REPLY

NORTHERN POWERGRID (NORTHEAST) PLC and
NORTHERN POWERGRID (YORKSHIRE) PLC

APPELLANTS

- and -

GAS AND ELECTRICITY MARKETS AUTHORITY

RESPONDENT

RIIO-ED2 PRICE CONTROL

SLAUGHTER AND MAY

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15 May 2023

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1. Introduction

1.1 These are the Appellants' written submissions in reply to GEMA's response dated 24 April 2023 (**Response**), addressing the three points identified in the CMA's email of 5 May 2023. Defined terms are as defined in the Appellants' Notice of Appeal dated 2 March 2023 (**NOA**), unless indicated otherwise.

1.2 In summary, there have been striking changes in GEMA's case compared to the RIIO-ED2 documentation. GEMA advances in the Response a new account of what it decided and why. The new account amounts to a substantially new decision, as opposed to further or different reasons in favour of the (different) decision that GEMA actually took during the RIIO-ED2 process. The Response provides no tenable basis on which to defend either decision.

2. Whether GEMA re-baselined DNOs' business plans to a common scenario

2.1 In its Response, GEMA flatly denies imposing "*a so-called "Common Scenario" after the submission of business plans*"[1] and suggests that it made dramatic reductions to DNOs' planned LRE simply to ensure that network investment was limited to that which was "*justified, efficient and represented consumer best-value*", i.e. to remove planned costs attributable to inefficiency.[2]

2.2 It is however clear that GEMA did use a common planning scenario based on the System Transformation FES to set allowances in respect of LRE. For example:

(i) in the Draft Determinations (**DD**), GEMA stated that it proposed to "*set modelled costs for all DNOs based on a common net zero compliant scenario*".[3] It stated (emphasis added): "*The proposed adjustment aligns DNOs' forecasts and associated allowances to the lowest net zero compliant scenario, the ESO's System Transformation FES. This approach ensures a more consistent starting point across the DNOs. We opted for this scenario because while it facilitates the delivery of net zero, it is the least ambitious of the FES 2021, which will ensure we are only funding a level of investment we can be reasonably confident is needed in the next five years. This is not to say we consider System Transformation is the most likely view of the future, but instead it is the most appropriate scenario to use in order to protect consumers from higher costs than necessary while ensuring allowances are sufficient to enable net zero*";[4]

(ii) in the Final Determinations (**FD**), GEMA stated that most DNOs had "*agreed that there was a need for an adjustment to rebase allowances to a common scenario*" (emphasis added).[5] As in the DD, GEMA characterised its approach as "*adjusting LCT forecasts to a common scenario across all DNOs*"[6] and repeated that it had not concluded that System Transformation

[1] Response, paragraph 83.

[2] Response, paragraph 59.

[3] DD Core Methodology (NOA1 Tab 05), paragraph 7.7 (3rd bullet point).

[4] DD Core Methodology (NOA1 Tab 05), paragraph 3.36.

[5] FD Core Methodology (NOA1 Tab 03), paragraph 7.550.

[6] FD Core Methodology (NOA1 Tab 03), paragraph 3.16.

was "*the most likely view of the future*" but had decided to use it to set baseline allowances based on a "*more conservative view of LCT uptake*";[7] and

(iii) both the relevant UM designs (LRE volume drivers and the LRE Re-opener) are predicated on a common scenario of System Transformation.[8]

2.3 Furthermore, this was the context for the use by GEMA of the Demand Driven Adjustment (**DDA**) in the totex modelling. GEMA decided not to apply the DDA to the disaggregated models' outputs because those models "*utilise a similar approach to adjusting LCT uptake and capacity released"*, and imposing the DDA would risk "*double counting with the volume adjustments in these models*".[9]

2.4 GEMA now seeks to move away from these clear statements in the DD and FD, and recasts *ex post* its approach to the uncertainty around the path and pace of electrification (in effect, defending a fundamentally different decision from that in the FD).

2.5 As such, GEMA has to recast the DDA as a response to alleged inefficiency in the high levels of LRE in DNOs' business plans, rather than an adjustment to align DNO's plans to a common baseline scenario.[10] That is not, however, how the DDA is described in the FD.[11]

2.6 GEMA does not signal or explain this change of case in the Response, but cites the *Firmus Energy* case.[12] In *Firmus Energy*, the CMA cited paragraph 24 of Moses LJ's judgment in *Everything Everywhere*.[13] Moses LJ's uncontroversial statement of principle does not, however, apply to the present case. This is because GEMA does not seek to defend a decision that it took by relying on different reasoning in support or identifying in evidence some other "*basis*" for that decision. Instead, GEMA seeks to defend a different decision that it did not take, identifying grounds on which that different decision might have been lawful. As with GEMA's new case on whether the allocation method does (and is intended to) reduce total allowances, GEMA's recasting of its case on the Common Scenario may be best characterised as an impermissible fresh decision.

2.7 In any event, GEMA's new case is untenable on the facts. Contrary to the Response, GEMA did not in the FD make only "*modest adjustments*" informed by the System Transformation FES 2022 scenario.[14]

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[7] FD Core Methodology (NOA1 Tab 03), paragraphs 7.546 and 7.559.

[8] See LRE Volume Drivers Governance Document (FE1 Tab 01e), paragraph 2.21; Re-opener Guidance and Application Requirements Document (FE1 Tab 01f), Appendix 8 paragraphs A8.3- A8.5; FD Core Methodology (NOA1 Tab 03), paragraphs 3.14-3.15 and 3.54; and Special Condition 3.2, point 3.2.75.

[9] FD Core Methodology (NOA1 Tab 03), paragraphs 7.549 and 7.564.

[10] Response, paragraph 60.

[11] See for example FD Core Methodology (NOA1 Tab 03), paragraphs 7.547 – 7.559.

[12] *Firmus Energy (Distribution) Limited v NIAUR* (26 June 2017) – see points (b) and (h) at Response, paragraph 35.

[13] *Everything Everywhere Ltd v Competition Commission* [2013] EWCA Civ 154.

[14] Response, paragraphs 83 and 92.

That stance is not only inconsistent with the content of the DD and FD (as addressed above), but is also clearly wrong considering the detail of the process that GEMA followed.

2.8 As explained in Annex A, which sets out comments from Frontier Economics, the key LRE volume adjustments made in the benchmarking process (the DDA in the totex stream and workload adjustments (**WLA**) in the disaggregated models) are, by their characteristics and effects, plainly adjusting for differences between DNOs' planning scenarios and the Common Scenario. NPg's own planning documents reveal a difference in secondary reinforcement costs between its "*best view*" (i.e. the NPg Planning Scenario) and its "*low case*" (i.e. System Transformation) that closely matches the size of the adjustments made by GEMA in the disaggregated modelling (£370m vs £398m). On GEMA's new case, that can only be a striking coincidence because its adjustments are now claimed to be almost all efficiency, not scenario, related. GEMA's new position also does not in any event address the misallocation issue: irrespective of the basis for the dramatic reductions to LRE, reliance on business plan proportions results in an unjustified under-allocation of cost to fixed cost categories.

3. Alleged inefficiency of the NPg Business Plan

3.1 For consistency with the point addressed above, GEMA now has to say that the NPg Business Plan included "*extremely high*"[15] and, in its view, inefficient workload volumes for secondary reinforcement (specifically in respect of NPgY).[16] It is true that NPg planned, on its "*best view*", for high volumes of secondary reinforcement. However, as explained in Annex A, this was driven by NPg's planning assumptions, rather than arising from inefficiency. The NPg Business Plan explicitly stated that NPg was uncertain whether all of the forecast LRE work volume would actually be required and that this was dependent on which decarbonisation pathway eventuated.[17] Further, NPg proposed that almost half of the secondary reinforcement work be funded via UMs rather than *ex ante* allowances, such that work would only need to be funded to the extent that one of the higher scenarios eventuated; i.e. one in which demand growth proved high enough to require that work to be performed.[18]

3.2 GEMA cites no examples of having itself criticised the final NPg Business Plan for having LRE forecasts that were inefficient in the context of the NPg Planning Scenario. GEMA in fact found that NPg performed well on unit cost benchmarking for secondary reinforcement, and it did not go on to say that this was in stark contrast to extreme inefficiency as regards work volumes.

3.3 The decision documents simply do not state that the vast majority of the adjustments made to NPg's planned LRE were required to correct for extreme inefficiency.[19] Had GEMA reached such an important conclusion, it would have been set out in clear terms. Further, in circumstances where GEMA has <u>not</u> concluded that System Transformation FES was the most likely scenario, it could not rationally conclude that LRE planning assumptions appropriate to higher electrification scenarios are somehow

[15] Response, paragraph 137.2.

[16] McMahon 1, paragraph 345.

[17] Annex 4.1 to the NPg Business Plan (APJ1 Tab 01), page 26.

[18] Annex 7.4 to the NPg Business Plan, page 14.

[19] GEMA has to rely on adverse comments made by the Challenge Group at an earlier stage in the preparation of business plans: see Response, paragraph 57.

objectively inefficient. Volumes of work appropriate to higher electrification scenarios do not become inefficient simply because GEMA ultimately decides to fund a more conservative baseline scenario.

3.4 It is rewriting history for GEMA now to suggest it concluded that the secondary reinforcement costs in the NPg Business Plan were hugely inefficient, as opposed to being over and above the funding appropriate to a System Transformation baseline scenario. It is also difficult to understand why GEMA would wish to allocate final allowances so as to permit a higher amount of (*ex hypothesis* inefficient) spending on LRE. Given GEMA's duty to protect customers, if it had concluded that the NPg Business Plan revealed gross inefficiency in LRE, the rational course would be to set a lower notional allowance (so that the monitoring metrics within the UM would apply from a lower level), facilitating closer scrutiny and control over expenditure. GEMA did the opposite. It is not credible that, had GEMA identified significant inefficiency in LRE, it would then undermine the logic of its funding mechanism by allocating deliberately excessive notional allowances to those costs categories. The guidance on the operation of the UMs is clear that the purpose of the baseline funding is to protect customers from inefficient spending, not to facilitate it.[20]

3.5 A further new contention in the Response is that NPg's planned LRE was not premised on a substantially different path and pace of electrification. A fundamental premise of this suggestion is that differences between DNOs' levels of planned LRE are attributable entirely to differences between their assumptions as to LCT uptake in the period 2023-2028. That premise is both new and incorrect. While the number of new LCTs in the period 2023-2028 is an important driver for increases in LRE in RIIO-ED2, the network impact of these incremental LCTs varies dramatically depending on local network design, existing demand profile, the location, timing and demand profiles of the new technologies, and how demand is assumed to increase after the period 2023-2028: see Annex A, Annex B (which contains further explanation on this topic from Mr Nicholson) and Taylor 1. It is untenable to suggest that there is or should be a linear relationship between LCT uptake in 2023-2028 and the efficient LRE required to accommodate increases in demand on the network (necessarily over a longer window) and that this relationship would be the same across dramatically different electrification scenarios.

4. GEMA's claim that efficiency scores and the BPI Stage 4 calculation are not comparable

4.1 GEMA now argues that there is no need for consistency in its approach to calculating the BPI Stage 4 reward and efficiency scores because the two calculations serve *"separate and distinct purposes".*[21] It says *"there is no sole, true view of efficiency"*, and that the catch-up efficiency challenge measures *"the efficiency of delivery"*, whereas the Stage 4 reward calculation measures *"the efficiency of business plans in terms of DNOs' approach to running their businesses"*.[22] As explained in Annex A, this is incoherent and, moreover, flatly inconsistent with the price control as a whole. GEMA also did not explain at any point during the decision-making process that it considered there to be two relevant types of efficiency to be assessed. Had GEMA done so, it would have been told (by NPg at least) that a purported distinction between *"efficiency of delivery"* and *"efficiency of business plan*" has no basis.

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[20] See, for example, LRE Volume Drivers Governance Document (FE1 Tab 01e), paragraph 2.21; Re-opener Guidance and Application Requirements Document (FE1 Tab 01f), Appendix 8 paragraphs A8.3-A8.5.

[21] McMahon 1, paragraph 262.

[22] McMahon 1, paragraphs 265–268.

The business plan encapsulates a DNO's view (based on assumptions) of how the plan will be delivered and so how much it will cost; plan and delivery of the plan are indivisible parts of a whole.

5. GEMA's 'cross-checks'

5.1 GEMA now relies on various "*cross-checks*"[23] to validate its chosen hybrid allocation method. As explained in Annex A, these cross-checks are uninformative and do nothing to refute the fundamental irrationality of using submitted cost proportions in allocating final allowances. GEMA also asserts consistency with its approach in other RIIO price controls.[24] In fact, the allocation approach used in the last electricity distribution price control (RIIO-ED1) is more consistent with the remedy proposed by the Appellants than it is with the approach that has been adopted by GEMA for RIIO-ED2.

6. Conclusion

6.1 Drawing these points together, the Response fails properly to defend the decision that GEMA consulted on, took and sought to justify in the FD. Now that GEMA no longer feels able to dispute that its allocation method has the practical effect of reducing total allowances determined by its benchmarking as efficient, opposition to Ground 1 rests on downplaying the importance of decarbonisation scenarios, and a new and unsustainable contention that NPg's planned LRE was extremely inefficient. As regards Ground 2, GEMA's defence hangs on a distinction between two types of efficiency that is incoherent, appears nowhere in the FD, and is actively inconsistent with the approach that GEMA in fact took to calculating BPI Stage 4 rewards.

7. Statements of truth

The Appellants believe that the facts stated in this Reply are true.

SIGNED [redacted]

PHILIP JONES

DATED 15 May 2023

for and on behalf of Northern Powergrid (Northeast) Plc and Northern Powergrid (Yorkshire) Plc

[23] See: Response paragraph 96.3.

[24] See paragraphs 171-174 of McMahon 1.

ANNEX A: OBSERVATIONS IN RESPONSE FROM FRONTIER ECONOMICS

1. Whether GEMA re-baselined DNOs' business plans to a common scenario

1.1 In its Response, GEMA disputes whether it has, through the DDA and WLA, calibrated RIIO-ED2 to a Common Scenario consistent with System Transformation.[25] GEMA claims that the WLA are overwhelmingly related to efficiency and, specifically, that just £65m of the £398m of WLA made in its secondary reinforcement disaggregated model for NPg related to scenario, with the remaining 84% allegedly reflecting inefficient volumes removed from the NPg Business Plan.[26] This position is untenable for a host of reasons:

(i) LRE is (obviously) heavily influenced by the assumed planning scenario. The difference between NPg's estimates of the LRE needed to serve the relevant scenarios closely correspond to the quantum of cost removed by GEMA's WLA. GEMA chose to add in all the NPg Planning Scenario costs rather than using its costings for System Transformation, and then to effectively take those costs back out again using WLA. It is surprising for this now to be characterised as an efficiency challenge.

(ii) All aspects of the WLA applied to secondary reinforcement are strongly determined by scenario assumptions. This is supported by:

(a) a review of the factors that are relevant to the planning of LRE (see Annex B);

(b) examination of what GEMA would have put in its models had it relied on the cost estimates for other decarbonisation scenarios developed by NPg. This shows in particular that the required quantum of reinforcement work per LCT varies markedly with scenario;

(c) the sheer scale of inefficiency that one would need to believe was present in NPg's LRE planning for GEMA's argument to be correct. It is simply not credible that NPg's proposed reinforcement activity for some asset types involved 94% pure inefficiency, rather than being associated with a higher electrification scenario;

(d) the spread of LCT impact ratios across DNOs and asset types, which again shows significant divergence between DNOs regarding the work that needs to be done. It is not credible to suggest this divergence can be explained by efficiency differences;

(e) the large scale of WLA within secondary reinforcement, a cost category that is affected by profound uncertainty around future decarbonisation scenario, versus the much smaller scale of WLA within the other cost categories that are inherently less sensitive to scenario.

[25] For example, Response, paragraphs 83 and 92.

[26] Response, paragraph 92.

1.2 There is also the simple fact that GEMA found the volume of LRE required during RIIO-ED2 so uncertain it decided to put in place a suite of UMs to allow funding to vary very widely depending on outturn conditions. Notwithstanding this, GEMA now seems to take positions that suggest that NPg should have known not to plan for high electrification (despite this being legitimate within GEMA's business plan guidance).

The different scenarios set out in the NPg Business Plan submissions

1.3 In line with the requirements set out in GEMA's business plan guidance[27] and further requests issued during the process, NPg submitted LRE cost forecasts associated with seven different decarbonisation scenarios, including both the NPg Planning Scenario and System Transformation.[28]

1.4 The NPg Business Plan included detailed cost information based on the NPg Planning Scenario, and higher-level information on total LRE for the other six scenarios. In response to a further data request from GEMA as part of the December 2021 Business Plan submission, NPg completed a data template to provide 'high' and 'low' cost estimates. NPg based its 'high' estimate on the CCC Widespread Engagement scenario, and its 'low' estimate on the FES System Transformation scenario. This information was provided to GEMA before NPg had sight of GEMA's models and scenario adjustments, any concrete knowledge of how GEMA's UMs would operate, or how GEMA proposed to allocate allowances between cost categories.

1.5 NPg explicitly acknowledged in the NPg Business Plan that it was uncertain whether all of the LRE work in the NPg Planning Scenario would be needed during RIIO-ED2 (as it assumed not just rapid electrification during the RIIO-ED2 period, but continued rapid electrification beyond RIIO-ED2) and that the NPg Planning Scenario was not a view of the world that was considered most likely to come to pass.[29] Rather it was *"the one best optimised for the inherent uncertainty in planning for all decarbonisation pathways. It ensures that our network will be in a position to effectively keep pace with any pathway that emerges by 2028"*.[30]

1.6 The NPg Business Plan split out the LRE costs that NPg requested *ex ante*, from those that it believed should be funded through UMs. The latter were reported separately in the "M13 table" within the Business Plan Data Template (**BPDT**).

1.7 The waterfall chart below steps through: (i) NPg's 'low' scenario LRE costs (premised on System Transformation); (ii) the additional costs that made up NPg's *ex ante* LRE request; and (iii) the additional LRE costs that made up NPg's Planning Scenario. We show also against these (in red) the LRE costs removed by GEMA through WLA in the secondary reinforcement model.

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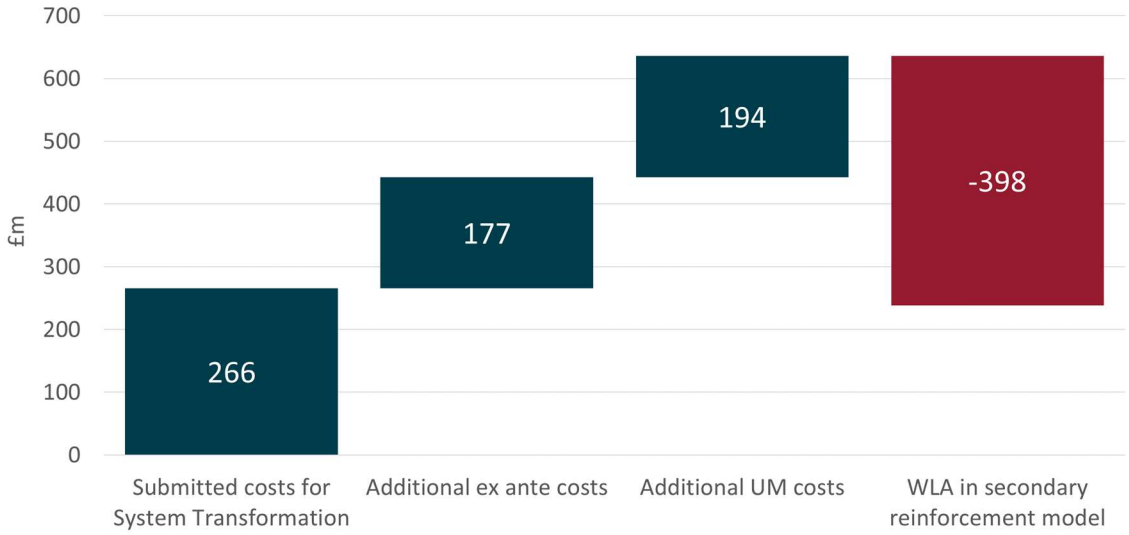
[27] GEMA (September 2021), RIIO-ED2 Business Plan Guidance, paragraph 5.4. *"DNOs must demonstrate that their forecasts have been informed by the range of assumptions found in the Net Zero compliant energy pathways in the Electricity System Operator's 2020 FES, and the Climate Change Committee's 6th Carbon Budget".*

[28] For a full list of all seven scenarios see NPg Business Plan, page 56. See also Annex 4.1 to the NPg Business Plan (APJ1 Tab 01), and Annex 7.4 Decarbonisation Uncertainty and Ofgem Uncertainty Mechanisms.

[29] Annex 4.1 to the NPg Business Plan (APJ1 Tab 01), page 25.

[30] Annex 4.1 to the NPg Business Plan (APJ1 Tab 01), page 26. See also Jones 1 for more detail.

Figure 1: Comparison of NPg submitted LRE costs to WLA



Source: Frontier Economics analysis of NPg's BPDTs (and underlying detail), and GEMA's secondary reinforcement disaggregated model.

1.8 When developing its cost assessment methodology GEMA had a choice of what information it requested and what it would rely on. It could have chosen to make use of cost estimates developed for System Transformation, where NPg developed LRE plans intended to deal with much less electrification that contained much less reinforcement work.

1.9 GEMA instead chose to rely on cost estimates derived for the NPg Planning Scenario despite other more conservative cost forecasts for NPg being available, and even though NPg did not request the full quantum of costs associated with the NPg Planning Scenario and instead stated that higher amounts of funding should be released if and only if an accelerated decarbonisation scenario did emerge.

1.10 The size of the WLA made by GEMA in its secondary reinforcement model (which seem to be bringing DNO costs in line with System Transformation) closely correspond to the quantum of scenario-related LRE in the NPg Business Plan (i.e. the difference between System Transformation and the NPg Planning Scenario). GEMA now argues that these WLA, which simply take NPg approximately back to where it started, are overwhelmingly related to inefficiency rather than scenario. However, this claim is not credible.

1.11 The most stark example of this "Hokey Cokey" approach of putting all costs associated with a higher electrification scenario in, before taking them all back out again, and claiming that this is done in the name of inefficiency, is found in the case of Reactive LV Services.

(i) As part of the NPg Business Plan, NPg estimated that Reactive LV Service upgrade costs could be as high as £116m,[31] but noted that this estimate was subject to profound

[31] This figure includes indirect costs and RPEs.

uncertainty.[32] NPg's clear recommendation was that this high cost estimate should be taken as only indicative of how high costs in this category may become. NPg requested that only £16m of these costs be included in *ex ante* allowances.[33]

(ii) Despite this, GEMA included NPg's higher, indicative cost estimate in its modelling. After uplifting NPg's submitted costs for Reactive LV Services (£93m), because NPg's unit cost was lower than sector median, GEMA then applied a WLA of £115m to remove 98% of uplifted submitted costs, apparently in the name of efficiency. Of this WLA of £115m, GEMA's position is that just £4m was scenario-related. In comparison, as noted above, the NPg Business Plan stated that £100m of the £116m cost estimate was subject to decarbonisation uncertainty.

The size and composition of GEMA's WLA – the gap between GEMA (£65m) and NPg/Frontier (£398m)

1.12 The WLA in the secondary reinforcement model were calculated separately for each of eight different asset types: Pole Mounted Transformers (**PMT**), Ground Mounted Transformers (**GMT**), Low Voltage Overhead Line (**LV OHL**), Low Voltage Underground Cable (**LV UG**), High Voltage Overhead Line (**HV OHL**), High Voltage Underground Cable (**HV UG**), Reactive LV Services, and Proactive LV Services. Each asset type was also subject to a unit cost challenge (which it is accepted represents an efficiency challenge).

1.13 For each asset type, GEMA calculated an 'adjustment factor' by comparing each DNO's own forecast of reinforcement work to GEMA's view of reinforcement work for the Common Scenario. For each of the six types of transformer and circuit reinforcement (PMT, GMT, LV/HV OHL, LV/HV UG), GEMA's view was derived by multiplying together:

(i) GEMA's view of **LCT additions** in the period (in terms of their contribution to peak demand), based on LCT uptake numbers under the FES System Transformation scenario and GEMA's own assumptions of EV and HP contributions to peak demand; and

(ii) GEMA's view of **reinforcement[34] per megawatt of LCT additions**, which we refer to as the **'LCT impact ratio'**. GEMA set this figure by calculating the industry median of the 'reinforcement per megawatt of LCT additions' ratio for each DNO by asset type.

[32] A number of important uncertainties were cited by NPg to explain why it was particularly challenging to produce an estimate of required volumes in this area for RIIO-ED2, including for example that it is *"uncertain how these types of upgrades may need to be scaled up to reflect much larger LCT volumes"* . To see the full explanation refer to Annex 4.5 to the NPg Business Plan.

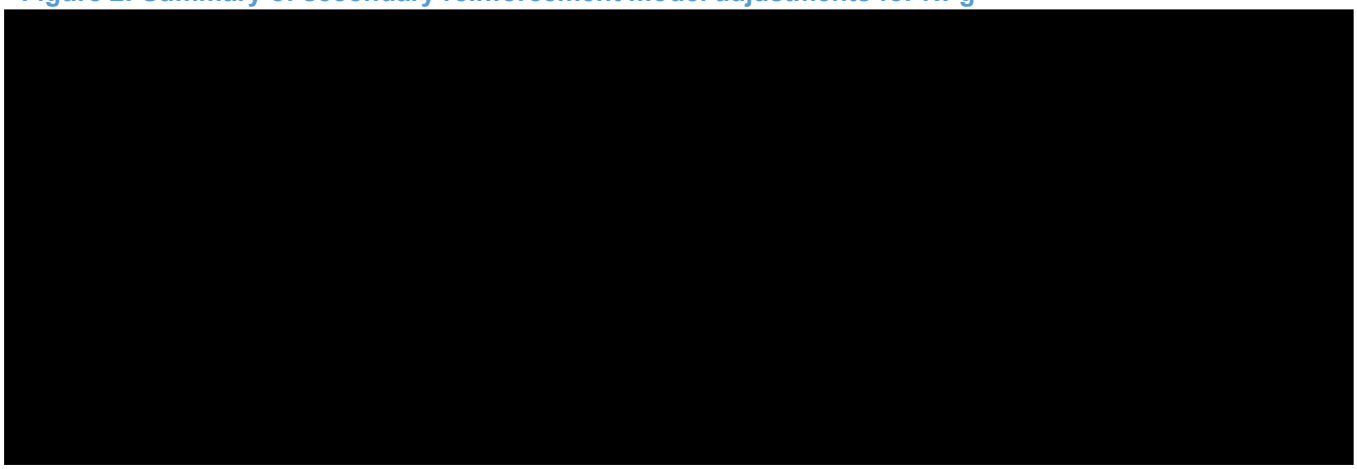
[33] Annex 4.5 to the NPg Business Plan, page 33.

[34] For substation reinforcement, reinforcement work is measured in terms of megavolt amperes (**MVA**) of capacity released. For circuit reinforcement, it is measured in terms of kilometres of circuit reinforced.

1.14 GEMA's approach for Reactive LV Services was similar, though based on (i) **EV additions** and (ii) **reactive service cable interventions[35] per EV addition**.[36]

1.15 The effect of each step in GEMA's secondary reinforcement model is summarised in Figure 2 below.

Figure 2: Summary of secondary reinforcement model adjustments for NPg



1.16 On unit costs, NPg performed very well. NPg's unit costs broadly matched or comfortably beat the sector median for all assets. This does not indicate that NPg is inefficient; it indicates the opposite.

1.17 GEMA's WLA are driven by the combined effect of its view on '**LCT additions**', and '**LCT impact ratio**'. We can consider the effect of applying each individually, and the effect of applying both together. The order in which these are applied is irrelevant to the final outcome (the two steps are commutative) but the order matters to the importance one ascribes to each step, since the two interact materially with one another, as we illustrate in Figure 3 below for NPg.[37] NPg's total WLA was £398m. If we apply only the LCT addition adjustment then this would lead to a WLA of £268m, areas (a) and (b) in Figure 3.[38] If we apply only the LCT impact ratio adjustment then this would lead to a WLA of £333m,

[35] Measured as the number of properties that have been unlooped or had another constraint removed.

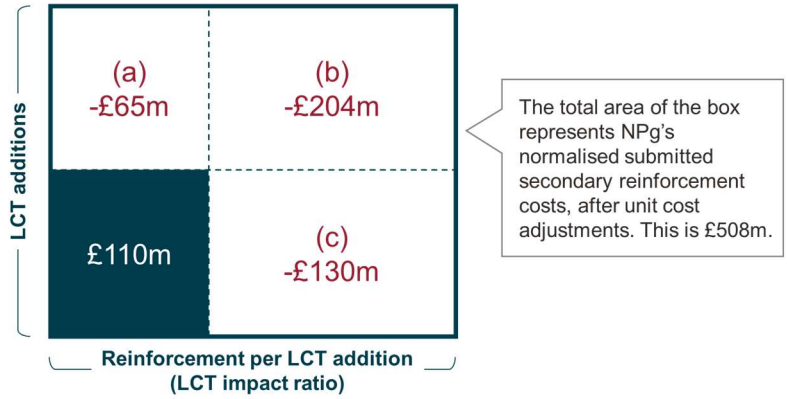
[36] The treatment of Proactive LV Services however was different to the other asset types, but we understand that this is not contentious and do not intend to cover this further (unless requested to do so by the CMA).

[37] This figure is a stylised representation of the effect of GEMA's models that operate on an asset type by asset class type. It would be possible to produce "squares" for each asset type to depict more accurately the effect of GEMA's modelling. Some would reveal that for certain asset types NPg's efficient volumes are far higher than those they submitted. In the interests of brevity, we provide one, aggregate illustration.

[38] The totals quoted here do not exactly match the sum of the figures in the illustration due to rounding.

areas (b) and (c). Area (b) is captured in both the LCT addition adjustment and the LCT impact ratio adjustment.

Figure 3: Illustrative decomposition of NPg's WLA



Source: Frontier Economics, based on GEMA's secondary reinforcement model.

1.18 GEMA argues that only the WLA illustrated in area (a), i.e. those that are additional to the LCT impact ratio adjustment and therefore purely driven by the LCT addition adjustment, are scenario related.

1.19 To hold this view, GEMA implicitly assumes that the efficient LCT impact ratio is fixed and invariant across all scenarios, i.e. that there is a simple linear relationship between LCT uptake and required LRE work and that any variation provides evidence of relative (in)efficiency. We do not agree that this assumption holds. The LCT impact ratio is strongly driven by the level and profile of LCT uptake assumed. We provide evidence to support this in the subsections below.

1.20 In its Business Plan guidance, GEMA also explicitly recognised that this was not the case: *"Precise alignment to a specific pathway is not expected due to the range of the FES and CCC forecasts and is not necessary since it is appreciated that the relationship between forecasts and investment plans is not linear"*[39] (emphasis added). Yet GEMA now applies precisely this assumption in quantifying all variation from a linear relationship as efficiency driven.

How reinforcement work is planned

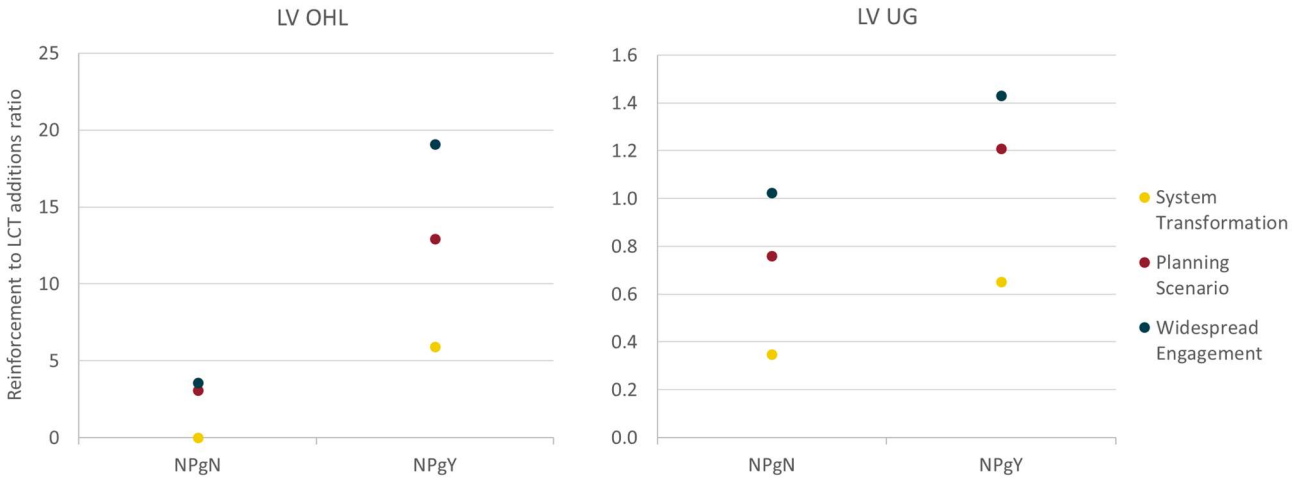
1.21 As Mr Nicholson explains in Annex B, the amount of reinforcement work required in response to a given level of demand growth is not fixed in proportion to the demand growth. It follows that there is no single "true" LCT impact ratio that can be identified and applied in all circumstances. These ratios will depend on a range of factors including the assumed profile of LCT additions over time (including the profile of additions beyond RIIO-ED2), the assumed contribution of each additional LCT to peak demand, assumptions around the location and clustering of LCT additions, the level of existing spare capacity on the network, and the length of a DNO's network.

[39] GEMA (September 2021), RIIO-ED2 Business Plan Guidance (NOA1 Tab 34), page 93.

The NPg Business Plan submission reveals sizeable variation in LCT impact ratio by scenario

1.22 The effect of scenario assumptions on the LCT impact ratio is obvious from analysis of the decarbonisation scenarios costed in the NPg Business Plan (the NPg Planning Scenario, a 'high' CCC Widespread Engagement scenario, and a 'low' System Transformation Scenario). Figure 4 below focuses on LCT impact ratios for two asset types that receive large WLA, namely LV UG and LV OHL reinforcement.[40] As can be seen, there are material differences in the ratios across different scenarios, despite these ratios all being derived by forecasts by the same planning team, using the same suite of tools and analysis.

Figure 4: Ratio of reinforcement to LCT additions across scenarios, low voltage circuits



Source: Frontier Economics analysis of NPg data.

The scale of WLA is far too large to credibly be interpreted as inefficiency

1.23 GEMA agrees that £65m of NPg's £398m WLA in secondary reinforcement are scenario related. This leaves an adjustment of £333m which GEMA argues is an efficiency adjustment. Given that NPg's submitted costs for secondary reinforcement totalled £450m, uplifted to £508m by the unit cost challenge, this implies that GEMA considers that 66% of these costs were driven by inefficient workloads, i.e. NPg planned for three times as much reinforcement work as was needed, due to inefficiency.

1.24 The scale of the implied inefficiency is simply not credible, in particular in the context of the inherent uncertainty affecting the planning task with respect to secondary reinforcement during RIIO-ED2. Mr Nicholson explains in Annex B that solutions to network constraints at the low voltage (**LV**) level are limited and mechanistically chosen. If all DNOs were faced with the same starting network configuration, and then given a clear and common set of network constraints arising from a common scenario, the reinforcement solutions that each planning team would identify as required to alleviate

[40] Ratios for other asset types can be provided on request, but all show predictable variation between scenarios.

these constraints would be expected to be highly similar across DNOs. It is simply inconceivable that a planning team could get it wrong by approximately 200% or more.

The spread of LCT impact ratios across company plans is too large and variable to represent efficiency

1.25 We have explored the LCT impact ratios derived in GEMA's secondary reinforcement model. We find that the ranges across these ratios are very wide, indicating no sector consensus as to any given volume of work needed per LCT. There is no clear pattern in DNO placement across asset types, contrary to what one would expect if ratios were primarily driven by efficiency. NPg for example has very high ratios for LV reinforcement, but very low ratios for high voltage (**HV**) reinforcement. To conclude that these differences are driven by efficiency, one would need to believe, among other things, that:

(i) NPgY is simultaneously extremely inefficient on LV overhead line reinforcement, proposing to carry out 2,251% more work per LCT addition than the median firm, but highly efficient on HV overhead line reinforcement, carrying out 86% less work per LCT addition than the median firm; and

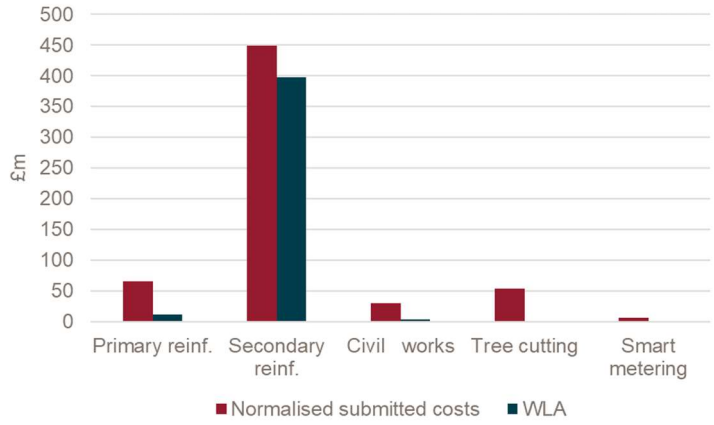
(ii) NPgY is simultaneously highly inefficient on LV underground circuit reinforcement, proposing to carry out 528% more work per LCT addition than the median firm, and highly efficient on HV underground circuit reinforcement, carrying out 37% less work per LCT addition than the median firm.

1.26 This is clearly implausible. These differences are simply driven by NPg's (and other DNOs') planning assumptions, as described in Annex B, which explains why NPg is an outlier in respect of LV circuits.

The scale of the WLA in secondary reinforcement is inconsistent with GEMA's WLA in other models

1.27 GEMA applied WLA in five models, and it is common ground that four of these should be understood to be related primarily to efficiency. In Figure 5 below, we show for each of the five cost categories in receipt of WLA the scale of those adjustments relative to submitted costs.

Figure 5: Scale of WLA by disaggregated model



Source: Frontier Economics, based on GEMA's modelling.

1.28 For cost categories where the profound uncertainty of decarbonisation pathway is absent, modest WLA have been applied, completely at odds with the WLA applied to secondary reinforcement, providing no indication that this can be interpreted as an efficiency adjustment.

Implications of GEMA's position for misallocation

1.29 Putting to one side our arguments against GEMA's claims for a moment, if we were to take those claims around its scenario adjustments at face value, then this would still lead to a misallocation error. It would also create an internal inconsistency between GEMA's method of determining baseline allowances and the operation of the UMs that will (or may) adjust those baselines.

1.30 According to GEMA, NPg's submitted costs contained large volumes of inefficient load related work that should not be delivered. On this basis, GEMA's allocation method would still result in an unjustified under-allocation of cost to fixed cost categories because:

(i) submitted shares would be based on a plan that contained materially too much LRE work, which GEMA would still have stripped out in the course of its modelling;

(ii) as a result, allowances would still contain a materially lower proportion of LRE than submitted costs;

(iii) if GEMA then relied on submitted costs shares to make its allocation, then it would clearly still have allocated too much allowance into LRE; and

(iv) this overallocation would, for the reasons described in the Frontier Misallocation Report, end up being lost and never recovered owing to the operation of LRE UMs.

1.31 For secondary reinforcement cost categories covered by volume drivers, those baseline cost allowances also set the threshold outturn expenditure above which GEMA may scrutinise activity using its identified set of monitoring metrics. The express purpose of this provision is to protect customers from the danger of DNOs delivering inefficient volumes of work.[41]

1.32 If NPg's planned load related volumes were simply inefficient (rather than being appropriate to a different scenario) then it would still make no sense to use those planned volumes to allocate allowances. The effect of GEMA's allocation methodology is to set NPg's UM scrutiny threshold by reference (with 50% weight) to volumes it now declares to be extremely inefficient. Hence this threshold will be set far too high and this important check and balance on the operation of volume drivers will kick in at a level that would clearly allow the delivery of a large volume of work that GEMA now says it considers to be inefficient.

1.33 We therefore regard GEMA's submissions on scenario adjustments as irrelevant to the misallocation ground and revealing an internally incoherent and irrational position.

[41] LRE Volume Drivers Governance Document (FE1 Tab 01e), paragraph 2.21. See also FD Core Methodology Document (NOA1 Tab 03), paragraphs 3.14–3.16 and 3.54.

2. Alleged inefficiency of the NPg Business Plan

GEMA's claim that NPgY's efficiency score ranking is misleading

2.1 GEMA argues that the fact that NPgY ranks second in the calculation of efficiency scores is misleading as it is just an intermediate step and not reflective of the final efficient costs.[42]

2.2 This is not a fair reflection of how GEMA's modelling works. Efficiency scores are based on a comparison of submitted costs and modelled costs (i.e. after all of GEMA's relative benchmarking of DNOs). The only step in the modelling that happens after this point that impacts the ranking of the three most efficient DNOs (SPN, NPgY and LPN) in the BPI Stage 4 calculation is GEMA's application of the WLA as a post-modelling adjustment.[43] GEMA's argument is therefore based again on the treatment of WLA.

2.3 In its evidence on the appeal, GEMA proceeds to calculate a new set of efficiency scores after the application of WLA, showing that NPgY ranks worse on this basis, but this is inevitable given the scale of costs added to serve NPg's Planning Scenario versus the scale of cost included in modelled costs for a different scenario. This is nothing more than a restatement of a key area of dispute.

2.4 Finally, GEMA states that NPgY does not beat the 75th percentile efficiency score in any of the three totex models, while LPN and SPN beat the 75th and 85th percentile benchmarks. This is a cherry-picked observation. It is also true that neither LPN nor SPN beat the 75th percentile benchmark in the disaggregated modelling, while NPgN and NPgY are the only DNOs that beat both the 75th and 85th percentiles in that modelling. The disaggregated benchmarking receives 50% weighting in the modelling, so this finding should be of equal importance to GEMA's observation on the totex modelling.

2.5 If GEMA's view is that NPgY and NPgN only beat the 75th and 85th percentile benchmarks in the disaggregated modelling because a large portion of allegedly inefficient volume disallowances were excluded in the calculation of the efficiency scores, then GEMA has set a benchmark in the disaggregated modelling that sits beyond the performance of every DNO. This is not logical and cannot be right.

GEMA's claim that efficiency scores and the BPI Stage 4 are not comparable

2.6 GEMA argues that there is no need for consistency between the BPI Stage 4 and efficiency score calculations because the two serve "*separate and distinct purposes*".[44] It states that the catch-up efficiency challenge measures "*the efficiency of delivery*" while the Stage 4 reward calculation

[42] McMahon 1, paragraph 301.

[43] While GEMA claims that the WLA are *"applied directly within the disaggregated benchmarking"* (McMahon 1, paragraph 108) this is not accurate. The WLA are calculated within the relevant disaggregated benchmarking models, but applied later in GEMA's "PostAnalysis" files.

[44] McMahon 1, paragraph 262.

measures "*the efficiency of business plans in terms of DNOs' approach to running their businesses*", assessing "*efficiency of volumes and types of work undertaken in addition to efficiency in delivery*".[45]

2.7 It is unclear what point GEMA seeks to make here. The only coherent interpretation we have been able to place on GEMA's new efficiency concept distinction would be for one of its efficiency concepts to cover the efficiency with which DNOs have costed the task GEMA has set for them (i.e. their ability to deliver efficiently the Common Scenario) and for a second concept to cover the efficiency of DNO plans in and of themselves, (i.e. given the scenario each DNO assumed and costed). We agree that either of these efficiency concepts would be valid. The problem with GEMA's approach on BPI Stage 4 is that it mixes up these two concepts by comparing (in respect of disaggregated modelled costs) submitted costs premised on DNO plans with modelled costs premised on the Common Scenario.

2.8 A key part of GEMA's argument on the BPI Stage 4 calculation is that the WLA are not scenario adjustments, but rather that they reflect GEMA's view of inefficient work volumes. If this were the case (which in our view it is not), then it is unclear why any inefficient costs should be excluded from an assessment of efficiency, regardless of whether they are driven by volumes or unit costs.

2.9 Furthermore, GEMA's rationale is internally inconsistent. While GEMA states that efficiency scores should not include efficiency related to work volumes, by excluding WLA it is only excluding volume disallowances from a small minority of its disaggregated models (five out of 36), and it is making no attempt to exclude the volume disallowances implicit in its totex modelling at all. GEMA acknowledges that the totex benchmarking involves (implicit) volume adjustments.[46]

2.10 It is therefore not logical that GEMA's exclusion of WLA results in exclusion of volume efficiency and measurement of only *"efficiency of delivery"* (even if this were a sensible approach to take).

GEMA's claim that its approach to estimating efficiency scores is conservative

2.11 GEMA claims that its approach to calculating efficiency scores was conservative.[47] This is wrong. By excluding the WLA from its calculation of the glidepath (thereby ignoring a subset of allegedly inefficient costs), the sector appears more efficient. This leads to a tougher glide path efficiency challenge, and lower allowances for the sector. If GEMA had calculated efficiency scores after the application of all WLA other than £65m (consistent with its view that these are all driven by inefficiency, noting we disagree), then the sector would have received £246m higher allowances (£34m higher for NPg).

2.12 Finally, even if we accept GEMA's claims that (i) WLA are primarily volume efficiency adjustments; and (ii) volume efficiency adjustments should not be captured in efficiency scores, its approach to calculating efficiency scores still remains inconsistent with its approach to calculating the BPI Stage 4 reward. The intention of the BPI Stage 4 was to reward information that is useful in setting lower

[45] McMahon 1, paragraphs 265 – 268.

[46] McMahon 1, paragraph 108.

[47] McMahon 1, paragraph 267.

allowances for other DNOs.[48] If GEMA genuinely has no interest in these (alleged) volume efficiencies when setting the efficiency challenge, then DNOs should not be rewarded or penalised for them in the BPI Stage 4, i.e. the Stage 4 reward should be calculated before the application of WLA.

3. Cross-checks

3.1 Appendix C of McMahon 1 presents three 'cross-checks' of GEMA's Final Determination 'non-variant' allowances. This is the first time that GEMA has shared the detail of these cross-checks. For the reasons set out below, we consider these cross-checks to be uninformative.

3.2 The first cross-check is the remedy proposed by NPg, where disaggregated cost shares are used to allocate allowances. Comparing this to the FD level of funding simply demonstrates the quantum of the misallocation error (although this is done on the basis of non-variant costs rather than contingent costs, which we consider to be the appropriate basis on which to assess the scale of the misallocation error).

3.3 The cross-checks GEMA has offered, if any weight is to be placed on them at all, all show that an error has been made. They indicate that non-variant funding provided is far too low, by between £51m and £130m, albeit we remain of the view that the materiality of the misallocation error is £157m on a final allowances basis.

3.4 It is helpful that through its analysis of the second cross-check GEMA acknowledges the importance of using cost shares that match the relevant scenario, while confirming that NPg requires more funding than has been effectively provided in the FD. But the second cross-check does not provide a full cross-check for the misallocation error as it contemplates a markedly different approach to ex ante and variable funding and to the design of UMs and the funding of LRE to that found in the FD. We also do not think that looking at outcomes for one company in one part of a hypothetical price control sheds much light on the actual price control process set out in the FD and the arguments around misallocation within that process.

3.5 Finally, the third cross-check, which effectively just provides a cut of NPg's submitted costs, is again irrelevant and does not provide a check on the reasonableness of GEMA's allocation method. If the third cross-check were to bind, it would in effect act as a limit on a subset of allowances, bounded above by the NPg Business Plan submission, with this constraint applied after all cost modelling had essentially been concluded as an additional test. But this is not what GEMA stated it was doing in its decision,[49] and it would act as a further arbitrary ratchet to reduce allowed costs.

3.6 Having examined GEMA's underlying calculations, there are three licensees that "fail" the test GEMA seeks to impose after the event by comparing the first and third cross-checks: NPgY, LPN and SPN, i.e. the three licensees that GEMA found to be most efficient when it calculated efficiency scores. It is far from unusual for the most efficient companies in a benchmarking exercise to receive higher allowances for some cost categories that they requested in their business plans, and there is a

[48] GEMA (December 2020) RIIO-ED2 Sector Methodology Decision, Annex 2 Keeping bills low for consumers (NOA1, Tab 12), paragraph 10.57.

[49] NOA, paragraph 18.4 and FD Core Methodology (NOA1 Tab 03), paragraph 7.635.

perfectly sound basis for regulators to make such an outcome available, i.e. it will strongly incentivise companies to seek to be most efficient. Rather than provoking concern, the third cross-check reveals an entirely expected outcome, and provides further evidence that NPgY has properly earned a BPI Stage 4 reward.

4. GEMA's comparisons to allocation methods used in other price controls

4.1 GEMA states that its allocation approach at RIIO-ED2 is aligned with its approach at RIIO-ED1 and RIIO-GD2.[50] However, these examples are misleading.

4.2 At RIIO-ED1:

(i) GEMA applied disaggregated cost shares to the entire set of outputs of its benchmarking modelling (including the totex modelling). Therefore, GEMA's use of disaggregated cost shares at RIIO-ED1 is in fact entirely consistent with NPg's proposed remedy, which would also apply disaggregated shares to the outputs of the modelling suite.

(ii) GEMA then weighted these category-level modelled costs, allocated using the disaggregated cost shares, with the DNOs' submitted costs for each category. This step of interpolating between GEMA's view and DNOs' views of costs (in order to acknowledge the limitations of benchmarking modelling) does not occur at RIIO-ED2. The use in RIIO-ED2 of submitted cost shares to allocate modelled costs is therefore not consistent with RIIO-ED1.

4.3 The approach at RIIO-GD2 (the current gas distribution price control) is also not consistent with GEMA's approach in RIIO-ED2. The RIIO-GD2 price control was not conducted in the presence of any material decarbonisation scenario uncertainty, meaning that the gas distribution network companies (**GDNs**) submitted business plans on a comparable basis. Furthermore, the cost assessment process at RIIO-GD2 involved the use of a single totex model, reflecting the fact that GEMA was comfortable with the comparability of the input data and did not need to carry out detailed disaggregated scrutiny of costs. There was therefore no scope for modelling to fundamentally change the structure of GDNs' submitted costs.

I believe that the facts stated in this Annex A are true.

SIGNED [redacted]

MICHAEL PAUL HUGGINS (Director, Frontier Economics Limited)

DATED 15 May 2023

[50] McMahon 1, paragraph 174.

ANNEX B: FURTHER INFORMATION ABOUT ENGINEERING MATTERS FROM MR NICHOLSON

1. The relationship between reinforcement work and demand growth

1.1 The amount of reinforcement work required in response to a given level of demand growth is not fixed in proportion to the demand growth. For example, it is not possible to say that as a rule, 1MVA of additional transformer capacity will be required to accommodate each additional megawatt of LCT demand. This ratio will depend on a range of exogenous factors as explained in Taylor 1 at paragraph 27. From an engineering perspective, the most material factors include:

(i) the level of existing spare capacity on the electricity distribution network;

(ii) the length and topography of a DNO's network;

(iii) the assumed profile of LCT additions over time, including not only the assumed rate at which LCTs are added within the RIIO-ED2 price control period, but also the profile of additions expected beyond this. Indeed, in order to prepare a proper business plan DNOs were required to look beyond the RIIO-ED2 price control period to avoid inefficient long run costs to the detriment of consumers. NPg looked out to 2050 when assessing the reinforcement work required, in order to ensure long run costs were optimised in the interests of consumers;

(iv) assumptions about the location and clustering of LCT additions, which will drive where constraints occur on the network; and

(v) the assumed contribution of each additional LCT to peak demand, which is influenced by assumptions about the diversity in relation to the number of connections to the network, their power consumption and/or energy production.

2. Decision making with respect to secondary reinforcement

2.1 Secondary reinforcement work involves routine, high volume, relatively low value projects. When secondary reinforcement work is required the solution is almost always prescriptive from an engineering perspective and there are minimal cost-effective innovations or technical trade-offs that are available. As a result, there is less potential for optioneering and limited scope to find workload efficiencies in implementing secondary reinforcement work. DNOs therefore tend to carry out the same type and volume of secondary reinforcement work when presented with the same capacity constraint. The differences in each DNO's volume of forecasted secondary reinforcement work submitted in their RIIO-ED2 business plans are therefore, in large part, a result of the different planning scenarios used.

3. NPg's planned secondary reinforcement

3.1 As a result of the fact that the amount of secondary reinforcement work required is not fixed in proportion to demand growth, the NPg Business Plan forecast different levels of secondary reinforcement work in the electricity distribution networks operated by NPgN and NPgY, based on the same NPg Planning Scenario.

3.2 This is because the electricity distribution networks operated by NPgN and NPgY provide a good example of the way in which the electricity networks across Great Britain differ in a variety of respects, in particular in relation to their network topologies. NPgN's network is an example of a network that serves predominantly rural areas, with few large concentrations of population, whereas NPgY's network includes a greater proportion of the UK's most populous areas. It also includes many ex-mining villages that are particularly densely populated with terraced and/or semi-detached housing stock. As LCT uptake increases, capacity constraints on the network resulting in a need for secondary reinforcement work will occur more frequently in areas with high population densities, where clusters of LCTs occur.

3.3 In addition, NPgY's network requires a larger volume of work when alleviating a capacity constraint as a result of the fact that its network serves more customers per transformer and also contains longer LV circuits. Also, urban, more populous areas tend to be supplied by way of older LV circuits. When those networks were installed many years ago, such circuits were designed to 'taper' (where the size of cable gets smaller along the circuit). That was a sensible design decision in the world that those networks were designed to serve, but when the levels of electrical demand grow, such as when there is LCT uptake, this creates additional capacity constraints that will manifest themselves disproportionately on those longer, tapered, circuits.

3.4 Therefore, NPgY's network will require more secondary reinforcement work than NPgN's network to take account of the same level of uptake of LCTs.

I believe that the facts stated in this Annex B are true.

SIGNED [redacted]

JONATHAN MARK NICHOLSON
(Director of Engineering at Northern Powergrid Holdings Company)

DATED 15 May 2023