Meeting Summary

TNUoS Task Force Meeting 6

Date:	26/06/2023	Location:	Faraday House
Start:	10.00	End:	16:00

Participants

Attendee	Attend/Regrets	Attendee	Attend/Regrets
Aled Moses (AMo)	Regrets	Joseph Dunn (JD)	Attend
Adam Morrison (AM)	Attend	Joshua Logan (JL)	Regrets
Binoy Dharsi (BD)	Attend	Lauren Jauss (LJ)	Attend
Brendan Clarke (BC)	Attend	Lizzie Skells (LS)	Attend
Deborah Coyle (DC)	Attend	Luke Davidson (LD)	Attend
David Tooby (DT)	Regrets	Niall Coyle (NC)	Regrets
Edward Smith (ES)	Attend	Nicola White (NW)	Attend
Elana Byrne (EB)	Attend	Paul Jones (PJ)	Attend
George Moran (GM)	Regrets	Sam Davies (SD)	Attend
Grace March (GM)	Attend	Simon Lord (SL)	Attend
Harriet Harmon (HH)	Attend	Sinan Kufeoglu (SK)	Attend
James Stone (JS)	Attend	Stephen McKellar (SM)	Attend
John Tindal (JT)	Attend		
Jon Wisdom (JW)	Attend		

Agenda Point 1: Introduction and Welcome

The Chair welcomed those attending the meeting.

The Authority representative reminded Task Force members that Task Force Terms of Reference require members to attend face-to-face meetings in person (or provide alternates). If Task Force members have significant issues with that policy, they are invited to raise this with the Task Force for discussion.

Agenda Point 2: Action Review

Actions were reviewed and updates noted (please see the Actions section at the end of the document).

Agenda Point 3 – 7: Backgrounds - Deep Dive, Feedback & Discussion

The consultants shared an overview of their work to date on backgrounds and the reference node. This included analysis and discussion points to provide tentative conclusions for the Task Force to assess and identify further work needed.

N.B. The consultancy work is still work in progress with further actions and discussions with the Task Force planned.

Backgrounds

It was discussed that cost reflectivity and predictability are the two primary concerns behind the analysis work, and in the trade-off between the two, focus has tended to start with cost reflectivity, to then assess the implications of predictability.

The motivation for looking at backgrounds has been to identify the cost driver(s) for particular network elements and the design conditions that will trigger transmission investment. In looking at the current backgrounds from the Security and Quality of Supply Standard (SQSS), it is worth considering whether the assumptions that created the backgrounds are appropriate now and for the future (e.g. the correct generation mix, fair scaling of different generation types etc.)

Criteria for Modelling

The extent to which current backgrounds are representative had been assessed by the consultants, with alternative background options then created using the most appropriate assumptions, and made without constraint of the SQSS and set to best reflect conditions that drive incremental cost and will trigger investment (i.e. Peak).

It was noted by the consultants that the concept of Peak and Year Round still applies – with modelling using i) a single background (Year Round being considered most appropriate), ii) two 'updated' backgrounds (Year Round & Peak) and also iii) including a third background (although there is not a strong case for this in results).

It was explained by the consultants that the first model used was an hourly dispatch model and the second model being an independent version of the transport model for 2025/2035 simulations (N.B. the transport model used is not the ESO's version and does not include the locational element of the analysis and is based on a fixed network size so cannot forecast for new build circuitry).

2025 & 2035 Simulations

For the deep dive into Cost Reflectivity, the consultants had assessed what market conditions drive flow and whether current backgrounds reflect this. This was via a dispatch model simulation for 2025 and 2035 where a range of backgrounds were used to tag circuits and see which backgrounds would reflect maximum flow, agnostic to the size of the network elements. This then identified the 'representative background'.

- *2025 simulation* – results indicated that current Peak and Year Round scenarios weren't considered a good representation for approximately half of the network. The best representation of the network was from a variation of the current Year Round background (with some adjustment for scaling factors).
- *2035 simulation* – as with the 2025 results, the best representation of the network was similar to the current Year Round background, with a second added background (similar to Peak) improving demand. The Year Round background resulted in net exporting vs

importing (whereas 2025 was importing) and diminishing returns from adding more backgrounds.

In regard to diverging from the SQSS backgrounds, a Task Force member noted that peak security means that sufficient network must be built to get from generation to demand, so care should be taken to consider the SQSS logic in backgrounds.

A Task Force member raised that there was less opportunity to scale with conventional plant for future scenarios, that scaling will likely work differently in future scenarios, and that different regions/locations will produce different results.

The consultants saw no clear implication on predictability by moving from 1 or 2 backgrounds.

- ACTION 1 *(Frontier/LCP)*: The consultants agreed to look into how much of each background represents different regions.
- ACTION 2 *(JS, NW to explore with ESO)*: It was noted that the historic scaling factors that set the CBA for the current backgrounds need to be understood more clearly.
- ACTION 3 (*Frontier/LCP*): A Workgroup member asked whether there is value in weighting the circuits when assessing them and the consultants shared that they saw no significant change when this was included in the modelling, and they agreed to share the indicative view from those results.
- ACTION 4 (*Frontier/LCP and JS):* Regarding interconnector flows and their predictabilities, the consultant agreed to look at whether it was possible to identify similar backgrounds with different interconnector flows (and information to be shared with the consultants from the ESO in relation to the BSUoS (Balancing Services Use of System charge) Task Force work).

Backgrounds and Charging

The consultants outlined that, for using backgrounds to calculate tariffs, important factors were how the circuit is tagged (Year Round vs Peak) and, more importantly, the direction of flow (with Combined Cycle Gas Turbine (CCGT) and wind examples shared).

Questions raised in discussions by Task Force members for consideration:

- When is the different distribution of demand to be considered? (Response: this is to be picked up in Data Inputs workstream)
- How material is the loss of locational data between the dispatch and transport models?
- Should the transport model have different load factors applied depending on location on the network?
- Is there a correlation between regional resources and should the Task Force consider reflecting this in charging?
- How is photovoltaic (i.e. solar) treated? (Response: As PV is a reduction in demand, with more PV connected at the transmission level may mean different charging is more relevant)

The consultants explained that different approaches could be taken to assess the impacts of backgrounds on tariffs, such as using different Future Energy Scenario (FES) scenarios, more judgements against the current approach or a combination of 2025 & 2035 numbers to create an average view.

Other considerations raised by the Task Force:

- After Project TransmiT, MWkm has to be tagged to either Peak or Year Round backgrounds, so the load factor is important in driving tariffs.
- Peak should reflect Peak security in the SQSS.
- How the difference in tagging Peak/Year Round will translate to tangible examples - for example, there would be significant differences for wind farms charges if moving to one background as Year Round backgrounds would be applied to previously Peak circuits.
- Exploring other types of storage in technology types of the backgrounds.
- Using the raw assumptions there is still a strong North-South flow (but not a significant impact on charging).
- ACTION 5 (*Frontier/LCP*): For the impact of alternative backgrounds, a Task Force member requested whether indicative monetary values could be provided for the impacts of the different backgrounds on differently-sized projects.
- ACTION 6 (*Frontier/LCP*): A Task Force member asked the consultants to consider whether there is an impact of other types of storage being included in the technology types of backgrounds.

Predictability

The consultants shared that for a CCGT plant, volatility of charges is only affected when using a Peak scenario (and greater volatility in the North vs South). There is less volatility for wind with a single background (although level of charges is slightly higher than with two backgrounds).

Questions raised in discussions by Task Force members for consideration:

- How to quantify predictability and what is the threshold for what is acceptable? Some small changes would be expected to have large financial impacts.
- Would a larger number of sample years/historic charging years would be worthwhile to show a wider data set? It was suggested to use actual £/KW changes (rather than % changes) to be more reflective of the situation and better for risk assessment.
- ACTION 7 (*Frontier/LCP*): The consultants have some additional analysis to share on metrics used to compare volatility between actual and estimated charges.
- ACTION 8 (*Frontier/LCP*): The consultants are to consider a wider range of charging years in the data set.
- ACTION 9 (*Frontier/LCP*): For examples shared by the consultants (e.g. changes for CCGT) it was suggested that change is better expressed in monetary terms.

Additional questions for further potential discussions on backgrounds:

- Assess whether the right load factors are being used for Peak and Year Round.
- If assumptions were different, would a different methodology be used?
- Consider leaving peak scaling factors the same as the SQSS for the security factor, and allowing Year Round to flex (maybe a future action).
- If charging backgrounds should be split from the security standards?
- Would a new CBA provide more insight at this point, including consideration for storage etc.? N.B. Network Option Assessment (NOA) carries out a CBA to decide what network is built.

- What is the process for dealing with non-firm connections (different charging arrangements due to an absolute vs theoretical sharing factor)? Is this part of the CBA?
- Is more work into the Signals defects needed to help confirm the objectives on the Background work? I.e. what's the purpose of the background work?
- ACTION 10 (*JS, SS to explore with BD*): Bring together the Task Force representatives and the ESO SQSS Review team (when in a position to do so) to discuss potentially parallel/overlapping interests.

Agenda Point 8-10: Reference Node – Deep Dive, Feedback & Discussion

The consultants presented the analytical assessment including the original rationale for the current reference node, issues considered regarding the choice of reference node, options for change and analysis relating the charging impacts.

It was discussed that the Year Round and Peak scenarios could have the same fundamental distributed reference node for the purposes of the modelling and comparing backgrounds. However, it was raised that generation-weighted reference nodes weighted to different scaling in the respective backgrounds, could be more cost reflective as it could show how generation would respond to investments at a particular location.

The consultants summarised the potential issues when choosing a reference node and the potential reference node options, which were options previously put to Ofgem by industry (with the consultants then reviewing these in terms of cost reflectivity).

Suggested options with the best potential for cost reflectivity and predictability:

- A distributed generation-based reference node (less stable and separate reference nodes for Peak/Year Round scenarios but greater year-on-year variability), or
- The current distributed demand-based reference (more stable and a single reference node for both backgrounds)

It was clarified by the consultants that options for reference nodes were considered at a transmission level.

The consultants couldn't place a clear recommendation for moving away from the current reference node approach. A generation-weighted node would imply significant changes in charges, but also a greater year-on-year variability (which could possibly be tempered by the generation adjustment credit), and it can't be determined if this would be more cost reflective than the current demand-weighted approach.

It was noted that if different demand levels are set for the two different backgrounds then there would be different reference nodes across the different backgrounds, regardless of whether demand/generation-weighted.

While there were greater reductions for high carbon assets in the North, there would be lower impacts on intermittent assets in the South. The lower stability of a generation-weighted approach is based on the greater expected change in spatial distribution of generation compared to the expected change for demand (still to be seen considering the impacts of hydrogen etc.).

The consultants re-iterated that direction of flow was also important for reference nodes (as it is for backgrounds). Changing the direction of flow or reducing how far North/South flows are measured will impact the charging stability significantly if the reference nodes move more rapidly with generation.

Additional questions to be potentially considered regarding the Reference Node (as part of the case for change)

N.B. The questions below will be prioritised as to what might be of most value to be progressed and can be covered in the scope of work for the consultant's work

- How is the system being utilised in reality for transport models to reflect generation and demand better, e.g. should generation increase proportionally to reduced generation elsewhere, or should generation increase in proportion with increased demand?
- E.g. (a suggestion from the consultants):
    - For demand-weighted Reference Node – demand increases and the signal indicates where generation could be built (assuming demand increases in line with the current methodology)
    - For generation-weighted Reference Node – if demand was added at a location, generation would need to be built to deal with that but could that be anywhere vs a specific location
- A viewpoint was shared that generation capacity is expected to be the primary driver for network investment and network build-out, therefore a suggestion being to start by creating generation at a node, then assessing how best to serve demand when and where it arises – although it was noted that the modelling approach should not be the driver for the change.
- Where is it sensible to reduce generation relative to increases in generation elsewhere on the system? Is a national or more local approach more sensible and how is that determined?
- Is it problematic that Annual Load Factors (ALFs) have a different effect the further away from the reference node? Could adjustments to the backgrounds or application of the ALFs mitigate any issues from this?
- The consultants' response re: ALFs:
    - If the flow is still North to South and northern plant is still using a greater distance of network to deliver generation at times of stress, the argument for ALF having a greater effect further from the node still stands.
    - However, whether the ALF discount is valid is determined by the question of whether the change in flow should be determined by the Demand reference node (further south, ALF discounts being more relevant) or the Generation reference node (further north, ALF discounts less sensible)?
- Regarding the role of the Investment Cost Related Pricing (ICRP) - the ICRP is to determine the marginal impact of generation presence on the network investment costs, i.e. if adding new generation on the system, how and where does that generated power go until it's used by demand (location and direction of flow).
- What's the relative difference between generation on a generation-weighted node vs a demand-weighted node? How does it change relative to the average? It was posed that relative difference is more relevant than the absolute values.

Location

It was argued that, if considering demand charging at a suitable point, a demand-weighted reference node doesn't make sense for Peak or Year Round because the location of generation build is determined significantly by the technology type and environmental factors. However, the location of demand has constraints on it too so there is an argument that the driving principle should be to serve the demand primarily (vs being led by the location of generation).

With current approach to the balancing generation and demand, the accuracy of where demand will draw power from/where generation comes from is not precise, so changes in generation are therefore shared across the system.

However, if the current approach is seen as too much of an assumption, and greater accuracy is wanted (e.g. for more precise investment signals to determine new plant location etc.), greater accuracy would be needed across the system to pin-point that demand/generation. I.e. if new generation is to be added to the system, accurate information would be needed to identify which existing generation would need to be deducted off the system.

By moving generation, flows must be assessed to accurately assess ALFs, sharing factors and tariffs.

An alternative modelling approach was discussed to see what background is relevant for each part of the network, what load factors are involved to then calculate the charges from for incremental MWkm in each background. Then avoid the need for ALFs and sharing factors. However, the consultants referenced that despite precise results from such a model, those results are unlikely to be reflective of what was happening in reality on the system.

ALFs and sharing factors necessary if using a single background to proxy for multiple different backgrounds.

Zoning

A question was raised as to what extent zoning dampens or distorts the viewpoint on changes in the reference node (considering that zoning is being reviewed).

- I.e. if there are smaller variances for different technology types in certain places, how much of that is based on raw nodal prices from the transport model and how much is that due to how nodal prices are grouped because of zoning?
- Would a generation-weighted node still be less stable/too volatile if zoning changes were applied?
- Would the change to zoning move the dial sufficiently/significantly?
- ACTION 11 (*Frontier/LCP*): The consultants are to explore the questions above, with an expectation that the question as to generation-weighted or demand-weighted nodes will be influenced on how the system is planned to develop.

Reference node and charging predictability

A question was raised as to whether the current approach to the reference node creates less predictability in charging.

Authority policy will need to assess how much cost reflectivity is offset to benefit predictability as part of this process, but it's currently unclear what the sum benefits of the changes are in order to assess this.

Embedded generation is treated as positive generation for the purpose of system planning but it's undecided as to what extent this assumption is factored into the transport model for the future.

ACTION 12 (*JS & NW*): revisit ESO work on embedded generation in relation to the transport model and share with the Task Force if relevant.

The consultants' results showed limited change in the non-shared Year Round scenario when the reference node was changed (when the generation-weighted node lowered tariffs in other scenarios).

ACTION 13 (*Frontier/LCP*): The consultants are to check this relating to changing sharing factors.

A question was posed re: 'guess-timating' residual adjustments when forecasting:

- TNUoS as generation charges are increasingly large, so is there a better approach to help anticipate changes to those adjustments (considering ALF etc.)?
- Currently modelling reduces generation nationally on a pro rata basis irrespective of technology type etc., but if generation is reduced at the nodes differently, the average tariff may be closer to zero.
- (It was noted by the consultants that average tariff is measured in different units, so if the average tariff were to go to zero (KW term) there may still be some adjustment credit dependent on how much generation there is because the EUR2.50 cap is in MWh).

A separate question was posed as to whether it would be useful to assess variability of charges vs tariffs alone?

Agenda Point 11: Defect Update – Quick Wins & Workstream Plan

It was reported back by the ESO that Task Force members are engaged in reviewing the 8 prioritised packages, with an update and workstream plan due to be shared at the next virtual session.

Agenda Point 12: Next Steps

ACTION 14 (*Task Force*):Task Force members are to engage industry colleagues and stakeholders with the summary of analysis and progress update of the Task Force's work to date. Responses are to be fed back to the Task Force at the next face-to-face meeting to influence next steps.

Any substantive effects on other areas of work to be identified and shared with the Task Force ASAP if it may impact progression to a modification.

ACTION 15 (*JS, JT, LJ*): The collective process to be started to draft the defect for backgrounds ahead of the next meeting.

ACTION 16 (*BD, JT, colleague of AM*): the collective process started to draft the case for change on the reference Node ahead of the next meeting.

The Task Force can discuss these draft documents at that next meeting, along with initial feedback from stakeholder engagement on analysis to date.

Task Force and Authority viewpoints of the analysis are to be shared alongside the agreed findings.

Modifications then to be raised against agreed principles and Workgroups to work through solutions (i.e. CBA will be important evidence for a Workgroup process).

Next Meetings

- July face-to-face meeting, 27 July – Warwick (Data Inputs and Sharing work packages, also an update from OTNR sub-group from JT - ACTION 17, stakeholder feedback on work to date if available)
- August virtual meeting – date TBC based on availability (cases for change for backgrounds and reference node)
- September face-to-face meeting, 15 Sept - London

Action Item Log

Action items: In progress and completed since last meeting

ID/ date	Agenda Item	Description	Owner	Notes	Target Date	Status
1 26.06	3-7	How much of each background represents different regions	Frontier/LCP		Mtg 7	Open
2 26.06	3-7	The historic scaling factors that set the CBA for the current backgrounds need to be shared with Frontier/LCP	JS, NW to explore with ESO.	CBA information shared with Frontier	Mtg 6	Closed
3 26.06	3-7	Results of weighting circuits in the modelling to be shared with the Task Force (i.e. to show no significant change)	*Frontier/LCP*		Mtg 7	Open
4 26.06	3-7	Explore possibility of identifying similar backgrounds with different interconnector flows. Information to be shared with the consultants from the ESO in relation to the BSUoS (Balancing Services Use of System charge) Task Force work relating to this.	*Frontier/LCP and JS*	NW and JS to provide BSUoS IC work but possibility another FES scenario to be run might meet the request	Mtg 7	Open
5 26.06	3-7	Can indicative monetary values be provided for the impacts of the different backgrounds on differently-sized projects.	*Frontier/LCP*		Mtg 7	Open
6 26.06	3-7	Consider whether there is an impact of other types of storage being included in the technology types of background.	*Frontier/LCP*		Mtg 7	Open
7 26.06	3-7	Additional analysis shared on metrics used to compare volatility between actual and estimated charges.	*Frontier/LCP*		TBC	Open
8 26.06	3-7	Consideration of a wider range of charging years in the data set.	*Frontier/LCP*		Mtg 7	Open

9 26.06	3-7	For examples shared by the consultants (e.g. changes in Predictability for CCGT) can change be expressed in monetary terms.	*Frontier/LCP*	Covered in Action 5		Closed
10 26.06	3-7	Bring together the Task Force representatives and the ESO SQSS Review team (when in a position to do so) to discuss potentially parallel/overlapping interests.	*JS, SS to explore with BD*		TBC	Open
11 26.06	8-10	Consultants are to explore the questions raised on zoning	*Frontier/LCP*	Considering what adding more zones would do to the existing Ref. Node work?	Mtg 7	Open
12 26.06	8-10	Revisit ESO work on embedded generation in relation to the transport model and share with the Task Force if relevant.	*JS & NW*		To consider as part of demand generation element of next work package	Open
13 26.06	8-10	The consultants are to check results showing limited change in the non-shared Year Round scenario when the reference node was changed	*Frontier/LCP*	LCP to provide an email update	Mtg 7	Open
14 26.06	12	Task Force members are to engage industry colleagues and stakeholders and feed back at the next virtual meeting (incl. substantive effects on other work)	*Task Force*		Mtg 7 or August virtual mtg (depending on when responses received)	Open
15 26.06	12	Draft the defect for backgrounds ahead of the next virtual meeting	*JS, JT, LJ*		August virtual mtg	Open
16 26.06	12	Draft the case for change on the Reference Node ahead of the next meeting	*BD, JT, colleague of AM*		August virtual mtg (possible initial draft for Mtg 7)	Open
17 26.06		Update from OTNR sub-group	*JT*		Mtg 7	Open

Action items: Open actions from previous meetings

ID/ date	Agenda Item	Description	Owner	Notes	Target Date	Status
1 17/05	3	Check for any overlap between Frontier-LCP work on ALFs and work done in CMP331 and CMP393	James Stone, Nicola White		TF Mtg 6	Closed
2 17/05	3	Information from 2022 Task Force meetings relating to Absolute vs Relative is to be shared with the Task Force as a reminder of definitions agreed	James Stone	Minimal information found to share from Mtg 1 & 2	w/c 29 May	Closed
3 17/05	3	Share the question re: Technology Type & users' capabilities aid in constructing backgrounds with Frontier-LCP for consideration.	Nicola White	Ongoing	w/c 29 May	Open
4 17/05	3	Assign the 20 defects in the shortlist to their Categories & how they are linked. Scopes of work for each category/grouping to be created. Task Force asked to review this list with work packages assigned across the group	James Stone, Nicola White	Update to be shared at Mtg 7	Aug virtual mtg Mtg 7	Open
6 17/05	7	ESO to proceed with the wider-remit zoning modification	James Stone	Drafted but further review needed	August	Open
1 26/04	1	Provide update on recruiting Non-Domestic user reps to Task Force	James Stone & Nicola White	Discussions ongoing for a named rep	Mtg 7	Open
3 26/04	3	Decision re: involving OTNR in Task Force discussions	Harriet Harmon	JT to provide update on OTNR sub-group at next TF session	Mtg 7	Open
7 26/04	5	Review additional information re: sharing factors (not covered for time)	Task Force	To be part of relevant deep-dive session	Mtg 7	Closed
8 26/04	7	Further work on design vs cost reflectivity to be presented at Mtg 6	James Stone & Nicola White	Further updates in Mtg 7	Mtg 7	Open
9 26/04	7	Technical input needed on deviation from SQSS and legal implications	James Stone & Nicola White	Email due from JS and NW	Mtg7	Open
10 26/04	7	Investigate more granular data sources for DNO embedded distribution to support the methodology & analytics	James Stone	Need to identify the data needs before exploring sources	Mtg 8	Open

11 26/04	8	Actions allocated across the TF group for topics progressing for further development or into draft modifications	James Stone	Packages to be agreed and volunteers sought	Post Mtg 7	Open