

# CMP419: Generation Zoning Methodology Review – Workgroup 5

**16 April 2024**

**Online Meeting via Teams**

# Agenda

Topics to be discussed	Lead
Actions Update	Chair / Proposer
Analysis Overview	SME
Timeline and Terms of Reference Review	Chair
AOB & Next Steps	Chair



## Actions Update

Lizzie Timmins - ESO Code Administrator

Nitin Prajapati - ESO

# Action Log for CMP419

Action number	Workgroup Raised	Owner	Action	Comment	Due by	Status
11	WG2	NP	ESO Revenue team to attend WG4 and present analysis.	Analysis provided as part of Workgroup 5 papers, SME to present at Workgroup.	WG5	Open
13	WG3	PA	Confirm the Authority position around policy and workgroup work		WG4	Open
14	WG3	NP/RP	ESO to liaise with the TOs to obtain coordinates for each transmission node	Update provided on slide 5.	WG4	Open
15	WG3	NP	Share list of the transmission nodes and the ETYS zone they sit in with the Workgroup	Update provided on slide 6.	WG4	Proposed to close
17	WG3	NP	Confirm that alongside the published analysis a copy of the transport and tariff model will be provided to WG members	Update provided on slide 6.	WG4	Open
18	WG3	NP	Confirm whether it is possible to share a list of nodal prices for all generators by generation zone, or whether the ESO only have a price per ETYS zone	Update provided on slide 6.	WG4	Open
19	WG3	NP	Confirm whether the methodology and assumptions being used as part of the analysis will be available to share with the Workgroup ahead of the analysis taking place	Update provided on slide 7.	WG4	Open
21	WG4	TE/SC	After receiving examples of inconsistencies between the July and December Transport Models (TE) provide feedback on changes (SC)	Update provided on slide 8.	WG5	Open
22	WG4	SC	Look into interactive nodal 10-year map	Verbal update to be provided.	WG5	Open
23	WG4	SC	Confirm whether requested elements can be included in analysis: - Connectivity matrix - Year and non year-round split - Cost reflectivity	Update provided on slide 9.	WG5	Open

# Actions Update

**Action 14:** ESO to liaise with the TOs to obtain coordinates for each transmission node.

- We have liaised with the three TO's, National Grid Electricity Transmission (NGET), Scottish Power Energy Network (SPEN) and Scottish and Southern Electricity Networks (SSEN) to try and obtain the information.
- SSEN have provided a spreadsheet with the substations and the relevant coordinates to identify the locations..
  - Please note: SSEN have advised the information provided in the spreadsheet should not be circulated beyond the members of the CMP419 Workgroup and should only be utilised to help identify the location of the substations.
- NGET have provided the below link where the substation data is downloadable. This data is updated monthly direct from GeoGrid.
  - <https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/network-route-maps>
- SPEN have provided the relevant information in a spreadsheet and we are just liaising with SPEN to ensure we can share all the information provided. We hope to share this information with the Workgroup soon.

## Actions Update

**Action 15:** Share list of the transmission nodes and the ETYS zone they sit in with the Workgroup.

- These are in the spreadsheet on worksheet “Nodal Data”.

**Action 17:** Confirm that alongside the published analysis a copy of the transport and tariff model will be provided to WG members.

- Members that have signed the licence to receive the model can obtain a copy of the models used, there are four members which have not yet signed the licence.

**Action 18:** Confirm whether it is possible to share a list of nodal prices for all generators by generation zone, or whether the ESO only have a price per ETYS zone

- The prices for each node are in the spreadsheet on worksheet “Nodal Data”.

# Actions Update

**Action 19:** Confirm whether the methodology and assumptions being used as part of the analysis will be available to share with the Workgroup ahead of the analysis taking place.

- Methodology:
  - Updated node/zone alignment to match the corrections that were implemented in July (in original 28/29 5YV base case comparison model).
  - Identified the ETYS Major Zone for each node.
  - Mapped each of the 18 ETYS Major Zones to a number (T=1 to A=18) and updated within the node table of the Transport Tab.
  - Use the circuit table of the Transport tab to identify which zones are connected by circuits and drew the full connectivity map.
  - Simplified the connectivity map using CUSC 14.15.50 (see separate slide on connectivity) and updated the connectivity matrix in the T&T model.
  - Ran the T&T model to produce the new tariffs.

# Actions Update

**Action 21:** After receiving examples of inconsistencies between the **July** and **December** Transport Models (TE) provide feedback on changes (SC).

- *Note: I believe this action should read “between April and July Transport Models.”*
- Following the April 2023 Five-Year View, a customer got in touch to query a node that they believed was mapped to the wrong zone in the T&T model. This was investigated, and we agreed it needed to be corrected. This is likely to be due to the zone remapping process that took place ahead of RIIO-T1 in 2013, where we believe the focus was on nodes that had generation connected rather than known future nodes.
- To identify any similar issues that may have occurred, a tool was created using geographic information to ascertain the correct zones for each node. Any differences that were identified were investigated and the corrections were implemented in the July Forecast of 24/25 TNUoS Tariffs.
- Note: the same node corrections have been implemented within the 27-zone base case (2028-29 from the 2023 5YV) so that we are not knowingly using incorrect zones within the analysis.



# Actions Update

**Action 23:** Confirm whether requested elements can be included in analysis:

- **Connectivity matrix** – *yes, this activity has been completed, the new map can be found in the analysis spreadsheet.*
- **Year and non-year-round split** – *yes, the year round and peak security nodal prices have been provided, as per the example analysis that was highlighted for CMP324.*
- **Cost reflectivity** – *we think it is better to agree on principles required to ensure cost reflectivity in the methodology rather than trying to use it as a criteria to assess the results, as that can be very subjective.*



# Analysis Overview

Sarah Chleboun – ESO

# Connectivity

- The instructions for creating and simplifying the Connectivity Map are given in CUSC Section 14: 14.15.50 – 14.15.52. We have given an overview of what we did during this exercise and the key points to note here.

The aim: to create a tree, where all zones are connected and acyclic, working towards the notional demand centre.

Data needed: The zonal incremental km for each zone.

- This is an output of running the Transport model and can be found in the Tariff worksheet:

Derivation of Zonal Generation Tariffs - Shared Year Round						
Zone	Zone Name	Generation Charge Base: TEC Net Stn * ALF	Unadjusted Transport Zonal Wtd Marginal (km)	Shared Transport Zonal Wtd Marginal (km)	Shared Year Round Zonal Tariff (£/kW)	Shared Year Round Zonal Revenue (£m)
1	North Scotland	1.35	1,665.64	1,191.16	40.85	55.27
2	East Aberdeenshire	0.50	1,420.50	946.02	32.44	16.46
3	Western Highlands	0.14	1,447.74	1,025.90	35.18	5.24
4	Skye and Lochalsh	0.06	1,773.47	1,025.90	35.18	2.30
5	Eastern Grampian and Tayside	0.44	1,254.2	878.50	30.13	13.45
6	Central Grampian	0.01	1,201.99	843.35	28.92	0.41
7	Argyll	0.13	1,553.96	777.48	26.66	3.51
8	The Trossachs	0.02	1,192.34	777.48	26.66	0.62

- OR by taking the YR nodal prices and calculating it yourself using the formula from CUSC para 14.15.40

Scenario 1 Demand Year Round	Scenario 1 Demand Peak Security	Scenario 1 Gen Vider Year Round	Scenario 1 Gen Vider Peak Security	Scenario 1 Gen Local
-87.99	-89.11	-87.99	-89.11	0.00
-87.98	-89.13	-87.98	-89.13	0.00
1362.97	281.16	1362.97	281.16	0.00
-167.52	53.51	-167.52	53.51	-0.00
1342.07	173.39	1342.07	202.39	-95.76
1591.43	160.09	1591.43	231.53	45.94
41.13	192.86	41.13	192.86	0.00
1726.96	113.99	1726.96	213.99	0.00
1726.96	113.99	1726.96	213.99	0.00
-5.04	-12.85	-5.04	-12.85	0.00
-52.35	-8.87	-52.35	-85.87	0.00
-41.33	-50.11	-41.33	-50.11	0.00
-41.33	-50.11	-41.33	-50.11	0.00

Transport worksheet: column AP

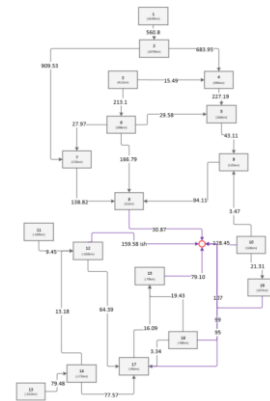
Similarly, the zonal Year Round marginal km for generation is calculated as

$$WNMkm_{jYR} = \frac{NMkm_{jYR} * Gen_j}{\sum_{j \in Gi} Gen_j}$$
$$ZMkm_{GjYR} = \sum_{j \in Gi} WNMkm_{jYR}$$

# Connectivity Steps: Creating the Connectivity Map

1. Identify the boundary incremental km between each pair of connected generation charging zones by subtracting the zonal incremental km of one zone from the other.
2. Note that the absolute value of the zonal incremental km get smaller as they get closer to the notional demand centre, which is at 0km.
3. Use the circuit table of the Transport tab to identify which zones are connected by circuits and from this draw the full, un-simplified, connectivity map.
4. Any connected zones where the incremental km have gone from a positive value to a negative value crosses through the notional demand centre and therefore, any such boundaries were directed via this point.

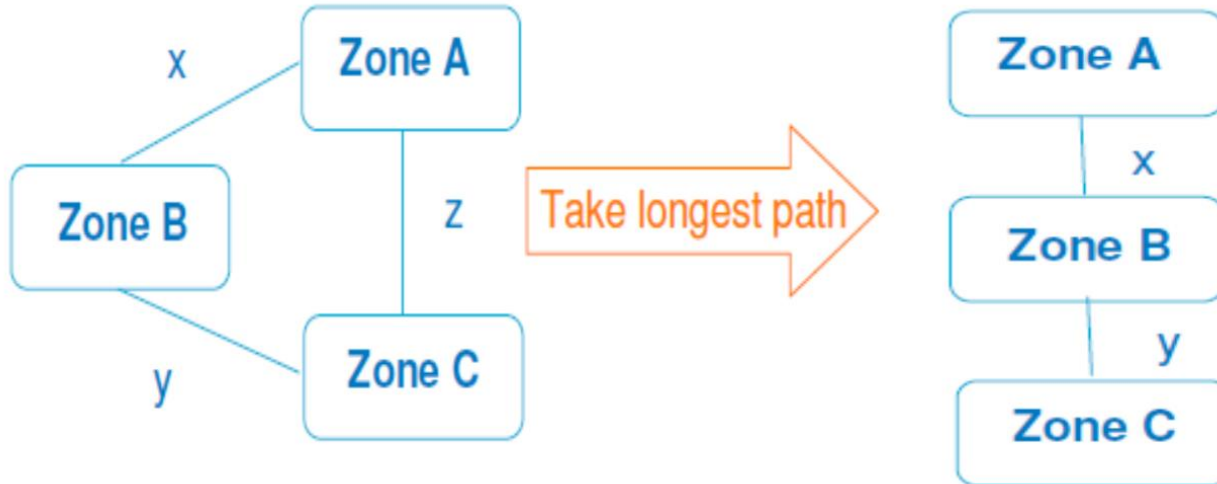
Routes which cross the notional demand centre marked by blue line:



Notional demand centre marked by red circle

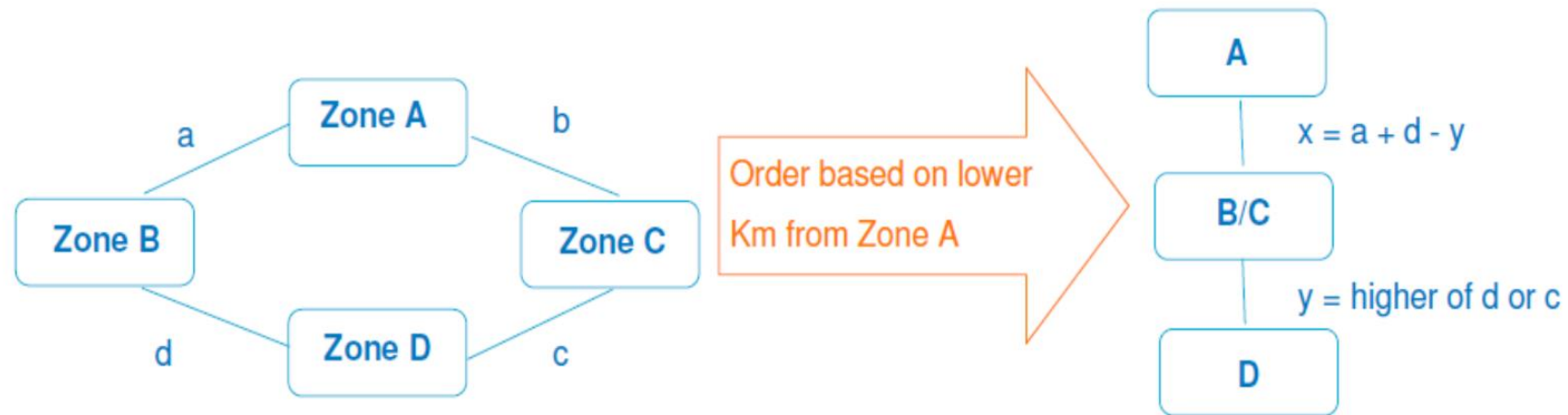
## Connectivity Steps: Map Simplification

5. Simplify the connectivity map using the rules in CUSC 14.15.50:
- **Parallel paths** – the longest path will be taken. An illustrative example is shown below with x, y and z representing the incremental km between zones. Any connected zones where the incremental km have gone from a positive value to a negative value crosses through the notional demand centre and therefore, any such boundaries were directed via this point.



## Connectivity Steps: Map Simplification

- **Parallel zones** – parallel zones will be amalgamated with the incremental km immediately beyond the amalgamated zones being the greater of those existing prior to the amalgamation. An illustrative example is shown below with a, b, c, and d representing the initial incremental km between zones, and x and y representing the final incremental km following zonal amalgamation.



# Connectivity Steps: Map Simplification & updating T&T Model

- The example situations given in CUSC are very simple and the real system may be a bit more complicated, so we used the following principles when merging zones:
  - the total incremental km “length” of the route should be maintained from the starting zone to end zone via the merged zones.
  - after merging parallel zones, the combined zone distance cannot be larger than the zones that were merged.
- 6. Once the map has been simplified, the connectivity matrix in the “TxNetwork” worksheet of the T&T Model is updated to match the simplified map.

Zone connectivity Input																												
		From																										
To	Gen Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	1	1	1																									
	2		1																									
	3	1	1																									
	4			1	1																							
	5					1																						
	6			1		1	1																					
	7							1																				
	8						1	1		1																		
	9								1	1																		
	10									1	1	1																
	11										1	1																
	12											1																
	13												1	1	1													
	14												1	1	1	1												
	15												1															
	16													1	1													
	17															1	1											
	18																1	1										
	19																	1										
	20																		1									
	21																			1								
	22																				1	1						
	23																			1			1	1	1			
	24																			1			1	1	1			
	25																			1								
	26																									1		
	27																										1	1
	Demand Centre																					1	1	1	1	1	1	1



# **Timeline and Terms of Reference**

**Lizzie Timmins – ESO Code Administrator**



# Proposed Timeline for CMP419 (as of April 2024)

Milestone	Date	Milestone	Date
Modification presented to Panel	25 August 2023	Code Administrator Consultation (20 working days)	18 December 2024 – 17 January 2025
Workgroup Nominations (15 Working Days)	30 August 2023 to 20 September 2023	Draft Final Modification Report (DFMR) issued to Panel (5 working days)	20 February 2025
Workgroup 1 – Workgroup 8 To discuss the defect, analysis required and begin refining the solution	12 October 2023 08 November 2023 12 December 2023 17 January 2024 <b>16 April 2024</b> 07 May 2024 05 June 2024 02 July 2024	Panel undertake DFMR recommendation vote	28 February 2025
Workgroup Consultation (20 working days)	08 July 2024 – 02 August 2024	Final Modification Report issued to Panel to check votes recorded correctly	03 March 2025 – 10 March 2025
Workgroup 9 – Workgroup 12 To review the Workgroup Consultation responses and to finalise the solution	21 August 2024 25 September 2024 23 October 2024 27 November 2024	Final Modification Report issued to Ofgem	11 March 2025
Workgroup report issued to Panel (5 working days)	05 December 2024	Ofgem decision	TBC – required by 30 September 2025
Panel sign off that Workgroup Report has met its Terms of Reference	13 December 2024	Implementation Date	01 April 2026

# Terms of Reference

Workgroup	Term of Reference
a)	Consider EBR implications
b)	Consider how the implementation of a new zoning methodology, its governance and associated impact of rezoning will impact the predictability, cost reflectivity, and stability of charges.
c)	Assessing the use of ETYS boundaries and/or use of other methods to develop generation zones before considering how this may or may not increase the range of nodal prices within a generation zone.
d)	Assess the frequency of reviewing the number of generation zones, factoring in the decision from <a href="#">CMP324/325</a> and associated impacts on the stability of TNUoS charges.
e)	Consider relevant regulatory changes



## **AOB & Next Steps**

**Lizzie Timmins – ESO Code Administrator**