



NGA/NGN Models update

Note in response to the comments received following public consultation

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1 Introduction

As part of ComReg's Access Network Model Consultation,¹ ComReg requested TERA's assistance to update the NGA (Next Generation Access) Cost model and the NGN (Next Generation Network) Core model used to set regulated prices for Wholesale Broadband Services (Standalone and POTS based VUA, FTTC/EVDSL based Bitstream and CGA Bitstream). This consisted of:

- ▶ Updating the cost inputs from ComReg's Access Network Model ("ANM"), i.e. Sub-loop Unbundling (SLU), Full Local Loop Unbundling (LLU) and the NGA link. These updated inputs were provided by ComReg.
- ▶ Updating the WACC (Weighted Average Cost of Capital) from the current 8.18% WACC to the 2020 WACC notified by ComReg to European Commission of 5.61%.
- ▶ Updating the cost inputs from ComReg's NGN Core model, based only on updating the WACC in the NGN Core model.

In response to this Consultation, operators raised a number of issues related to ComReg's approach to the update of the NGA/NGN models. These issues and our assessment is set out below.

2 Issues raised and TERA's assessment

Tera considers that operators raised four key issues² with regards to ComReg's approach to the update of the NGA/NGN models:

- ▶ The anchor technology approach is no longer appropriate;
- ▶ The demand data was inconsistent between the NGA Cost model and the ANM;
- ▶ The OPEX data used in both the NGA and NGN models was not updated; and
- ▶ The new WACC was implemented incorrectly in the NGA and NGN models.

2.1 The anchor technology approach

Eircom was of the view that the anchor technology approach used in the NGA Cost model was no longer appropriate given that Eircom has now completed the roll out of its rural FTTH network and is currently overlaying its urban FTTC network with full fibre. Given this, Eircom noted that ComReg "*must ensure that adequate account is taken of technological change and asset stranding in its cost models*". Eircom further noted that "*in order to be compliant with the 2013 EC Recommendation, it can no longer be the case, for example, as assumed in*

¹ ComReg Document No. 20/101, "Regulated Wholesale Fixed Access Charges Review of the Access Network Model and Specification of the Price Control for Public Switched Telephone Network Wholesale Line Rental", dated 22 October 2020.

² Tera understands that ComReg's final Decision document also addresses these concerns. However, Tera's approach in this note was to review and assess what it considers to be the main issues raised by operators.



ComReg's NGA Cost Model uses a 50 year time horizon to model FTTC costs and that the average FTTC connection cost is modelled over 20 years".³

Vodafone's consultants Frontier Economics also commented on the fact that the NGA model considers the replacement of FTTC specific CAPEX after the copper switch off: "since the deployment of FTTH is likely to result in the eventual switch-off of Eircom's copper network, as assumed in the ANM, it is reasonable to expect that FTTC assets (as well as other assets relating to copper-based services) will be 'sweated' until copper switch-off. The assumption made in 2016 that FTTC-specific assets will be operated on an indefinite basis, with these assets continuing to be replaced periodically, is therefore no longer reasonable."⁴

In addition, Sky and Vodafone raised related concerns with regards to the consistency of demand between the NGA model (which models no overlay of FTTC with FTTH by Eircom, based on the anchor technology approach) and the draft ANM (which at the time of the Consultation modelled an overlay of FTTC with FTTH). These concerns are addressed fully in the next subsection.

TERA's assessment

TERA sees no reason to change the NGA Cost model to reflect Eircom's FTTH overlay of FTTC. This approach was primarily aimed at providing an anchor price that could inform the build/buy signals relevant to NGA Broadband services. In the 2018 Pricing Decision (D11/18), ComReg noted that: "An anchor technology approach can be adopted in a cost model even when there is a prospect of a major shift in technology and it involves setting the prices based on the hypothetical use of the more established technology"⁵, and also highlighted that:

"...the NGA Cost Model considers VDSL as an anchor technology and so VDSL demand is assumed to exist into the last year of the 50 year model timeframe. However, this does not imply that Eircom is prevented from investing in alternative technologies such as FTTH in this period. ComReg's approach to setting cost oriented prices for VDSL services using a BU-LRAIC+ methodology, based on replacement costs, should help inform those investment decisions and Eircom has the pricing flexibility to recover the costs for any enhanced functionality that such investment delivers"⁶. (emphasis added).

Hence, we consider that modelling Eircom's FTTH overlay would be a significant deviation from the approach set out in the 2018 Pricing Decision. TERA is of the view that such a deviation, half-way through the price control period, could undermine ComReg's objectives of providing an appropriate build/buy signal for prospective investment, of which regulatory consistency (and price signal stability) is a key element.

In effect, the 2013 EC Recommendation refers to the need for ensuring price stability in the context of a change in NGA technology, stating that "such a costing methodology should be based on a modern efficient network, reflect the need for stable and predictable wholesale copper access prices over time, which avoid significant fluctuations and shocks, in order to provide a clear framework for investment and be capable of generating cost-oriented wholesale copper access prices serving as an anchor for NGA services, and deal appropriately

³ Paragraph 267 of Eircom's non-confidential response to consultation dated 8 January 2021.

⁴ Section 3.1 (page 27) of the Frontier Economics Report for Vodafone

⁵ The 2018 Pricing Decision, paragraph 6.60

⁶ The 2018 Pricing Decision, paragraph 6.131



and consistently with the impact of declining volumes caused by the transition from copper to NGA networks, i.e. avoiding an artificial increase in wholesale copper access prices which would otherwise be observed as a result of customers migrating to the NGA network of the SMP operator".⁷

Therefore, we consider that ComReg's use of an anchor technology approach, which in practical terms means that the NGA cost model assumes no FTTH overlay of VDSL by Eircom, to cost copper-based NGA services remains appropriate and provide a relevant build/buy signal for FTTH competing investment, while continuing to be consistent with the 2013 EC Recommendation.

2.2 Demand consistency

Sky's consultants Analysys Mason raised concerns regarding the demand data consistency between the NGA Cost model and the ANM: *"The Revised CAM assumed that the copper network would be the basis of providing NGA (VDSL) services in perpetuity, and determined copper costs on this basis. On the other hand, the ANM represents ComReg's most recent perspective and assumes that the copper network will be entirely replaced in the coming years, and that FTTH will provide NGA services in perpetuity".⁸* Similar concern was noted by Vodafone's consultants Frontier Economics.⁹

Separately, Frontier Economics pointed out in addition that there is a gap between the FTTC demand volumes for the year 2019, observing that the FTTC demand is higher in the ANM than in the NGA model.¹⁰

TERA's assessment

With regards to demand inconsistency between the NGA cost model and the ANM, TERA considers that the LLU/SLU and NGA links cost inputs derived from the ANM should be estimated in the ANM based on a similar hypothetical scenario as that used in the NGA Cost model (i.e. assuming no overlay of FTTC with FTTH by Eircom, based on the anchor technology approach) rather than based on the actual demand for VDSL products (which is based on Eircom's FTTH overlay).

We understand that the demand for FTTC in the final version of the ANM has been altered to be consistent with the anchor technology approach used in the NGA Cost model, by explicitly modelling under the bottom-up approach a demand scenario of no FTTH overlay by Eircom to serve urban premises previously targeted with FTTC and we therefore consider that the issue of inconsistency of demand between the NGA cost model and the ANM, as set out in subsection 5.4 of ComReg's Decision document. has been satisfactorily addressed by ComReg in the updated ANM.

⁷ Paragraph 25 of 2013 EC Recommendation. European Commission's Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (2013/466/EU)

⁸ Section 3.5.2 of the Analysys Mason Report for Sky

⁹ Section 3.1 (pages 26 and 27) of the Frontier Economics Report for Vodafone

¹⁰ Section 3.1 (pages 28) of the Frontier Economics Report for Vodafone



2.3 OPEX updates

Both Sky's consultants Analysys Mason and Vodafone's consultants Frontier Economics raised concerns regarding ComReg's approach to not undertake an update of Opex data in the NGA and NGN models.

Analysys Mason stated: *"Any input based on data from Eircom in 2016 can readily be updated or checked for 2019 or 2020 based on the most recent and therefore current efficient standards of costs appropriate for the Irish operating situation (which can be obtained from comparable Eircom data, or equivalent data from other wholesale operators such as SIRO)."*¹¹

Similarly, Frontier Economics considered that *"it is common practice to update bottom-up models over time to reflect the latest available information on the efficient level of costs and demand"* and illustrates this with the Danish Business Authority, who *"updates its cost models on an annual basis to inform the prices of wholesale services in the subsequent year."*¹²

Frontier Economics added that: *"Forecast FTTC network operating costs also do not account for information on Eircom's recent cost reduction programme. The estimates of efficiently incurred, forward-looking costs based on the most recent Eircom cost data are therefore likely to be significantly lower than those reflected in the NGA and NGN Core models."*¹³

TERA's assessment

TERA understands from ComReg that the copper/fibre inputs into the NGA Cost model (i.e., SLU/LLU and NGA Link) continue to be modelled in the ANM using a bottom-up methodology (similar to the approach in the 2016 Revised CAM), doing so is reflective of a Hypothetical Efficient Operator (HEO) with Eircom's scale and scope, which would include the level of OPEX efficiencies of operating a newly deployed network. TERA considers no further adjustments to the Opex of these inputs in the context of the NGA Cost model are therefore justified.

With regards to the Opex for the active VDSL equipment (e.g., DSLAMs) and backhaul links (calculated in the NGN Core model) the cost modelling relied mainly on Eircom's Top-down accounts for FY2015/2016. However, at the time of ComReg's 2018 Pricing Decision (D11/18), it was also noted that the modelled Opex was aimed at providing a forward-looking cost target of maintaining a capital base for a VDSL network operating in perpetuity (over a 50-year timeframe). ComReg noted then: *"the position in the NGA Cost Model, that future cost increases to operating and common costs can be offset by general efficiency gains, is reasonable"*.¹⁴ Similarly, we do not consider that efficiency gains that would more than offset nominal increases in costs should necessarily be 'locked in' in the form of an update of the NGA and NGN models, as suggested by Sky and Vodafone.

There is a risk that a regulated operator could be disincentivised from pursuing efficiency programmes if it thought that any benefits it could gain from such programmes would be immediately eroded through consequent reductions in regulated prices. Therefore, allowing Eircom to retain the benefit of any additional efficiencies over and above those factored into

¹¹ Section 3.5.5 of the Analysys Mason report for Sky.

¹² Section 3.1 of the Frontier Economics report for Vodafone.

¹³ Section 3.2 of the Frontier Economics report for Vodafone.

¹⁴ Paragraph A 1.75 of ComReg's Decision D11/18



the price control helps ensure that productive efficiency incentives are not being diluted in a way that future price outcomes could be compromised. It also allows for a fuller assessment of the impact of cost saving programmes on long term cost trends to be undertaken, as some programmes may have to be revisited if the results are not as expected. This appears to have been Eircom's recent experience when it agreed to improved terms for staff in customer care functions that had been brought back in-house after been outsourced in an earlier cost saving programme.¹⁵ We consider that, given objectives of promoting efficient investment, ComReg needs to be mindful of the risks to dynamic efficiencies in setting prices too low by modelling savings that are unsustainable.

ComReg provided TERA with internal analysis of Eircom's accounts for FY2019/2020. This analysis shows that updating the VDSL-specific Opex inputs in the NGA Cost model (namely Carrier Administration & Billing and Broadband Repair costs) would only have a minor impact on the final cost of FTTC products (less than €0.20). This indicates that the level of efficiencies factored into the NGA Cost Model have not been exceeded to any material extent, despite the subsequent cost reductions reported in Eircom's company accounts. Therefore, even if cost recovery was ComReg's primary concern during the price control period, there appears to be little reason to update the NGA Cost Model with the latest operating costs¹⁶.

Tera considers that setting appropriate signals for prospective investment means that the price methodologies and assumptions need to be stable and consistent and do not consider that this would be achieved by frequently updating the NGA and NGN models for the very latest Opex numbers from Eircom. Therefore, TERA agrees with ComReg's approach.

In response to Frontier Economics' point that updating bottom-up models to reflect the latest available information is a common practice, TERA notes that many regulatory authorities do not update models on a yearly basis. In France, the regulatory authority (Arcep) for example, the prices informed by cost models are set for a multi-year period, without updating each year the input data. In Sweden the regulatory authority (PTS) updates its cost models annually but this mostly relates to demand and WACC inputs - some OPEX components, which are also based on the operators cost data, are not part of this yearly update. In Denmark the 2017 model update mentioned by Frontier Economics did not involve any update of non-network Opex, which remained similar to the 2012 values, based on operator's figures (network OPEX were implicitly updated as they were set as a percentage of equipment unit CAPEX).

In addition, TERA notes that the NGA model models the network of an hypothetical operator which operates a VDSL network over a 50 year period, consistent with the anchor technology approach. While the modelled HEO's network was similar to Eircom's network in 2015, the modelled network increasingly differs from Eircom's network over time, with the progressive roll out of Eircom FTTH network in urban areas. Therefore, TERA considers that, while it was appropriate to use Eircom's accounts for the financial year 2015/2016 as a starting point (given that those operating costs could be considered efficient as Eircom had only recently deployed its FTTC network), updating the NGA Cost model with Eircom's latest financial data will become less relevant every year.

¹⁵<https://www.irishtimes.com/business/work/eir-customer-care-staff-to-receive-earnings-increase-of-up-to-17-1.4564109>

¹⁶ The NGA Cost Model models the most significant elements of the FTTC prices after the access network model (previously the Revised CAM but not the ANM).



2.4 WACC change

Eircom raised concerns with ComReg's approach to implement the new WACC in the NGA and NGN models, following ComReg's 2020 WACC Decision.¹⁷ According to Eircom's advisers BRG,¹⁸ the new WACC should only apply to investments after this decision. According to BRG, the approach proposed in the consultation risked not allowing Eircom to recover its costs.

TERA's assessment

TERA understands that ComReg previously refuted Eircom's arguments that it should be allowed to retain the previous WACC of 8.18% over the lifetime of the FTTC investments (on the basis that the decision to make these investments was made on the expectation it would be allowed to earn that return over the life of those investments),¹⁹ which Eircom's advisers BRG describe as; respecting a "fair-bet principle." Therefore, in TERA's assessment we focus on whether the WACC update should be applied retrospectively (i.e. to FTTC investment prior to the 2020 WACC change) or not.

BRG's argument was that when calculating economic depreciation (or tilted annuity method), the 8.18% WACC should apply up until the new WACC decision is reasonable from the perspective of adding certainty to Eircom's cost recovery.²⁰ However, cost recovery is not the primary objective of ComReg when setting FTTC prices but instead providing appropriate build/buy signals for an entrant competing with Eircom. TERA considers that recognising the previous WACC in the model (up until the introduction of the 2020 WACC Decision) would effectively raise the internal rate of return implicit for FTTC and would signal to a prospective entrant returns above the level of the current WACC could be expected in the future, which would be inconsistent with ComReg having determined that the forward looking WACC is the lower 2020 WACC.

Therefore, we consider that no adjustments to the way ComReg implemented the WACC update in the NGA and NGN models are necessary or appropriate.

3 TERA's conclusions

Having considered the key points raised by respondents to ComReg's Consultation, TERA concludes that:

- ▶ The anchor technology approach remains appropriate to model the costs of FTTC services
- ▶ The demand data inconsistencies between the NGA Cost model and the ANM have been materially resolved by ComReg and its advisers Cartesian

¹⁷ ComReg Document No 20/96: Review of Weighted Average Cost of Capital (WACC) – Response to Consultation and Final Decision; Mobile Telecommunications, Fixed line Telecommunications, Broadcasting Transmission; dated 14 October 2020.

¹⁸ Section III.3. of the BRG report for Eircom

¹⁹ See ComReg Document 20/96, 2020 WACC decision, Submissions to Questions 7 to 9 – Respondents' views, page 92.

²⁰ However, Tera understands that ComReg conceded to correct the capital annuities associated with CEI (in the PAM and DAM cost modules), where competing CEI investment is not a plausible prospect and Eircom's cost recovery is the main concern.



- ▶ That an update of OPEX data in the NGA and NGN models is not justified
- ▶ The implementation of the new WACC in the NGA and NGN models by ComReg is reasonable

Therefore, TERA overall concludes that ComReg's approach as updated (and discussed in Section 6 of its decision) and shared with TERA is reasonable.

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