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Consultation Appendix

Default Tariff Cap: Statutory Consultation

Appendix 1 – Benchmark methodology

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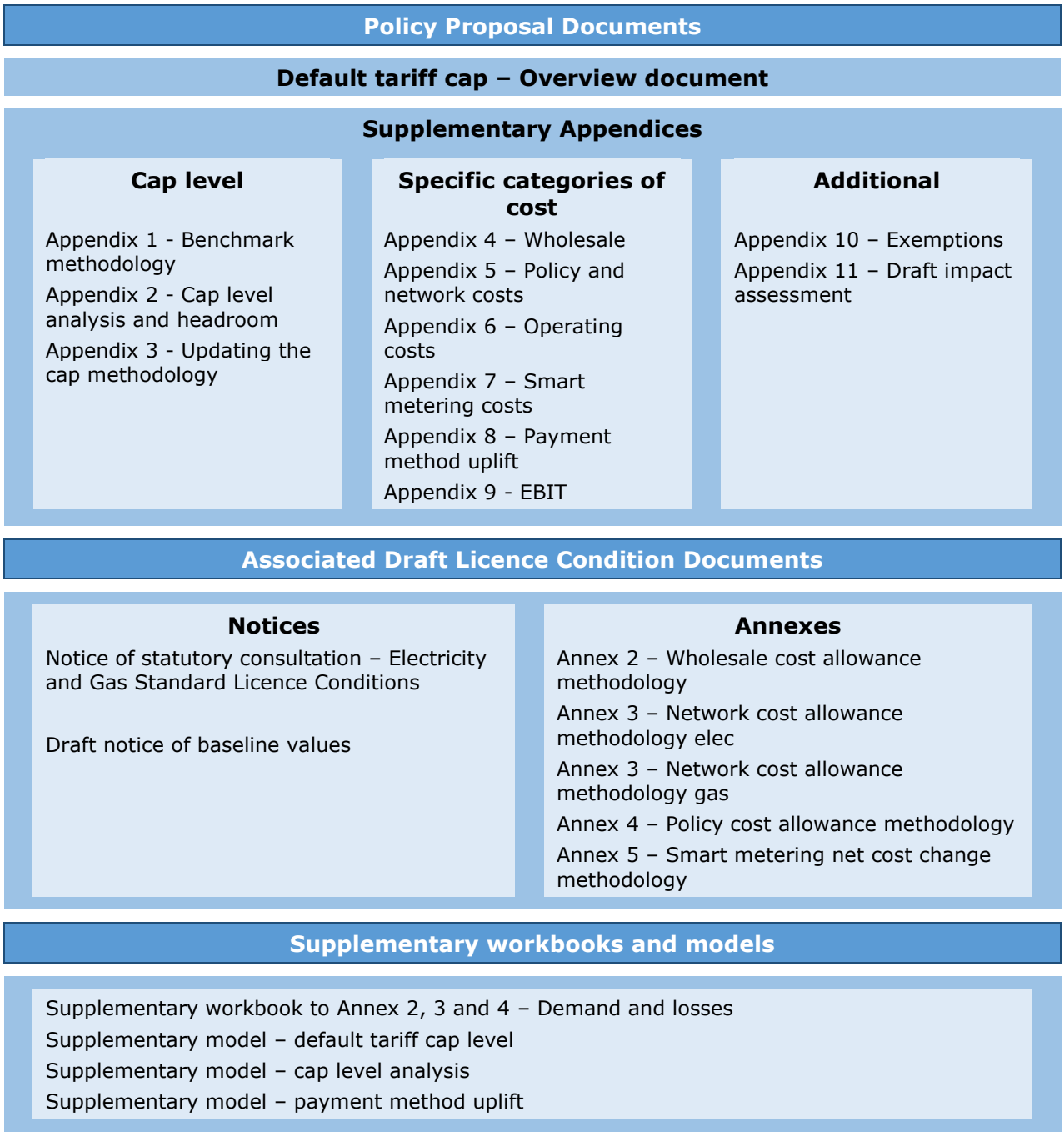
We are consulting on our proposals for setting and updating a default tariff cap in accordance with the Domestic Gas and Electricity (Tariff Cap) Act 2018. This supplementary appendix provides details of the proposals in relation to our proposed benchmark methodology. This document is aimed at those who want an in-depth understanding of our proposals. Stakeholders wanting a more accessible overview should refer to the Default tariff cap – Overview document.

We welcome views from stakeholders on all of our proposals set out within this document. Please see the Default tariff cap – Overview document for instructions on how to respond to the consultation.

Document map

Figure 1 below provides a map of the default tariff cap documents published as part of this statutory consultation.

Figure 1: Default tariff cap – statutory consultation document map



Contents

1. Introduction

Overview

Considering efficient costs

1.1. To meet the objective of the Act, we will set the overall default tariff cap level with reference to our estimate of the efficient level of costs associated with supplying a default tariff customer with a given set of characteristics. Estimating the efficient level of costs is a common challenge where companies' prices or allowed revenues are regulated.

1.2. We cannot directly observe the efficient level of costs. Instead, we must estimate it using imperfect data. While we can collect data on suppliers' historical costs, each supplier will generally not hold information in the exact form required to provide us with comparable cost data, and so we are required to adjust the data provided to increase consistency. Suppliers also face costs, particularly when purchasing energy, which are difficult to anticipate based on historical costs, and instead must be based on forecasts. Together, these factors introduce uncertainty into our estimates of efficient costs.

1.3. In addition, some elements of costs may vary between suppliers not only due to differences in their relative efficiency, but also due to differences in their customer bases. Given this, some judgement is required to determine what is an efficient level of costs that is appropriate for the market as whole, rather than a specific supplier. There are various ways we might take into account variation in costs that is driven by differences in customer bases. One approach would be to set an efficient benchmark based on suppliers with the lowest costs (frontier suppliers), and then to add a separate headroom allowance to account for differences in suppliers' customer bases. Another approach would be to set an efficient benchmark that allows for suppliers who may have higher costs due to their customer bases. These two approaches could set the overall cap at the same level, but they would define their respective 'efficient' benchmarks and headroom allocations differently. We consider this issue further below.

How we propose to use our benchmark to set the cap

1.4. As set out in our May consultation[1], we propose that the level of the default tariff cap will increase in proportion to consumption. To achieve this, we propose two separate benchmarks: one at nil consumption and one at the current Typical Domestic Consumption Values (TDCV – referred to as typical consumption below). The cap at other consumption levels will then be defined by the line connecting the level of the cap at nil and typical consumption.

1.5. We propose to set the benchmark in different ways for nil and typical consumption. We considered four approaches for estimating efficient costs to set the default tariff cap, which to different extents are based on cost data and price data. At typical consumption, we propose to set the efficient benchmark with reference to our bottom-

[1] Default tariff cap: policy consultation May 2018 https://www.ofgem.gov.uk/publications-and-updates/default-tariff-cap-policy-consultation-overview

up cost assessment. However, we propose to set the initial value of the benchmark at nil consumption with reference to market prices in 2017.

Advantages and disadvantages of using a bottom-up cost assessment for customers with nil consumption

1.6. In Chapter 2, we describe why we propose to estimate efficient costs at typical consumption using a "bottom-up" cost assessment. Under this approach, we estimate efficient allowances for different categories of costs. We then add these together to derive our estimate of the total costs for a given customer type. We set the overall level of the cap with reference to this estimated benchmark.

1.7. We summarise the advantages and disadvantages of using a bottom-up cost assessment to estimate efficient costs, relative to an updated competitive reference price approach. We also explain why we propose not to use the other models.

Our estimate of efficient costs at typical consumption

1.8. In Chapter 3, we describe the way we propose to approach categorising suppliers' costs for the purpose of our bottom-up cost assessment. We then provide our estimates of the level of efficient costs for 2017/18 for a customer with typical consumption, derived using our proposed approach.

Advantages and disadvantages of using a bottom-up cost assessment for customers with nil consumption

1.9. In Chapter 4, we set out our proposal to use market prices in 2017 to define the initial value of the benchmark at nil consumption. We explain our rationale for taking a different approach when setting the benchmarks at typical and nil consumption. We summarise the advantages and disadvantages of using a bottom-up cost assessment to define the benchmark at nil consumption. We compare this with an approach which defines the initial value of the benchmark at nil consumption with reference to market prices.

Our estimate of the benchmark at nil consumption

1.10. In Chapter 5, we provide our estimates for the benchmark at nil consumption. We also describe our proposed methodology.

Context and related publications

1.11. Ofgem (2018), Default tariff cap working paper – setting the level of the cap. https://www.ofgem.gov.uk/publications-and-updates/default-tariff-cap-working-paper-setting-level-cap

1.12. Ofgem (2018), Default tariff cap: policy consultation. Appendix 4 – Bottom-up cost assessment. https://www.ofgem.gov.uk/system/files/docs/2018/05/appendix_4_-_bottom-up_cost_assessment.pdf

2. Advantages and disadvantages of using a bottom-up cost assessment for customers with typical consumption

We discuss the advantages and disadvantages of using a bottom-up cost assessment to estimate efficient costs. We set out our proposed approach to estimating efficient costs for the purposes of setting the default tariff cap at typical consumption.

Assessing costs for customers with typical consumption

Proposed decision

2.1. We propose to use a bottom-up cost assessment to estimate the efficient level of costs associated with supplying a customer with typical consumption.

2.2. In light of this, we focus the sections below on our proposed approach. Where relevant, we compare this against the updated competitive reference price approach, which was our main alternative.

What we consulted on

2.3. In our May consultation, we consulted on four models for estimating the efficient level of costs:

- We considered estimating efficient costs using observations of competitive market prices. This would rely on the principle that competition in the competitive market segment will cause market prices to reveal efficient costs. In our May consultation we proposed not to use a pure reference price approach (market basket of tariffs).
- We also set out the option of using an adjusted version of the existing safeguard tariff.
- Our third reference price approach was an updated competitive reference price.
- Our fourth model was a bottom-up cost assessment.

2.4. In our May consultation, we described what we considered to be the advantages and disadvantages of using a bottom-up cost assessment to estimate efficient costs.

2.5. We said that the main advantage of a bottom-up cost assessment, compared to setting the default tariff cap with reference to competitive prices, was the confidence it provides as to exactly which costs are included in the benchmark, and how each element of costs is being treated under the cap. It avoids the key challenge of the price-based approaches, that the reference prices may not provide a valid comparator that can be used for setting the cap for the entire market, due to the specific circumstances or pricing strategies of the benchmark companies.

2.6. We said that the main drawback of a bottom-up approach was the difficulty of estimating an efficient allowance for each element of costs. While we are able to collect data on companies' historical or forecast costs, and then make adjustments to reflect our estimates of the companies' efficiency, doing so is subject to various challenges. These include the challenge that comparable cost information for each company will generally not be held in the exact form required (for example due to differences in accounting definitions); and that it will often not be possible to identify the element of costs associated with a particular activity, making it difficult to standardise across companies.

2.7. We noted that it may be possible to reduce some of these risks through collecting more detailed or better information on costs. However, it will never be possible to resolve them completely. In part, this is because there is a large asymmetry of information, and suppliers will always have greater insight into their own costs than the regulator.

Stakeholder feedback

2.8. Most respondents stated their preference for using a bottom-up assessment of costs to estimate efficient costs. The reasons given included: greater transparency provided by the approach; greater accuracy and lower risk of error – particularly for direct costs (which make up the majority of costs); greater ease of communication to stakeholders; and the ability to give a fuller representation of the costs across all suppliers.

2.9. Some respondents said that the challenges of a bottom-up approach that we had highlighted applied to all of the methodologies. One respondent said that it did not consider any asymmetry of information between suppliers and Ofgem to be a disadvantage of the bottom-up approach, as Ofgem has the necessary powers to request whatever information it believes is required to establish a complete and accurate view of costs.

2.10. A small number of stakeholders raised concerns with using a bottom-up approach to estimate efficient costs:

- One respondent told us that there was a risk that benchmarking each cost component separately could present an unrealistically low benchmark, resulting from differences in cost allocation rather than efficiency.

- Another respondent argued that a bottom-up cost approach would be complex and prone to error, and its use would risk significant delays or appeals.

2.11. Respondents supported our proposal not to use the basket of market tariffs approach.

2.12. Support for the adjusted version of the existing safeguard tariff was limited. Those suppliers who did agree that there was some relative advantage of familiarity, either commented that there would still be issues to address, or that another approach was preferred.

2.13. A number of respondents have previously raised concerns with the PPM cap methodology in response to previous consultations and working papers, which were referred to, or reiterated, in responses to our May consultation. A number of suppliers told us that they saw an issue with using an adjusted version of the existing safeguard tariff model that: was based on an older baseline; uses only two suppliers to calculate

the benchmark; and potentially does not represent variations in efficient costs. Several suppliers suggested that significant adjustments were needed for an adjusted version of the existing safeguard tariff to be an appropriate approach.

2.14. One supplier said that it favoured the updated competitive reference price model, particularly because the bottom-up approach would have risks if data was not available. In addition, a couple of respondents preferred the updated competitive reference price model on the basis that this was based on the prepayment meter cap, with the benefit of using more recent data than the adjusted version of the existing safeguard tariff.

2.15. We received a range of detailed comments on the design choices for an updated competitive reference price methodology. This feedback helped us develop the methodology and produce an estimate. Given that we are not proposing to use this methodology, we do not summarise or respond to these comments in this appendix.

Rationale for our proposed decision

2.16. Having considered the merits of the different approaches and stakeholder responses to our consultation, **we propose to use a bottom-up assessment of costs** as our primary method of estimating what would be an efficient level of costs associated with supplying a customer with typical consumption.

2.17. We consider that many of the key challenges of reliably estimating efficient costs are common to the bottom-up and updated competitive reference price[2] approaches:

- Both approaches require us to reach a view on both the breakdown of costs, and trends in costs over time, in order to be able to update the level of the cap for future periods.

- When choosing an appropriate benchmark, both approaches require us to make difficult judgements about the impact on suppliers' costs of their operating conditions and customer bases (including the proportion of customers using different payment methods).

- Both approaches rely to some extent on accounting data provided by the suppliers. (Under a bottom-up approach, this is to calculate our operating cost benchmark. Under an updated competitive reference price approach, this is to make supplier-specific adjustments to ensure prices reflect a normal level of profits).

2.18. We see the key advantage of the bottom-up approach as being that it specifies the size of each component making up the cap. This has particular benefits when we come to update the cap over time, as we want to update each component using different cost information. In contrast, the updated competitive reference price approach would give us an overall estimate for the efficient benchmark, but would not provide a figure for

[2] In the section below, we focus on comparing the bottom-up cost assessment against the updated competitive reference price approach, as these were our main options. However, many of the considerations about an updated competitive reference price would also apply to the adjusted version of the existing safeguard tariff, as they are both reference price approaches.

the size of each component. We would have to use a different method to estimate the individual cost elements in order to update them.

2.19. Furthermore, the bottom-up approach also makes it easier to assess each cost component in turn, and understand what these reflect. For example, this helps us to understand the degree to which our cost estimates take into account potential sources of uncertainty, which means we can better consider the level of headroom required. In contrast, under an updated competitive reference price approach, we can be less certain about precisely what costs have been priced into the tariffs informing our benchmark.

2.20. We recognise potential limitations with a bottom-up approach, but consider these to be mitigated. In theory, there is a risk that a bottom-up cost assessment could risk setting the overall benchmark unrealistically low due to differences in suppliers' approach to cost allocation. We do not consider that this is a risk in practice with our proposed bottom-up cost assessment approach. This is because we propose to benchmark operating costs in their totality, rather than looking separately at different categories of expenditure (eg on metering, billing etc). Our results are therefore not affected by how suppliers have subdivided their operating costs into different categories. The direct cost components (wholesale, network and policy costs) are also unaffected by suppliers' approach to cost allocation, as we use third party data to estimate industry-wide allowances based on a standardised set of assumptions.

2.21. Both methods face challenges when assessing some aspects of wholesale costs, but we do not consider that the bottom-up approach faces greater challenges. A bottom-up cost assessment requires us to estimate an appropriate allowance for elements of wholesale costs which are not known in advance (ie relating to shaping, forecast error and imbalance). Under an updated competitive reference price approach, these costs will already be priced into suppliers' adjusted tariffs to some extent. However, the adjusted tariffs will also be affected by suppliers' outturn costs in the year used for the analysis. It may therefore be more complex to take into account these wholesale costs in a typical year under an updated competitive reference price approach. (This is because it is unclear whether the costs already included in the benchmark are too high or too low relative to a typical year, and by how much). In contrast, under a bottom-up cost assessment, we would only be estimating a new cost component. We therefore do not consider that an updated competitive reference price approach would have clear advantages for estimating these elements of wholesale costs.

2.22. In theory, we recognise a risk that our bottom-up estimate could have been too high. While our information gathering powers allow us to collect detailed information on suppliers' costs, we continue to take the view that an asymmetry of information remains, given the complexity and number of costs incurred by suppliers, and the fact that these change over time. This creates a risk that we erroneously double count (or exclude) components of costs. While in general we do not consider that a bottom-up approach would be more prone to error than the alternatives, we do consider that this creates a potential disadvantage compared to the updated competitive reference price approach.

2.23. However, we have mitigated this risk by developing estimates using both the updated competitive reference price and bottom-up cost assessment methodologies. This allows us to compare the estimates and consider how they might be influenced due to factors simply relating to their methodology. For instance, if our bottom-up cost assessment benchmark was considerably higher than our updated competitive reference price estimate, it would be possible that we had double counted some costs, or used inflated

data. This additional test for the reasonableness of our bottom-up cost assessment mitigates the risk we unintentionally overstate costs.

2.24. The benchmarks produced by our bottom-up and reference prices methodologies are very similar, which gives us confidence that there is no significant double counting.[3] We therefore do not consider that this disadvantage (asymmetry of information) outweighs the benefits of using a bottom-up approach.

2.25. We are not proposing to adopt a basket of market tariffs, in line with the rationale set out in our May consultation.

2.26. We are not proposing to adopt an adjusted version of the existing safeguard tariff. While this approach benefits from an advantage of familiarity, there are several key reasons why we would not favour an adjusted version of the existing safeguard tariff. (These are reasons to prefer an updated competitive reference price, as well as a bottom-up cost assessment, over an adjusted version of the existing safeguard tariff).

- Using 2015 tariffs and data to define the efficient benchmark would not be making use of the most recent information available to us. Our bottom-up cost assessment uses cost data from 2017, while the updated competitive reference price would have been based on 2017 tariffs and data.

- The benchmark is based on the tariffs of two suppliers. The operating cost component of the bottom-up cost assessment is based on benchmarking across ten suppliers, while the updated competitive reference price model would have used more than two suppliers to calculate the benchmark. Considering more suppliers allows us to mitigate the risk that our results are driven by supplier specific variations which we cannot adjust for (eg in suppliers' customer bases).

- The more adjustments made to this model, the more we would remove the key advantage of this model - familiarity. We would not be able to make potential adjustments to this model to tackle stakeholder concerns without potentially adding room for error and uncertainty.

[3] Here we compare the benchmarks before we consider any headroom required for the uncertainty they contain. The required headroom may differ, as the uncertainty involved depends on each method.

3. Our estimate of efficient costs at typical consumption

We discuss the way we propose to categorise suppliers' costs for the purpose of our bottom-up cost assessment. We also provide our estimates of the level of efficient costs for 2017/18 derived using our proposed methodology.

Categories of costs

Proposed decision

3.1. Table A1.1 sets out the different components of suppliers' costs that we propose to estimate as part of our bottom-up assessment of costs, and summarises what each category contains. For each cost component we reference the detailed appendix that explains our methodology, rationale and stakeholders' views.

Table A1.1: categories of costs

Cost component	Description
Wholesale costs (see Appendix 4)	• The direct cost of gas and electricity contracts for delivery in the price cap period, including allowances for shaping, forecast error and imbalance, and transaction costs • Capacity market (CM) payments
Network costs (see Appendix 5)	• All gas and electricity transmission and distribution charges • Balancing services use of system (BSUoS) charges
Policy costs (see Appendix 5)	• The costs associated with schemes to support renewable and low-carbon electricity generation (Renewable Obligation (RO), Contracts for Difference (CfD), Feed in Tariffs (FiT)) • The costs associated with the Energy Company Obligation (ECO), supporting energy efficiency • The costs of providing support to fuel poor customers under the Warm Home Discount (WHD) scheme • The costs of providing assistance for areas with high electricity distribution costs (AAHEDC)
Operating costs (see Appendix 6)	Companies' internal operating costs, including: • metering (including smart metering) • sales and marketing (including commissions paid to price comparison websites or brokers) • billing and payment collections • customer service • central overheads (including IT) • Data Communications Company (DCC) and Smart Energy GB (SEGB) charges, Elexon and Xoserve charges, and other obligatory industry charges that specifically relate to supply • depreciation and amortisation charges associated with past capital expenditure
Payment method uplift (see Appendix 8)	An uplift reflecting the additional costs of supplying standard credit customers: • for direct debit customers, this will comprise a part of the additional bad debt and administration costs associated with standard credit customers • for standard credit customers, this will comprise the remainder of the additional bad debt and administration costs associated with standard credit customers, as well the cost of the additional working capital requirement of this payment method
Profit margin (see Appendix 9)	A profit margin reflecting a normal return on capital.

What we consulted on

3.2. In our May consultation, we proposed to use the categories of costs included in the Consolidated Segmental Statements (CSS)[4] as our starting point for a bottom-up assessment.

3.3. We proposed to vary how we treat a number of elements of costs, compared to the CSS:

a) including costs associated with the capacity market scheme alongside wholesale costs; and

b) including within operating costs:

- costs associated with the smart metering programme – including charges from the Data Communications Company;
- third party commissions where these relate to sales and marketing;
- mandatory charges from other industry bodies (including those from Elexon and Xoserve, which would be estimated with reference to historical costs); and
- depreciation and amortisation.

Stakeholder feedback

3.4. Most respondents broadly supported our proposed categorisation of costs. The exceptions were:

- one respondent said that smart metering costs should be categorised as a separate cost category
- some respondents said that capacity market costs should be categorised as a policy cost rather than a wholesale cost
- one respondent said that Elexon and Xoserve charges should be estimated directly as a separate cost line – noting that the charges are published in advance each year.

[4] We require certain suppliers to produce audited annual CSS to show the costs, revenues and profits for the different segments of their generation and supply businesses.
Ofgem (2015), Guidelines for preparing Consolidated Segmental Statements.
https://www.ofgem.gov.uk/publications-and-updates/guidelines-preparing-consolidated-segmental-statements

Rationale for proposed decision

3.5. Having considered responses, we propose to retain the broad categorisation of costs as described in our May consultation.

3.6. We consider smart metering costs to be intrinsically linked to suppliers' wider operating costs (particularly metering costs), and for this reason consider it appropriate to include these costs within operating costs more generally. (See Appendix 7 – Smart metering costs for more detail on our approach to smart metering).

3.7. We consider it appropriate to include capacity market costs alongside wholesale costs. As we described in the 2017 state of the market report, the government introduced the capacity market to pay generators that provide available capacity in the winter, in order to address the risk that wholesale prices may be too low to reward generators sufficiently for their contribution to secure energy supplies.[5] The capacity market and wholesale prices are therefore complementary ways of remunerating generators for providing capacity. In any event, this is purely a question of how costs are categorised, and does not affect the total level of the efficient benchmark.

3.8. Given the overall scale of these costs, we propose to include Elexon and Xoserve administration charges within operating costs more generally – and therefore index them in line with CPIH – rather than creating a separate category. We discuss our approach to estimating the amount of these costs to include in our baseline estimate of operating costs in Appendix 6 – Operating costs, and our proposals on updating the cap in Appendix 3 – Updating the cap methodology.

Our estimates of efficient costs

Our benchmark

3.9. Table A1.2 sets out our estimates of efficient costs based on our bottom-up assessment of costs. We calculate these for a customer with a typical level of consumption. We show separate values for electricity and gas, and for single rate and multi-register electricity meters. We also show values for a direct debit customer and for a standard credit customer. You can find full details of the calculations in the Supplementary model – default tariff cap level, which is published on our website.

[5] Ofgem (2017) State of the energy market report, p102.
https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf

Table A1.2: Estimates of efficient benchmark in 2017/18[i], £ per customer (GB average, typical consumption)[ii]

Category	Cost	Electricity Single rate	Electricity Multi-register	Gas	Dual fuel[iii]
Wholesale	Direct fuel	166.15	225.72	197.44	363.59
	Capacity Market	3.41	3.63		3.41
Policy	Renewables Obligation	57.79	78.29		57.79
	Contracts for Difference	8.33	11.49		8.33
	Feed-in Tariffs	14.39	19.51		14.39
	Energy Company Obligation	9.43	12.77	12.41	21.84
	Warm Home Discount	6.70	6.70	6.70	13.40
	Assistance for Areas with High Electricity Distribution Costs	0.78	1.06		0.78
Networks	Transmission	37.27	40.08	8.81	46.07
	Distribution	89.84	89.99	113.65	203.49
	Balancing Services Use of System	8.35	11.34		8.35
Operating costs		78.74	78.77	89.99	168.73
Direct debit					
Payment method adjustment		11.48	12.84	9.36	20.84
EBIT[6] (applied to everything)		9.36	11.25	8.33	17.69
VAT @ 5%		25.10	30.17	22.33	47.43
Total, inc VAT, excl headroom		**527.10**	**633.62**	**469.01**	**996.11**
Standard credit					
Payment method adjustment		52.58	60.35	37.93	90.51
EBIT (applied to everything)		10.14	12.15	8.87	19.01
VAT @ 5%		27.19	32.59	23.79	50.98
Total, inc VAT, excl headroom		**571.08**	**684.45**	**499.59**	**1070.66**

[i] Values shown are a weighted average of our estimates for summer 2017/18 and winter 2017/18.
[ii] Typical consumption values used are 3,100 kWh per year for electricity (single rate), 4,200 kWh per year for electricity (multi-register) and 12,000 kWh per year for gas.
[iii] We do not propose to set a cap specific to dual fuel, and we show dual fuel costs for illustration only. We calculated these by adding our estimates for single rate electricity and gas.
[iv] Please see the model on our website for full details of how these values have been derived, as well as illustrative levels of the cap for other periods, including 2018.

Comparison with 'frontier' costs

3.10. The benchmark above includes an allowance for operating costs that we consider would allow a supplier with an average customer base to cover its costs. Specifically,

[6] Earnings Before Interest and Tax – ie the profit margin to provide a return on capital.

we propose to set the allowance at a level equal to the lower quartile of costs of suppliers in the benchmarking sample, minus an efficiency challenge equivalent to £5 for a dual fuel customer. (See Appendix 6 – Operating costs for more detail).

3.11. An alternative approach would be to include in the benchmark an allowance for operating costs set with reference to the lowest cost suppliers in our sample (the frontier suppliers). We could then account for the possibility that other suppliers may have higher costs due to more expensive customer bases separately (outside the efficient benchmark), through headroom.

3.12. Table A1.3 below shows that using the operating costs of frontier suppliers would reduce the efficient benchmark by around £28 for a dual fuel customer.

Table A1.3: Comparison of efficient benchmark in 2017/18: bottom-up cost assessment benchmark and equivalent based on 'frontier' suppliers (£ per customer, typical consumption, non-standard credit, GB average, including VAT)

Approach	Electricity Single rate	Electricity Multi-register	Gas	Dual fuel
Bottom-up benchmark	527	634	469	996
Based on 'frontier'	518	66	450	968
Difference	**9**	**10**	**19**	**28**

Note: figures do not sum due to rounding. By "frontier" we look at the benchmark produces if we used our "frontier benchmark" for operating costs (the simple average of the two lowest cost suppliers in our sample, and remove the additional allowance for wholesale uncertainty that we include in our benchmark. The 'frontier' benchmark still includes efficient additional standard credit costs that we calculate using a lower quartile, rather than the lowest costs in our sample. See supplementary model - default tariff cap level.

Our methodology

3.13. This section provides a high-level summary of the approach that we have used to calculate the allowance for each category of costs. We describe our proposed methodology in greater depth in a series of separate appendices, and we provide further details in a set of models published on our website alongside this consultation.

3.14. The appendices and models include information about how costs vary between single rate electricity, multi-register electricity and gas.

Wholesale costs

3.15. We describe our proposed approach to estimating wholesale costs in Appendix 4. As discussed in that appendix, we set the allowance for wholesale costs with reference to the prices of annual forward contracts, as observed over a six-month horizon. To this index, we add further allowances to reflect the costs of imbalance and forecast error, shaping, and transaction costs. We then uplift these costs to reflect the impact of electricity losses and unidentified gas. This provides our estimate of total direct fuel costs.

3.16. We estimate the allowance for capacity market payments using forecasts of the total value of capacity market payments for a given scheme year. We combine this with estimates of the share of domestic customers' demand which falls into peak winter periods (uplifted for losses).

Policy costs

3.17. We set out our proposed approach to estimate policy costs (ie the costs associated with suppliers' environmental and social obligations) in Appendix 5. In general, this involves using data published by the administrators of the different schemes to calculate the cost to a domestic customer in a given obligation year. In some cases these costs are known with a large degree of accuracy in advance. In other cases these costs must be based on forecasts and are subject to greater uncertainty.

3.18. Given the proposed methodology, we would only expect these estimates to include the administrative costs that a supplier incurs for Feed-in Tariffs and the Energy Company Obligation. For other schemes – in particular the Warm Home Discount (WHD) – these costs would be included alongside operating costs.

Network costs

3.19. We discuss our proposed approach to estimating network costs in Appendix 5. We propose to set the allowance for network charges by combining charges as published by the network companies with assumptions about demand and losses to estimate the charges incurred in each region in pounds per customer.

Operating costs

3.20. We propose to estimate the allowance for operating costs with reference to information on suppliers' costs in previous financial years. Historically there have been large differences in operating costs between suppliers. We have therefore carried out a benchmarking analysis to form a view on what is an efficient level of operating costs. We discuss how we propose to estimate suppliers' historic operating costs, and benchmark them, in Appendix 6 – Operating costs.

Payment method uplift

3.21. We propose to estimate the allowance for the additional costs associated with supplying customers that pay by standard credit using historical data collected from suppliers on the additional working capital, bad debt, and other administrative costs of supplying customers who pay for their energy in this way. We propose to spread a proportion of these costs over customers that pay using payment methods other than standard credit (especially direct debit). We discuss our proposed approach in more detail in Appendix 8 – Payment method uplift.

Profit margin

3.22. Finally, we propose to include an allowance for suppliers to earn a normal rate of return on capital employed. We would set this allowance with reference to the estimates prepared by the CMA during its market investigation.[7] We discuss this in more detail in Appendix 9 - EBIT.

[7] CMA (2016), Energy market investigation – final report. https://assets.publishing.service.gov.uk/media/5773de34e5274a0da3000113/final-report-energy-market-investigation.pdf

4. Advantages and disadvantages of using a bottom-up cost assessment for customers with nil consumption

We discuss the advantages and disadvantages of using a bottom-up cost assessment to estimate efficient costs at nil consumption. We set out our proposed approach to estimating the benchmark for the purposes of setting the default tariff cap.

Assessing costs for customers with nil consumption

Proposed decision

4.1. We propose to set the initial level of the benchmark at nil consumption in line with market prices in 2017.

4.2. We propose to update the benchmark at nil consumption using the same model as the efficient benchmark at typical consumption. In practice, the choice of the benchmark at nil consumption is therefore about what we use as the starting value for the operating cost parameter (OC_0 in draft licence condition 28AD).

What we consulted on

4.3. In the May consultation, we stated that the specific approach used to set the cap at nil consumption would depend on the method we used for establishing the efficient cost.[8]

4.4. Within the operating cost appendix, we said that we would consider whether the operating cost allowance should be the same at typical consumption and nil consumption, or if the allowance at nil consumption should be lower. We said that our current view was that bad debt costs were the only element of operating costs which we might expect to depend on a customers' consumption to any material degree.[9]

Stakeholder feedback

4.5. We asked a question about whether operating costs should have a variable component to reflect differences in bad debt costs between customers with higher and lower consumption. Suppliers agreed that at least some part of bad debt should be recovered through a variable component.

4.6. One supplier told us that the allocation between the standing charge and the unit rate should be cost reflective. It said that most operating costs will not vary with consumption, and should therefore be recovered through the standing charge. However, it said that bad debt charges should be recovered through the unit rate due to their link to consumption. It also said that smart metering costs should be recovered

[8] Ofgem (2018), Default tariff cap: policy consultation – overview, paragraph 2.79. https://www.ofgem.gov.uk/system/files/docs/2018/05/default_tariff_cap_-_policy_consultation_-_overview.pdf
[9] Ofgem (2018), Default tariff cap: policy consultation. Appendix 8 – operating costs, paragraph 2.4. https://www.ofgem.gov.uk/system/files/docs/2018/05/appendix_8_-_operating_costs.pdf

through the unit rate, as this would allocate costs to those customers with most to benefit.

4.7. We also received comments about setting the cap at nil consumption in response to the May consultation appendices on the adjusted version of the existing safeguard tariff and the updated competitive reference price. Some of these comments are relevant to our new proposed approach. One supplier said that the pricing methodology of suppliers at nil consumption may not be cost-reflective. In response to the appendix on the adjusted version of the existing safeguard tariff, two respondents highlighted that they would prefer standing charges to be determined via a bottom-up approach, to ensure cost reflectivity of zero consumption customers. One of these respondents said that our proposed approach to nil consumption for the adjusted version of the existing safeguard tariff approach could artificially skew the market so that lower consumption customers potentially become unattractive to suppliers.

Rationale for our proposed decision

4.8. Operating costs are the largest cost component at nil consumption. We would not generally expect operating costs per customer to vary with the amount of energy a customer consumes, and we have not seen evidence to the contrary. As noted in the May consultation, bad debt might be an exception. However, we are already considering the additional bad debt related to standard credit (compared to direct debit) through the payment method uplift, and applying this as a percentage. (See Appendix 8 – Payment method uplift). We would expect this to account for the vast majority of total bad debt, as bad debt related to direct debit customers is negligible. Some other costs also apply at nil consumption (eg the WHD). We cover these other costs in Chapter 5.

4.9. One option would therefore be to set the benchmark at nil consumption using the same allowances for operating costs as used in our proposed benchmark at typical consumption. This would be a cost-reflective approach. After adding allowances for the other cost component which applying at nil consumption, we estimate that this would lead to an efficient benchmark of £225 for a dual fuel, direct debit customer at nil consumption. (As with our previous figures, this is a GB average, for 2017/18, including VAT).

4.10. This would be a significant departure from how suppliers set their prices at nil consumption. For example, in June 2017, large suppliers set direct debit prices at nil consumption for variable tariffs which ranged between £116 and £190.[10] Market prices at nil consumption were therefore materially lower than our benchmark. They range significantly between suppliers, in a way which does not appear to be linked to variation in suppliers' operating costs. This suggests that prices at nil consumption are primarily explained by suppliers' commercial pricing decisions, and not by the actual costs of serving customers at nil consumption.

4.11. The alternative would be to set the initial level of the benchmark at nil consumption in line with market prices in 2017.[11] This is our proposed approach – we explain in detail how we propose to calculate the average price in Chapter 5. This would lead to a

[10] Based on analysis of tariff data from Energyhelpline. Dual fuel, GB averages. We have selected the paper billing version where a supplier offers more than one variable tariff.
[11] We use 2017 to align with our base period for the efficient benchmark at typical consumption.

benchmark of £164. We achieve this by only allocating part of our estimated operating cost allowance to nil consumption.

4.12. Below-cost prices at nil consumption are not a source of consumer harm. If we set a cost-reflective benchmark at nil consumption, this could lead to suppliers increasing their standing charges (to make up for a reduction in unit rates as a result of the default tariff cap reducing the amount they can charge at typical consumption). This would be an unintended consequence, and could negatively affect consumers with low consumption. In order to protect consumers we consider that the least disruptive approach is to take account of market prices when setting the benchmark at nil consumption.

4.13. The CMA used market prices to set the PPM cap at nil consumption. This reflected feedback it received from stakeholders.[12] We are proposing to take a similar approach.

4.14. For a given efficient benchmark at typical consumption, changing the benchmark at nil consumption affects the implied maximum unit rate allowed under the cap for a simple tariff. (This is the slope of the line linking the levels of the cap at nil and typical consumption). Reducing the benchmark at nil consumption increases the implied unit rate (and vice versa). For example, in 2017/18, the direct debit unit rate for single-rate electricity would be 1.2p/kWh higher in our proposed approach than under a cost-reflective approach. The equivalent unit rate for gas would be 0.2p/kWh higher. However, the implied standing charges would be lower.

4.15. Therefore, it is important to note that setting a below-cost benchmark at nil consumption does not mean that the default tariff cap as a whole would be set below cost. Rather, it affects the balance between the implied standing charge and unit rate. However, there would be impacts on individual consumers, especially those with consumption significantly below or above the typical level. There could also potentially be impacts on individual suppliers, depending on their distribution of customers over different consumption levels.

[12] CMA (2016), Energy market investigation – final report, paragraphs 14.72 and 14.75-14.77. https://assets.publishing.service.gov.uk/media/5773de34e5274a0da3000113/final-report-energy-market-investigation.pdf

5. Our estimate of the benchmark at nil consumption

We provide our estimates for the benchmark at nil consumption for 2017/18, derived using our proposed methodology.

Our estimates of the benchmark

Our benchmark

5.1. Table A1.4 below sets out the value of the benchmark at nil consumption for 2017/18.

Table A1.4: Estimates of benchmark in 2017/18[1], £ per customer (GB average, nil consumption)

Category	Cost	Electricity Single rate	Electricity Multi-register	Gas	Dual fuel[2]
Wholesale	Direct fuel				
	Capacity Market				
Policy	Renewables Obligation				
	Contracts for Difference				
	Feed-in Tariffs				
	Energy Company Obligation				
	Warm Home Discount	6.70	6.70	6.70	13.40
	Assistance for Areas with High Electricity Distribution Costs				
Networks	Transmission				
	Distribution	16.43	16.43		16.43
	Balancing Services Use of System				
Operating costs		43.42	43.70	69.03	112.44
Direct debit					
Payment method adjustment		5.37	5.37	5.21	10.57
EBIT (applied to everything)		1.37	1.39	1.50	2.87
VAT @ 5%		3.66	3.68	4.12	7.79
Total, inc VAT, excl headroom		**76.95**	**77.27**	**86.55**	**163.51**
Standard credit					
Payment method adjustment		18.08	18.11	17.24	35.32
EBIT (applied to everything)		1.61	1.63	1.73	3.34
VAT @ 5%		4.31	4.33	4.73	9.05
Total, inc VAT, excl headroom		**90.55**	**90.90**	**99.43**	**189.98**

[1] Values shown are a weighted average of our estimates for summer 2017/18 and winter 2017/18.
[2] We do not intend to set a cap specific to dual fuel, and dual fuel costs are shown for illustration only. We calculate these by adding our estimates for single rate electricity and gas.

5.2. The operating cost in this table (£112.44 for a dual fuel customer) is lower than at typical consumption (£168.73 for a dual fuel customer). This illustrates that our proposed approach at nil consumption, which is based on market prices in 2017, does not reflect our full estimate of operating costs at nil consumption.

5.3. We propose to update this benchmark over time using the same cost models as at typical consumption, but taking into account that not all the same costs apply as at typical consumption. The section at the end of this chapter on updating the benchmark at nil consumption explains the detail of our proposal.

The methodology for our proposal

5.4. We collected tariff data through a request for information to suppliers in April 2018.[13] We propose using this data because it contains information on the number of customers on each tariff, in addition to the information on the prices of individual tariffs.

5.5. This data consists of four snapshots of suppliers' tariffs, at the end of each quarter in 2017. The request excluded prepayment tariffs, non-Economy 7 restricted meters, and multi-tier tariffs.

5.6. We have processed the tariff data to consolidate the information from suppliers into a single dataset. This largely involved ensuring that the data was formatted in a consistent way across suppliers so that it could be analysed together. For example, we needed to make sure that categories (eg tariff types) were named consistently. We also checked for issues with suppliers' data, and clarified these where necessary.

5.7. Our proposed approach seeks to calculate the size of the operating cost component for the efficient benchmark at nil consumption as the residual that is left once our estimates of other elements of costs at nil consumption are removed. We therefore looked at price data from 2017, and removed the cost elements that would have fed into these prices in that period, in order to calculate the implied allowance for operating costs.

5.8. Specifically, we calculated the annual price in 2017 at nil consumption for each tariff. This is the annual standing charge, minus the value of any discounts.

5.9. We then removed electricity distribution network charges. (There are no gas network charges at nil consumption). We used the values calculated through our network charging model. (See Appendix 5 – Policy and network costs). We used the network cost value which applied at each quarter end, for the applicable region.

[13] We originally issued this request for information to inform our development of the updated competitive reference price approach.

5.10. We then calculated the average bill (excluding electricity distribution network charges) at nil consumption. We did this separately for single rate electricity, Economy 7 electricity and gas. Our proposal involved a number of design choices:

- **Date:** We used information from each of the four snapshots in our dataset. This averages out any differences in prices across 2017.
- **Payment method:** We used information on direct debt tariffs. This is because we propose to apply a payment method uplift (in the same way as at typical consumption) when setting the benchmark at nil consumption.
- **Tariff type:** We used data on variable tariffs. This helps to ensure that we are setting the cap in line with the prices that were paid by customers who will be subject to the default tariff cap.
- **Suppliers:** We used data from the same ten suppliers used in the operating cost analysis at typical consumption (ie the "benchmarking sample" as discussed in Appendix 6 – Operating costs). This provides a degree of consistency.
- **Region:** We would already have removed network charges, which vary regionally. We therefore calculated a national average.
- **Weighting:** We calculated a customer-weighted average across all the tariffs that meet the design choices above. This helps us to get closest to reflecting market pricing at nil consumption in 2017.

5.11. Finally, to calculate the implied operating cost allowance at nil consumption we then subtracted three components: headroom, EBIT and the costs of the WHD scheme.

5.12. Although suppliers would not have included headroom in their prices in 2017, we propose to apply headroom in future at nil consumption in the same way as at typical consumption. We therefore need to remove an estimate for what headroom would have been. (We are seeking to align the initial level of the cap in 2017 with market prices, rather than seeking to align the benchmark alone to market prices). We calculated the implied headroom component by adding together the average price at nil consumption excluding networks and a GB average figure for network charges at nil consumption in 2017, and multiplying the total by the headroom adjustment percentage.

5.13. We adjusted for EBIT in a similar way to headroom. Having subtracted the implied headroom component from the average price at nil consumption excluding networks and the GB average figure for network charges, we multiplied this by the 1.9% EBIT margin. This gives us an implied EBIT component.

5.14. We obtained the relevant WHD amount from our policy cost model.

5.15. We subtracted the above three amounts from the average price at nil consumption excluding networks. Having removed all the other cost sources, the remainder is our estimate of the operating cost component at nil consumption. (This is referred to as OC_0 in draft licence condition 28AD. We are consulting on this draft licence condition alongside this document). Like our operating cost figure at typical consumption, we used April-September 2017 as the base period for the cap.

Updating the benchmark at nil consumption

5.16. The description above explains our proposed approach to setting the initial level of the benchmark at nil consumption. We then need to update the benchmark over time – we are proposing to do this every six months.

5.17. When updating the benchmark at nil consumption, we propose to take a similar approach to the efficient benchmark at typical consumption, in that we will use the same cost models. However, the cost components that apply at nil consumption are different than at typical consumption.

- **Wholesale costs:** Neither direct fuel costs nor capacity market costs apply at nil consumption, and so this would be zero. Direct fuel costs do not apply because no energy is consumed. Capacity market costs do not apply because suppliers are charged for these costs based on demand. (See Appendix 4 – Wholesale costs for further information on the capacity market).

- **Policy costs:** The only policy cost which applies at nil consumption is WHD. (Appendix 7 of the May consultation set out which schemes have costs to the supplier which vary with volume).[14] We would use the relevant value of WHD from the policy costs model.

- **Network costs:** As explained above there are no gas network charges at nil consumption. For electricity, we would use the values from our network charging model.

- **Operating costs:** We propose to update the benchmark operating cost at nil consumption (OC_0) using CPIH. We would add a scaled-down version of the Smart Metering Net Cost Change (SMNCC – described in Appendix 7 – Smart metering costs) – see below.

- **Payment method adjustment:** We propose to apply the payment method adjustment in exactly the same way as at typical consumption. However, because the bad debt and working capital elements of the payment method adjustment are based on percentages, the absolute uplift values will be smaller at nil consumption than at typical consumption. In relation to standard credit, we considered the estimate generated by our proposed approach, and compared this against market prices. This suggested that our proposed approach for standard credit is also broadly reflective of market prices.

- **EBIT:** We propose to apply a 1.9% EBIT margin, as at typical consumption.

- **Headroom:** We propose to apply the same headroom adjustment percentage as at typical consumption.

5.18. One specific difference to the method we propose for updating typical consumption is our treatment of the costs associated with smart meter rollout (SMNCC). At nil

[14] Ofgem (2018), Default tariff cap: policy consultation. Appendix 7 – Policy and network costs. Table A7.2.
https://www.ofgem.gov.uk/system/files/docs/2018/05/appendix_7_-_policy_and_network_costs.pdf

consumption, we propose to include a reduced SMNCC value (73% of the full SMNCC amount).

5.19. We would still apply 100% of the SMNCC at typical consumption. This means that if the SMNCC increases, the increase at typical consumption would be larger than the increase at nil consumption. Similar to the effect discussed above, this would mean an increase in the implied unit rate.

5.20. In principle, metering costs do not vary with consumption, and so a fully cost-reflective approach would allocate them entirely to the efficient benchmark at nil consumption. However, we know that suppliers do not take a completely cost-reflective approach in their pricing at present. While we do not know how suppliers might have priced future costs (ie costs associated with smart metering) in the absence of the cap, we consider it reasonable to assume that they might continue with their previous pricing approach.

5.21. In line with our general approach at nil consumption, we therefore propose that a fraction of the SMNCC is be added to the efficient benchmark at nil consumption. We calculate this fraction as the ratio in our base period (April-September 2017) between the direct debit benchmarks (excluding VAT) calculated using: our proposed approach at nil consumption and a fully cost-reflective approach. This equals 73%.

Next steps

5.22. During this consultation, we are disclosing additional information on the analysis we have carried out in relation to nil consumption. We are providing this information to the ten suppliers included in our analysis. This is an extra step, beyond the description of our process set out in this appendix.

5.23. We are sending each of these suppliers:

- an extract of the code from our tariff data cleaning file, showing how we have processed its own data
- a copy of the code which calculates the average price at nil consumption excluding electricity distribution network charges (with the names of other suppliers removed) and
- the MS Excel© file which removes headroom, EBIT and WHD from the average price, in order to calculate the operating cost parameter at nil consumption.