

Adam Lacey  
Ofcom  
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10<sup>th</sup> February 2016

Dear Adam,

### **Leased Lines Charge Control Modelling – External Review**

In accordance with the terms of reference agreed between CEPA and Ofcom (attached as an annex to our report), CEPA has carried out a review of the 2016 Leased Lines Charge Control modelling contained in a set of 13 spreadsheet models developed by Ofcom during 2015 and 2016. The calculations reviewed by CEPA were developed to calculate the annual “X” factor values to be applied to the Traditional Interface (TI) and Ethernet baskets based on forecasts of the costs and revenues of business connectivity services for the purpose of setting charge controls for the three years from 2016/17 to 2018/19. These calculations were generated by Ofcom in the main 2016 CPI-X model, which is fed by a set of supporting files.

The focus of the review has been consistency with the description in Ofcom’s relevant documentation, appropriateness of usage and processing of raw base data and inputs, and robustness and correct functioning of the calculations. To address these areas, CEPA structured the review in two parts:

- consistency with specification; and
- robustness and correct functioning of the calculations.

Any potential issues identified by CEPA were raised with Ofcom through the Issues Log and at the point of finalising this review none of the issues identified remain outstanding.

#### **Consistency with specification**

The first part of the review focused on a series of specification and formula tests to identify potential issues that might compromise the functioning of the 2016 LLCC models. Tasks completed in these areas included a review of consistency of the models with the relevant documentation at a high level and in detail. Changes in specification documented in the November 2015 LLCC consultation were targeted in particular as were changes in the models since the June 2015 consultation. The review included a mix of direct inspection and high-level mapping. It also made

use of third party and CEPA-developed tools to identify inconsistencies in the implementation of formulae, to target the most complex calculations and to identify potential issues with links between files.

### **Robustness and correct functioning of the calculations**

The second part of the review focused on numeric, robustness and macro tests. These tests complemented those directly focused on the specification, using separate calculations, perturbations to the model and review of non-formula aspects of the model to uncover issues more difficult to identify through direct inspection. CEPA also completed a high-level review of the model against modelling best practice. While divergence from best practice was found in some areas, CEPA found that this neither affected the calculations nor posed a significant risk for the model's overall correctness.

### **Conclusions**

As a result of this review, CEPA can confirm that it is not aware of any material outstanding issues with the 2016 LLCC calculations in the final spreadsheet model versions provided for review up to 4<sup>th</sup> February 2016.<sup>1</sup> We note that Ofcom represented that in certain cases revisions would be made to the models at a later date to resolve certain issues related to best practice such as removal of redundant functionality, which it will not be possible to verify as part of this review. However, as these were not found to affect the final X factors, we were happy within the scope of this review to close those issues. We also note that we understand Ofcom intends to make some revisions to the Passive prices and cost recovery model subsequent to the finalisation of this review on which it is not possible to comment at this point in time.

**CEPA's work was limited to the matters set out above and accordingly did not include, for the avoidance of doubt, any form of review of Ofcom's methodology, input data or functionality other than the calculation of the TI and Ethernet basket X factors. All comments above are provided solely in respect of the model versions noted in this letter and cease to be valid if there are subsequent changes to the models or their specifications.**

This letter has been prepared solely for the information and benefit of Ofcom consistent with the terms and conditions of our engagement. No other party may place reliance on any matters contained herein.

Yours sincerely,



Ian Alexander

**Director, Cambridge Economic Policy Associates**

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<sup>1</sup> "Base Year ModelvS21.xlsm," "(2a) 14-15 OR base year.xlsm," "(2b) 14-15 BTW base year.xlsm," "(1) 14-15 Service and Component lists.xlsm," "(2c) Elasticities by service.xlsm," "(3) 14-15 Base year consol.xlsm," "(4a) 14-15 Volume usage factors.xlsm," "(4b) Volumes forecast.xlsm," "2014-15 LRIC to FAC ratios for LLCC 2016v1.0.xlsx," "(4c) Prices.xlsm," "(5) CPI-X Statement Model.xlsm", "Passive prices and cost recovery v5.xlsx" and "(6) Cost forecast supplementary model.xlsm"