p/site/day for each of the 18 bands.

HV Band 1

- 1) Volume of HV Band 1 sites (MWh) / Total volume (MWh)
- 2) $100 \times 1) = \% \text{ of total volume accounted for by HV Band 1}$
- 3) Total TDR value (£) \times % calculated in 2) = Total bill for HV Band 1
- 4) $3) \div \text{Number of sites in HV Band 1} = \text{Tariff p/site/year}$
- 5) $4) \div \text{number of days in the year} = \text{Final tariff p/site/day}$



HV Band 2

HV Band 3

HV Band 4

2, worked example for HV bands

£1,000,000,000 total TDR required recovery

Assume 3% of total system volume (from final demand) is consumed by HV Band 1

Therefore, £300,000 needs to be recovered from 402 sites (using the example data in slide 12)

$£300,000/402 = £746.27$ (£/site/year)

$£746.27/\text{number of days in year} = £2.04457$ (£/site/day)

OR

204.46 p/site/day

3. Establish a process for periodic review of TDR

In their decision statement Ofgem propose that the charging bands be periodically reviewed.

Their proposal is that the charging bands should be reviewed and recalibrated every price control period (*Section 3.104, Review of Charging Bands*)

The CUSC will need to reflect this obligation to periodically review and recalibrate the charging bands.

Figure 3 Applying TCR principles to non-domestic customer segmentation for refined fixed charge

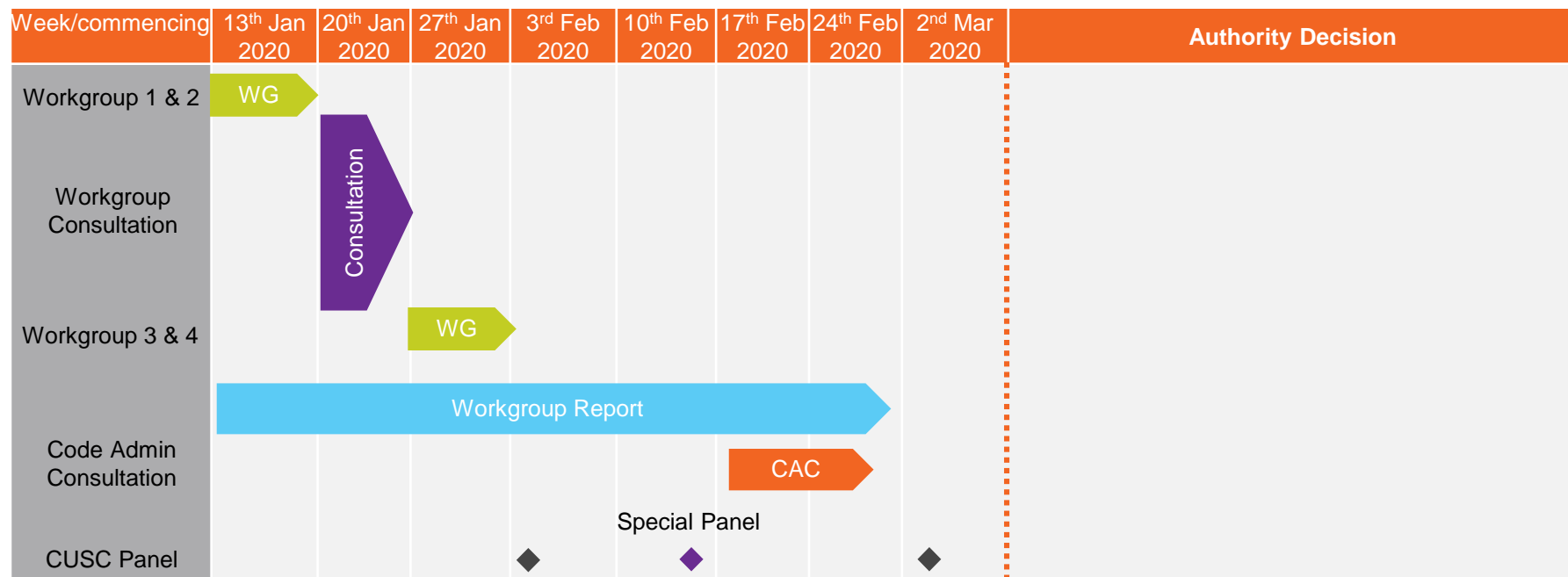
Reducing harmful distortions	<ul style="list-style-type: none">• Lowest number of segments needed to objectives• Segments avoid splitting dense clusters, of similar user types where possible• Sufficient users per segment to avoid gaming, volatility and commercial considerations (such as the confidentiality of EDCM charges)
Fairness	<ul style="list-style-type: none">• Broadly consistent upper limit on range of user types facing the same charge across segments• Segments well balanced with a broadly consistent basis, aiming to distinguishing user groups with significantly distinct characteristics, or clear reasons for differences.• Tangible, justifiable link to energy usage in the basis for segment boundaries
Practicality and proportionality	<ul style="list-style-type: none">• Lowest number of segments necessary to achieve objectives• Broadly consistent basis for segments for simplicity• Uses available data and any system changes are proportionate• Distributional effects and complexity are no greater than necessary to achieve objectives

Terms of Reference

- a) Consider the Authority's TCR SCR Direction to the Company and any associated implications for this Modification.
- b) Consider what the process will be for the 'unless otherwise proven' steps for MPAN/Site and Final Demand/All demand.
- c) Consider how the solution will apply in terms of IDNOs and DNOs if they use different approaches to LLFC.
- d) Consider if the approach followed by the ESO should align with the approaches followed by the DNOs, such as 15 months' notice.

Anticipated Timeline for CMP332

The Ofgem Direction on TDR requires extensive ESO system and process changes, therefore the code change needs to progress as quickly as possible to the Authority



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